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THE SCOPE OF DIVERSIFICATION OF THE WAREHOUSE SPACE MARKET IN A REGIONAL CONFIGURATION*

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Abstract. The purpose of the study is an attempt to show the scope of diversity occurring in the warehouse space market in a regional system. The size of the existing warehouse space, the scope of its use and the level of rents were analysed. The basic factors affecting the location of such objects in a given area were also indicated. Poland has the largest warehouse space market among the countries of Central and Eastern Europe (CEE). The amount of warehouse space in Poland is increasing every year. In 2014, it amounted to 8.5 million m2 and in the third quarter of 2019, 17.7 million m2. Currently, over 83% of the warehouse space market is concentrated in five main regions. These include the Warsaw region, Central Poland, Upper Silesia, Wrocław and the Poznań region. These centres, having a large population, generate significant demand for goods stored in warehouses. At the same time, locations around Szczecin, Tri-City, Rzeszów and Lublin are becoming the subject of growing interest of many developers and tenants. The increase in their investment potential is influenced by the availability of labour as well as differences in the level of employees' remuneration and the availability of land at attractive prices.

Keywords: scope of diversity; regional diversity; location factors; logistics operators; sustainable development; warehouse space management; supply chain

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1. Introduction

The warehouse and logistics market is the most dynamically developing real estate sector in Poland. Only during five years the area of real estate doubled. In the first half of the year 2014 the whole resources of the modern warehouse area equaled not much over 8 mln m2. However, growing demand on warehouse and logistics areas immediately transferred to revival of the market. In 2017 and 2018, respectively, objects of 2.3 mln m2 and 2.2 mln m2 were put into service. The data from 2019 indicate the continuation of this upward trend (Dołęga, 2019).

Polish market of warehouse space is interesting for foreign investors. The biggest and the best known in the world companies decide to place their main transshipment and logistics centres in Poland. These decisions are stimulated by factors such as: good location, constantly developing transport infrastructure and low operation costs (Szymonik, Chudzik, 2018). Taking into consideration the availability of unoccupied parcels and work force, the investors' interest transfers into the fast growth of warehouse space and high activity of developers not only in the main markets (Lin et al., 2018; Singh et al., 2018). This creates new places of work and fosters development of regions.

Poland is included into a group of investment leaders in the Central and Eastern European region (CEE). In 2018 the whole value of investment transactions in the market of commercial real estate was 13.2 bln Euro, from which Poland had 7.3 bln Euro (Trzysło, 2019).

An important part of the investment market is the market of warehouse space. In 2018 the value of warehouse transactions reached 1.8 bln Euro and Poland was third in the list of the most often chosen places in Europe to set up or move a warehouse. Poland was overtaken only by Holland and, the biggest European market, Germany. As the result every tenth square meter of warehouse area was rented in our country.

One of the lowest rents in Europe are among some factors encouraging people to rent warehouse space in Poland. Geographic location at the intersection of the North-South, and the East-West trade routes is another strong point. Additionally, our warehouse market is characterised by the high standard and good equipment of objects.

In Poland, foreign investors dominate the market of warehouse space. During the last three years 70% of the invested in Poland capital has come from the USA, South Africa, Germany and Great Britain. Polish capital is marginal, not only in comparison with Western European, but also with Central European countries.

The development of infrastructure plays an important role in the location of warehouses. The biggest aggregation of large-scale warehouse objects one can see in the neighbourhood of the A1 and A2, and A1 and A4 motorway intersections. The area around Warsaw are other important warehouse centre due to its central location and the capital city status. Also the areas through which expressways run are becoming more and more important. Potential tenants have a wide range of choices because of the regional differentiation in Poland.

2. The warehouse as an element of the supply chain – literature review

The warehouse is an important element in the supply chain. It is defined as a functional and organizational unit created for storing material goods (supplies) in a special area of warehouse building. Storage can consist of material stocks, raw materials, semi-finished products and goods which temporarily are not in demand. To store all of them, special conditions and methods are necessary, according to their individual physiochemical properties (Krzyżaniak, Niemczyk, Majewski, Andrzejczyk, 2014).

The warehouse in the supply chain is the main element combining supplies with production and the market (Makaci et al., 2017; Ben Moussa et al., 2019). Receiving goods, their periodic storage and conveying them to the following links of rotation are its functions (Galińska, 2016). However, there are two basic functions of a warehouse, independent on its placement in the organizational structure of enterprise, that is the function of stock protection, which has a static character, and material handling (manipulation function) concerning the time of

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receiving and goods issue, and the time of waiting for shipment (Matwiejczuk, 2014). The time of all those activities decides on .the efficiency of the warehouse. Material handling is characterised by high dynamic (Ellram & Ueltschy Murfield, 2019).

The main purpose of logistics processes is ensuring the highest level of customer service, having the lowest possible costs (Grzybowska, 2010). There are various modern strategies of stock management, which are to lower the costs of a company through decreasing stock, and at the same time, keeping the standards of customer service (Banaszak, Kłos, Mleczko, 2011). However, quickly changing demand and the possible costs for companies resulting from the lack of stock, prevent the elimination of the storage process. That is why warehouse space is still one of the most important links in the logistics process of every enterprise (Blaik, 2013).

On the one hand storage is a necessary activity, but on the other it is very expensive. The quest for limiting the complex cost of storing has generated a demand for, and following it creation of, a completely new kind of enterprises and warehouse services (Coyle, Bardi, Langley, 2010). Nowadays, these services take two main forms: the provision of commissioned storage services and providing storage space. In the first case, a warehouse company takes care of the cargo and the realization of all the main and supplementary services. In the second case, the service provider puts at disposal only a warehouse space with its equipment. From a formal point of view, this service is a classical rental service (Sainathuni et al., 2014; Mickleson et al., 2019). The basic criterion allowing to distinct modern warehouse spaces is their purpose and usage to the realization of commercial services which are commissioned and undertaken against payment for a recipient (Brockmann, Godin, 1997).

The development of modern warehouse spaces in Poland takes place faster than in the other countries of Central and Eastern Europe (Kisperska-Moron, 1999; Richards 2014). The first objects of this type appeared in the first half of the nineties. At that time both developers and investors concentrated on Warsaw and its neighbourhood. The uncertain political and economic situation, poor state of transport infrastructure and little demand discouraged investors from performing in the other parts of Poland (Długosz, 2009; Kern et al., 2020).

The situation changed in the years 2004 – 2005, when the accession of Poland to the European Union initiated a sudden growth of commercial investments. Following the increasing demand, the developers more willingly started investing also outside Warsaw.

Sustainable development aspects are also important when creating warehouse space (Tseng et al., 2019). Solutions leading to obtaining ecological certificates are used more and more often (Atieh et al., 2016; Alawneh & Zhang, 2018). The way to obtain them is to use the BREEAM (Building Research Establishment Environmental Assessment Method) and LEED (Leadership in Energy and Environmental Design) systems. Sustainable construction in the area of warehouse space allows for the creation of friendly work environments and leads to the optimization of costs associated with the operation of objects (Chen et al., 2016).

3. Materials and methods

The purpose of the study is an attempt to show the scope of diversity occurring in the warehouse space market in a regional system. The analysis of the warehouse space, the scope of its use, as well as the amount of rent were carried out including the split into the main regions of occurrence. The level of sector differentiation was also shown.

The volume of warehouse space was analyzed in relation to the total supply in the country and individual regions of concentration. The assessment of the increase and dynamics of warehouse space was made by main regions and development regions.

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The extent of use of warehouse space was assessed on the basis of the vacancy rate expressed as a percentage. It is the relation of vacant space to the total warehouse space in a given area.

Comparison of rents paid by tenants was made on the basis of base rates. Their height depends on the location of the object, its equipment and specifics. An important factor is also the size of the offered space and the estimated rental time. It is worth observing that the effective rates are, on average, lower by 25%-35% than the base rates.
The main sources of information were reports prepared by consulting companies, trade press and source literature.

4. Results and disscussion

The developing warehouse market has turned out to be very vulnerable to economic turmoil. In 2008 the fall in demand for renting warehouse space resulted in the decrease in concluded contracts, and consequently the decrease in the implemented and planned investments, which created a supply restriction concerning new investments. It was still possible to observe this situation at the beginning of 2010. However, since mid-2010 one could notice a significant revival connected with the improvement of the market situation (see Fig. 1).

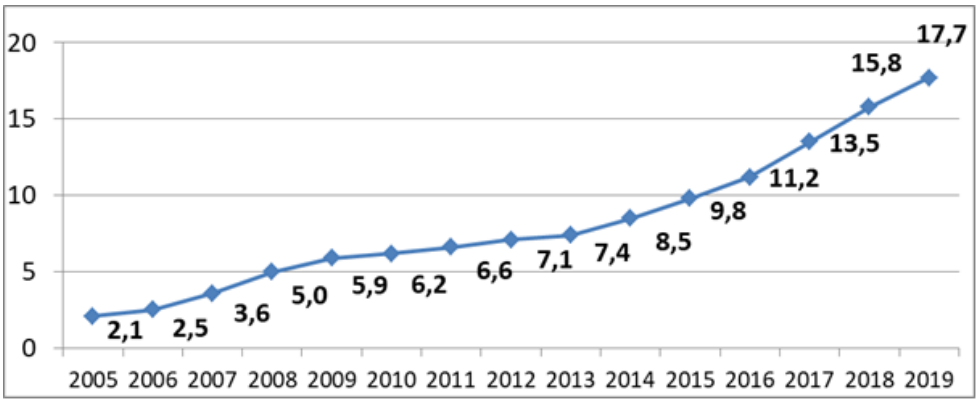

Fig. 1. Changes in the size of warehouse space in Poland in 2005-2019, in millions square meters (2019 – data for three quarters of the year)
Source: Own calculation based on reports The market of warehouse properties in Poland for each year (elaborated by JLL and Cushman & Wakefield)

In Poland the years 2005-2008 were the period of an investment boom in the warehouse space market (Fig.1.). Industrial developers handed over to tenants huge amount of modern warehouses grouped in warehouse centres located in the neighbourhood of highways and expressways in the process of being built. At the end of 2008 the size of warehouse space amounted to 5 mln m2.

In 2010-2011 the market of modern warehouse space did not keep pace with the growth from the previous years (Droździecki, 2012). In 2010 the total increment of new areas was 326 thousand m2, and in 2011, 371 thousand m2. The year 2012 was much better, when 518 thousand m2 of new warehouse space were handed over to tenants (Fig. 2). In this way Poland became the biggest warehouse space market in Central and Eastern Poland.

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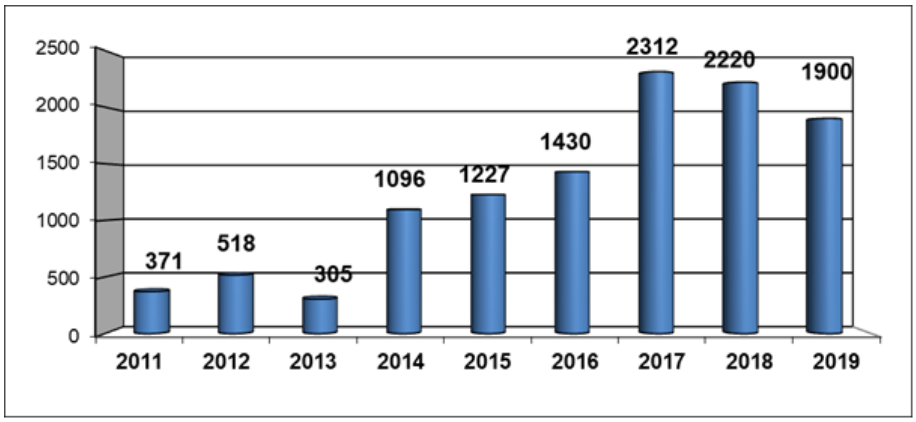

Fig. 2. The scope of change in the supply of warehouse space in Poland in 2011-2019, in millions square meters (2019 – data for three quarters of the year)
Source: Own calculation based on reports The market of warehouse properties in Poland for each year (elaborated by JLL and Cushman & Wakefield)

The second wave of economic slowdown that reached Poland in 2012/2013 also affected the results of the warehouse sector. In 2013 the GDP increased by only 1.6%, and the economic dynamic was as low as in 2008-2009. During the whole year 2013 only 305 thousand m2 of warehouse space were put into service, which earlier was quite a modest result.

At the end of 2014 the total supply of modern warehouse space amounted to 8.5 mln m2 and was the biggest among Central and Eastern European countries (Bond, 2015). During that year the activity of developers was high, resulting in putting into service over 1 mln m2. In 2014, 47% of the new supply was built within the projects such as BTS (build to suit). The new areas concentrated in five main regions, which embraced 92% of total supplies.

In 2015 the Polish economy one more time got very good results. GDP increased by 3.6% and the unemployment rate decreased further, falling below 10%. At the end of 2015 the total supply in the Polish warehouse space market was 9.5 mln m2. 774,000 m2 were under construction within 33 different investment projects. The area around Warsaw was the leader, where 219,000 m2 warehouse space was created (Fechner, Szyszka, 2018).

At the end of 2016 the total supply of warehouse space amounted to 11.2 mln m2 and during one year rose by 1.4 mln m2. It was an increase by 15% year-over-year with the higher dynamic mainly in regional markets. The year 2017 turned out to be a peak year (Rajska-Wolińska, 2018), when 2.3 mln m2 of the new warehouse space appeared in the market, and the total supply reached 13.5 mln m2.

In 2018, with a good economic situation one could observe a high demand and a great supply in the Polish warehouse sector. The demand from tenants was 4 mln m2, from which new lease agreements and expansions consisted of 72%. The developers completed over 2.2 mln m2 of the new warehouse space, only 8% less than in 2017. At the end of that year the impressive number of 1.9 mln m2 were under construction, more by 37% compared with the same period in 2017.

At the end of the third quarter of 2019 the total supply of the new warehouse space was 17.7 mln m2. This was the result of commissioning 1.9 mln m2 since the beginning of that year, and the investments completed in the third quarter amounted to 990, 000 m2. This result was higher by 56% than the analogous outcome the previous year. At the end of September, 54% of warehouses under construction were not secured by lease agreements, which is evidence of the developers' optimistic approach concerning the future of the market.

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The regions embracing the so called Great Five, that is Warsaw, Upper Silesia, Central Poland, Poznań and Wrocław, have been the pillars of the Polish warehouse market since the very beginning of modern warehouse space creation. The total share of these locations in the demand in 2013 was 90%, and in supply amounted to 92 %. In 2014 – 2019 Central Poland turned out to be the fastest developing region (Table 1), where the supply of warehouse space increased by 135%. Equally intensive development occurred, in that period, in Upper Silesia, where 1.6 mln m2 warehouse space were created.

Table 1. The change in the warehouse space market in 2014-2019 in the main regions, in thousands square meters (2019 – data for three quarters)

Main regions	2014	2015	2016	2017	2018	2019	Increase 2019-2014	Dynamics in % 2019/2014
Warsaw City	596,0	605,0	653,0	693,0	765,0	778,0	182,0	130,5
Warsaw Around	2079,0	2295,0	2511,0	2933,8	3149,0	3339,0	1260,0	160,6
Upper Silesia	1545,0	1701,0	1955,0	2394,3	2764,0	3235,0	1690,0	209,4
Poznań	1267,0	1587,0	1806,0	1941,9	2022,0	2044,0	777,0	161,3
Central Poland	1239,0	1298,0	1565,0	1713,6	2544,0	2917,0	1678,0	235,4
Wrocław	1162,0	1270,0	1394,0	1633,4	1791,0	2004,0	842,0	172,5

Source: Own calculation based on reports The market of warehouse properties in Poland for each year (elaborated by JLL and Cushman & Wakefield)

In spite of the dominating position of the five locations, their share in demand in 2018 decreased to 74%, and the share in total supplies to 83%. This is, first of all, the result of increasing transport availability translated into logistics and production investments (Sinkiewicz, Semaan, 2019). Also, as the unemployment rate fell, a new asset of local staff reserve appeared especially in smaller towns. The cost of land, which is lower than around main agglomerations, is also not without significance. The years 2016-2019 turned out to be a very prosperous period also for Szczecin. This city, already having a good road connection with Germany, strengthened its attractiveness when the S3 expressway towards the south of Poland, and the S6 expressway towards Koszalin were completed. The entrance into the market of two e-commerce companies (Amazon from the USA and Zalando from Germany) became a turning point, and Szczecin appeared in the list of the most attractive locations for warehouse space in Poland. Those two investments were realized mainly to fulfill the plan of serving Western Europe markets (especially in Germany and Scandinavian countries). As a result the warehouse space market increased then from 187,000 m2 to 711,000 m2 (Fig.3).

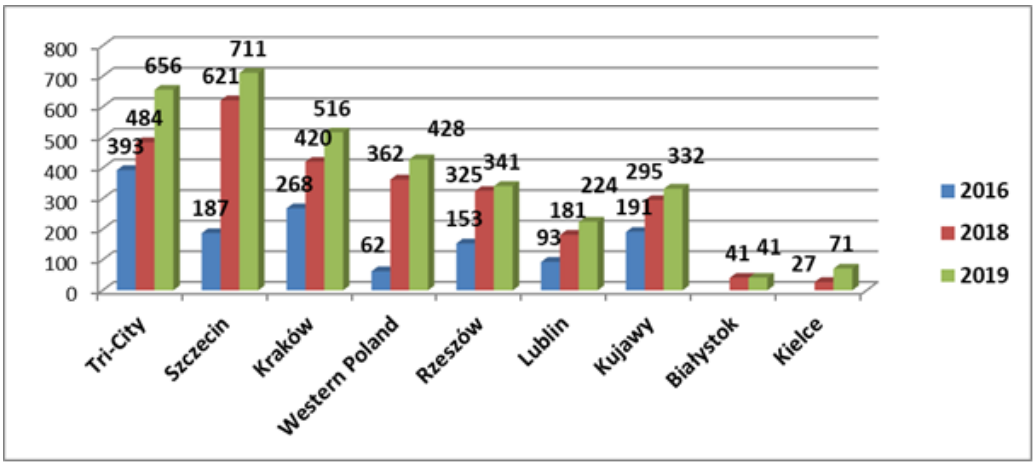

Fig. 3. The change in the warehouse space market in 2016-2019 in the developing regions, in thousands square meters (2019 – data for three quarters of the year)
Source: Own calculation based on reports The market of warehouse properties in Poland for each year (elaborated by JLL and Cushman & Wakefield)

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A similar group of factors stimulated the development of the warehouse space market in the region of Western Poland. This is a young warehouse market with a big development potential, extending along the S3 expressway and embracing, among others, Gorzów Wielkopolski, Świebodzin, Zielona Góra, Zgorzelec and Legnica. Because of its strategic location near the German and Czech Republic markets, this region attracts more and more attention of companies connected with such branches as: production, automotive, logistics and e-commerce (Dittmann, 2016). At the end of the third quarter of 2019 total supplies of warehouse space in this region were 428,000 m2. Western Poland is a specific region where the vacancy rate has been standing at zero level for a long time. This is due to the fact that most of the projects realized in this market are BTS (build to suit) investments.

The years 2017 – 2019 are the period of a clear increase in developers' and tenants' activities in the Eastern Poland warehouse market. One can observe the revival, both in maturing warehouse markets, such as Lublin or Rzeszów, and the new locations, such as Kielce and Białystok. In 2018, the first large investments were precisely in the latter two locations. Completing subsequent sections of expressways such as the S8 (Warsaw – Białystok) and construction of the S17 route, the section Warsaw – Lublin, as well as finalizing work in the S7 Warsaw – Kielce section, influence the growth of logistics potential of cities in Eastern Poland. Also, the situation in the local labour market is an important factor. According to Manpower data, the recruitment of 100 staff of a production company is the shortest in Białystok, and lasts about 40 days. This process takes 50 days in Rzeszów, Częstochowa, Lublin, Gorzów and Kalisz. In Wrocław, Warsaw and its neighbourhood as well as in Poznań the recruitment of employees lasts the longest – 90 days (Olszewski, Michalak, 2019). The afore-mentioned conditions mean that the warehouse space market in Eastern Poland in 2016 – 2019 doubled its supplies approaching 700,000 m2. The main credit for the situation goes to two cities: Rzeszów and Lublin.

The interplay of infrastructure factors, which already exist and these being in the implementation phase, appeared in Bydgoszcz and Toruń. These two biggest cities of the Kujawsko-Pomorskie Voivodeship, located near the completed A1 highway, the S5 expressway (Ostróda-Wrocław) being under construction, and the S10 route (Szczecin – Wołomin near Warsaw), also doubled the supplies of warehouse space (growth from 161, 000 to 332, 000 m2) in 2016 – 2019).

Remaining at a high level demand for warehouse space combined with moderately increasing supply secured by lease agreements contributed to reducing the vacancy rate (Haber, 2017). This indicator gradually decreased from 2014 reaching a record low level of 5% at the end of 2018 (Table 2).

Table 2. The change in the vacancy rate in 2014 – 2019 in regions, in percentage (2019 – data for three quarters)

Main regions	2014	2015	2016	2017	2018	2019	Increase/ decrease in percentage points
Warsaw City	14,6	10,4	9,4	9,5	9,2	12,6	- 2,0
Warsaw Around	10,2	8,7	5,5	4,9	3,8	4,1	- 6,1
Upper Silesia	11,1	7,4	7,2	5,1	5,7	6,6	- 4,5
Poznań	2,5	1,9	7,2	7,5	8,7	8,3	5,8
Central Poland	18,6	6,4	4,1	0,2	5,0	8,7	-9,9
Wrocław	5,7	5,8	5,1	6,6	2,6	4,3	-1,4
Total Poland	9,8	6,2	6,1	5,4	5,0	6,2	- 3,6

Source: Own calculation based on reports The market of warehouse properties in Poland for each year (elaborated by JLL and Cushman & Wakefield)

In 2019 the vacancy rate increased to reach 6.2%. The relatively high share of speculatively built warehouse space that could be observed in recent quarters resulted in the low growth of rented warehouse space throughout the country. This is visible mainly in smaller markets with limited demand, where even single speculative warehouses put into service significantly affect the vacancy rate (Głowacz, Rykowska, Staśkiewicz-Wieczorek, 2019). In the

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main markets the highest rate was in Warsaw (12.6%) and Central Poland (8.7%), followed by the Poznań region (8.3) and Upper Silesia (6.6).

The warehouse market in Poznań is characterised by a relatively high availability of warehouse space. This translates into high competitiveness among developers, which has a positive impact on the negotiating position of the future tenants. The remaining low vacancy rate in the Warsaw area (4.1%), combined with record demand and further development of transport infrastructure promote the realization of new projects in this market. The progression of the S7 and the S8 interchange with the Warsaw bypass create new opportunities for the development of big projects, such as BIG-BOX, as well as smaller ones, contributing to city logistics. In many cases (especially in the new areas being discovered by developers), the availability of a relatively inexpensive warehouse space of class A, encourages tenants to leaving the already rented old places and moving to new locations (Polkowski, Kotowski, 2019).

The ownership structure remains without any major change. Almost 50% of resources belong to the five main players, that is Panattoni, Prologis, Segro, Logicor, Mapletree and their partners. P3 and Goodman each posses 5% of the share in the ownership structure.

Developers more and more often ensure that warehouses are equipped with a number of ecological systems in the field of sustainable development (Badi & Murtagh, 2019; Tumpa et al., 2019). These systems control water consumption and save energy for air conditioning and ventilation (Fikiin et al., 2017; Geyi et al., 2019). Modern lighting and heating and cooling systems allow for significant savings in terms of media consumption throughout the building (Mahroof, 2019).

Guided by the idea of sustainable development, Panattoni built two BTS facilities for H&M in Grodzisk Mazowiecki and in Gądki near Poznań. They obtained LEED system certificates at Silver level. The ecological nature of the investment for H&M is proved by modern design of the warehouse, the use of ecological materials, energy efficiency, as well as the right location (Feng et al., 2017).

Also SEGRO introduced a number of changes in the standard of construction of its warehouses. The developer focused on innovative, ecological solutions in its strategy. According to its assumptions, every newly created SEGRO facility is certified in the BREEAM system. An example of this type of facility is the distribution center in Komorniki near Poznań. In a building with an area of 32 thousand. m2 of warehouse space, among others, intelligent LED zone lighting controlled by motion sensors (Halawa et al., 2019; Lyu et al., 2020). Special water distribution systems have been used in the facility to reduce water consumption by up to 10 percent (Monthatipkul & Yenradee, 2008).

There is a big differentiation of industries and sectors of companies' activities among the tenants of warehouse space (Fig.4).

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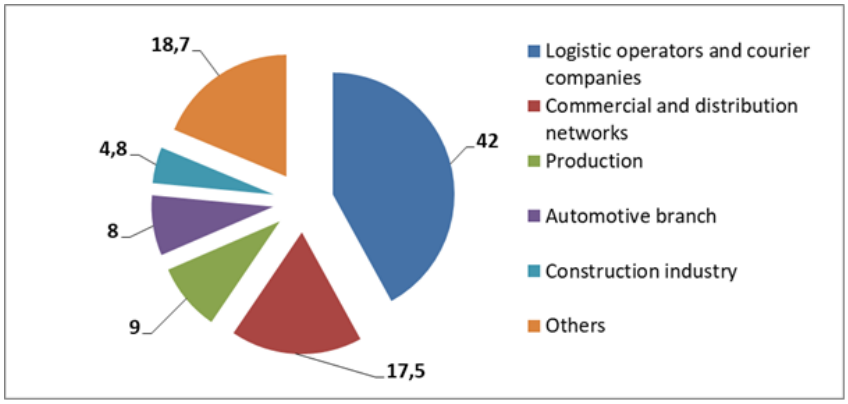

Fig. 4. Demand according to sectors in 2019 (III quarter) in percentage
Source: Own calculation based on reports The market of warehouse properties in Poland for each year (elaborated by JLL and Cushman & Wakefield)

Traditional companies from the logistics sector, delivery firms and retail chains had the biggest share in the industry structure of the warehouse space tenants. They rented 59.5% of the total area in the third quarter of 2019. Also the sectors of light production and automotive showed an impressive activity during the first three quarters of 2019 being responsible for over one fifth of the demand.

An important factor conditioning the locations of distribution centres for retail chains is the geographical position of the points of sale. Research shows that the cost of transport amounts to 50% of the supply chain costs, while rent is just above 4%. The right choice of location of a warehouse is of key importance for the financial success of the companies (Olszewski, Michalak, 2019).

Similarly to previous quarters, the tenants who are already present in the Polish market and who, thanks to new logistics contracts, invest in renting modern warehouse space to adjust their supply chain to serve e-commerce channel, gain advantage in the demand structure (Majewski, 2016). This situation concerns big players, including operators and retail chains, and medium sized companies, which decide to improve the standard of their warehouses and move to modern distribution centres (Krawczyk, 2011).

The scope of rent for warehouse space differentiation in 2014 – 2019 is presented in Table 3.

Table 3. The levels of rent in the warehouse market in 2014 – 2017, according to regions, in Euro

Regions	2014	2015	2016	2017	2018	2019
Warsaw City	4,10-5,50	4,10-5,30	4,10-5,10	3,50-5,50	4,30-5,25	4,30-5,25
Warsaw Around	2,70-3,60	2,70-3,60	2,70-3,60	2,00-3,20	2,50-3,60	2,60-3,80
Upper Silesia	3,00-3,70	2,80-3,50	2,70-3,60	2,20-3,20	2,90-3,60	2,90-3,60
Poznań	2,90-3,50	2,80-3,50	2,80-3,50	2,00-3,20	3,00-3,50	2,90-3,50
Central Poland	2,10-2,80	2,60-3,30	2,60-3,20	2,00-3,20	2,40-3,60	2,50-3,60
Wrocław	3,00-3,60	3,00-3,60	2,80-3,60	2,60-3,60	3,00-3,60	3,00-3,60
Kraków	4,00-4,80	3,60-4,20	3,50-4,20	3,50-4,50	3,00-4,20	3,20-4,30
Tri-City	3,00-3,50	2,80-3,20	2,80-3,35	2,80-3,50	3,00-3,50	3,10-3,60
Szczecin	3,00-3,75	2,70-3,40	3,20-3,70	3,20-3,50	3,20-3,50	3,20-3,50

Source: Own calculation based on reports The market of warehouse properties in Poland for each year (elaborated by JLL and Cushman & Wakefield)

The rent base rate in 2014 – 2019 was relatively stable with a weak tendency getting lower. The upward trend appeared in the first three quarters of 2019 in chosen locations, such as Warsaw and its neighbourhood, and

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Kraków. This was connected with a higher cost of land and growing prices of building materials. However, in highly competitive markets, where the availability of warehouse space is increasing, the rent shows a downward trend.

The highest base rent invariably appears in the Warsaw market, especially within the city, where the rates vary from 4.30 to 5.25 Euro for m2, per month. This results from this market specifics, where most warehouse space is not big, below 4 – 5 thousand square meters. Base rents in the other warehouse markets are 2.60 – 3.80 Euro for a square meter per month in the case of larger module type Big-box.

It is worth observing that the effective rates are, on average, lower by 25%-35% than the base rates presented in Table 3. The lowest rates, both base and effective, are likely to be paid in the Warsaw area, Central Poland and Poznań. The growth of warehouse space, resulting from very high demand, strengthens the negotiation power of tenants. This situation creates opportunities for renting warehouse space for 2.10 – 3.20 Euro for a square meter per month.

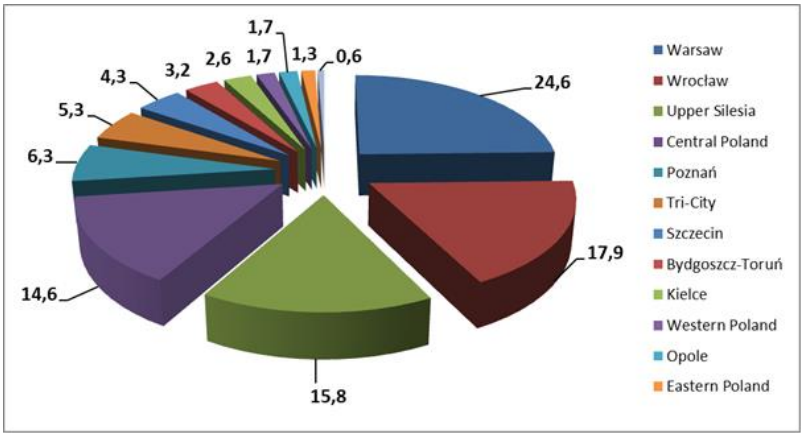

Fig. 5. The structure of warehouse space being under construction in the third quarter of 2019, in Poland, in percentage
Source: Own calculation based on reports The market of warehouse properties in Poland for each year (elaborated by JLL and Cushman & Wakefield)

The total amount of warehouse space under construction is not slowing down the activities of developers. At the end of 2019, as much as 1.9 mln m2 were under different stages of construction. The most warehouse space is built in the Warsaw region, 456,000 m2, next in Lower Silesia, 330,00 m2 and Upper Silesia 298,00 m2. Totally, almost 80% of warehouse space is in the Great Five markets (79.2%). The most active markets, except those afore-mentioned, are Tri-City, Szczecin, Kujawy and Kielce (Fig. 5).

The fact that only two out of ten projects under construction were rented in the whole by concrete companies (the warehouse in Mszczonów by Pepsico and the warehouse in Rawa Mazowiecka by Carrefour) confirms the developers' optimism. This transfers into over 1mln m2 built speculatively. However, taking into consideration demand in the market, one can expect that a large part of the warehouse space will be rented still at the construction state.

Conclusions

In Poland the amount of warehouse space is increasing every year. In 2014 it exceeded 8.5 mln m2 and in the third quarter of 2019 amounted to 17.7 mln m2. Hundreds of thousands of square meters of these new areas have

been put into service. Nowadays, 83% of the warehouse space market is in five progressive regions (the Warsaw region, Upper Silesia, Wrocław and the Poznań region). These centres are densely populated and itself generate high demand for goods being produced in companies, but also stored in warehouses. At the same time developers and tenants show more and more interest in the new progressing locations, especially in the regions around Szczecin, Tri-City, Rzeszów and Lublin.

The changes to date in the demand for warehouse space create good perspectives for the development of this market in Poland. E-commerce and the expansion of strategic for the Polish economy industries, such as automotive, food and household goods are responsible for the still growing interest in renting warehouse space. Logistics outsourcing is also an important factor.

Many tenants of warehouse space want to use environmentally friendly buildings. There are more and more facilities with ecological certificates on the market. Developers such as Panattoni and Segro offer facilities compatible with sustainable construction. An ecological warehouse is in many cases pure profit. It means not only lower water and energy bills, but also helps to improve the company's image.

Because of further development of the transport infrastructure and the decreasing availability of qualified employees in bigger agglomerations, the developers' activities will be increasingly moved to smaller markets and medium sized towns such as Olsztyn, Elbląg, Częstochowa, towns in Eastern Poland and also locations by the Western border. The difference in the levels of employee salaries and the availability of land at an attractive price, influence the growth of investment potential.

The increasing purchasing power of Polish citizens, which accelerates retail sale, both in a traditional way and through the Internet, also indicates a favourable outlook for the development of the warehouse space market, because this translates into the demand for the organization of distribution centres with the usage of logistics areas.

In terms of the market size, Poland ranks 7th in the European Union. Taking into consideration the already existing square meters compared with the population and GDP, and comparing that with the Western European countries, it turns out that there is still a huge potential for further development.

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SUSTAINABLE DEVELOPMENT AND URBAN PLANNING REGULATIONS IN THE CONTEXT OF CLIMATE CHANGE MANAGEMENT MEASURES

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Abstract. The purpose of this paper is to evaluate recent and upcoming changes in urban planning legislation in the Republic of Lithuania, which acknowledge the necessity of introducing climate change management tools. Sustainable development is a core principle of the Spatial Planning Law of the Republic of Lithuania since 2014. Special attention to the management of climate change is given at the national and municipal levels, and recent legislative initiatives are proof of this. Methodology – this analysis is based on evaluating the main applicable documents and introduced amendments. The theoretical publications, statistical data, and judicial practice are also observed while interpreting the given normative rules. This paper specifically analyses the legal requirements enshrined in Lithuanian law that are intended to foster sustainable development. New amendments to manage climate change are also analysed. In addition, the solutions of the Vilnius Master Plan are presented, as they introduced the principle of sustainable development before it became a national rule, as well as climate change management measures. Findings – the analysis reveals that national regulation only sets out the principles for spatial planners, and it is left to local governments to make final decisions on what exact measures may be introduced for the purpose of ensuring sustainable development and climate change management via spatial planning. This is a cause for concern and should lead to renewed calls for a coherent and ambitious approach to introduce the specific measures at the national level – at least in the by – laws to ensure consistent and unified application. Despite the vague wording employed by the regulations, the Vilnius Master Plan actively encourages the introduction of measures which could help in ensuring sustainable development and climate change management via spatial planning. Originality/value – this article is the first to analyse the newly adopted principle of sustainable development in the light of climate change management via spatial planning regulations in the Republic of Lithuania. In addition, the present analysis contributes to worldwide studies on sustainable development and climate change measures by filling a gap from Lithuania's side, showing recent regulatory changes as a good practice to other jurisdictions.

Keywords: sustainable development; urban planning; spatial planning; environmental law; climate change; land use law

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JEL Classifications: K32, K23, K25, R58, Q01, Q15, Q54, Q56.

Additional disciplines: law; ecology and environment; construction engineering; transport engineering; environmental engineering

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1. Introduction

Sustainable development has been a major area of policy focus since a framework for the principles of sustainable development was laid down at a United Nations (UN) Conference on Environment and Development in 1992. On 1 January 2014, a new Law on Spatial Planning came into force in Lithuania, which ultimately was aligned with the internationally agreed principles of sustainable development.

Sustainable development is becoming an increasingly topical issue due to the ground-breaking international accord to curb global warming reached under the Paris Agreement. There is a vast body of theory and research regarding sustainable development which is increasingly being translated into new laws and regulations to encourage its practice.

This paper consists of two main parts. Firstly, it analyses the most relevant research of other scholars to better understand the relationship between sustainable development and climate change management via spatial planning. Secondly, it examines the national regulations in four sub-chapters: the analysis of the current legal regulations; the analysis of the changes on the way, through the lens of how they reflect climate change management measures; the examination of the main by-law regulating spatial planning; and an assessment of the newly drafted Vilnius Master Plan. Finally, the conclusions drawn from this analysis are presented.

European Union (EU) regulations on climate change management are not discussed in this Article because of two main reasons. Firstly, during the research and drafting of this article, the newly appointed European Commission was just beginning to prepare their package for climate change management. Secondly, the scope of the planned package is so large that it would require a separate study.

This paper does not challenge the reality of climate change. Climate change was defined in the Law on Financial Instruments for Climate Change Management of the Republic of Lithuania, adopted back in 2009. Paragraph 5 of Article 2 defines climate change as: climate changes which, directly or indirectly, appear due human activity in the changing composition of the Earth's atmosphere, and which do not fall within natural climate fluctuations ranges observed at regular time intervals.

The research was performed, and the paper was written using the following methods. The method of *logical analysis (induction, deduction, synthesis)* was used in discovering the relevant rules of law and then formulating the respective findings. With the help of this method's inner logic, the meaning and purpose of certain laws was investigated. The method of *systemic analysis* enabled the authors to investigate the relationships between the rules identified, which cannot be explored in isolation. The *teleological method* of analysis was used to identify the purpose of certain legislation. The *documents analysis method* was used to examine the laws identified, along with other documentary sources. The *comparative method* helped to highlight the relevance of the analysed topic.

2. Theoretical background

There are a variety of studies on climate change management. This is also the case regarding sustainable development principles in spatial planning. Further still, there are pieces of research that cover both of these issues. After a wide-reaching research process, the following main findings of the relevant research may be cited.

Sustainable development and climate change are worldwide topics in urban planning legislation. As J. R. Nolon (2009) indicates after examining legal regulation on sustainable development in the USA, the task of creating an integrated system of law to promote sustainable development, manage climate change, and reduce energy consumption is not as complex or novel as it seems. I. J. Losada, A. Toimil, A. Munoz, A. P. Garcia-Fletcher, and

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P. Diaz-Simal (2019) discuss the new Spanish Coastal Law, which in addition to many other implications includes the compulsory development of a Spanish Strategy for Coastal Adaptation to Climate Change (SSCACC) and its submission to Strategic Environmental Assessment. A report from Ghana indicates a demonstration of the unclear nature of policies, and a lack of focus on climate change issues in urban planning (Cobbinah, Asibey, Opoku-Gyamfi, & Peprah, 2019). Researchers from Taiwan claim that the spatial planning bill introduced, on 18 December 2015, several new changes to secure its goal of nationwide sustainable development, but this also started a battle between the promoters of economic development and environmental conservation supporters (Huang, 2018)

Despite nationwide regulations, realistic climate change measures are essentially a concern of municipal level legislators. As I. Anguelovski and J. Carmins (2010) indicate, the traditional view of climate governance is that local action is shaped by international agreements and national policies, the priorities of funders, and ideas advanced by non-governmental organizations and transnational networks. Some cities act in response to these actors and the pressures they exert. However, the majority are motivated by internal goals and take independent action to advance their climate agendas. P. Mukheibir and G. Ziervogel (2007) note that climate change increases the likelihood of extreme weather events such as droughts, floods, and heat waves, as well as more gradual changes in temperature and precipitation. The authors presented and discussed an overarching framework which would facilitate the development of a Municipal Adaptation Plan (MAP). The example of the city of Cape Town (South Africa) illustrated some of the sector-level assessments and potential climate threats, as well as resource mobilization issues that need to be addressed during the development and implementation of a MAP. The city of Cape Town is at risk from projected climate-induced warming and changes in rainfall variability. This makes resource management and infrastructure planning more challenging and increases the urgency of the need to adapt city-level operations to both current climate variability and future climate change. To date, however, the focus of adaptation planning has been at the national level and has not adequately addressed municipal-scale adaptation.

Detailed measures which could be introduced to ensure sustainable development and mitigate climate change consequences are analysed by various researches. Especially in heavily affected regions. For example, Turkish researchers – while analysing measures to mitigate heat waves, floods and lack of water – indicate that, from the perspectives of massive architectural, spatial, and landscape designs and solutions, climate is among the major factors that play important roles (Toy & Demircan, 2019). Researchers from Iran systematically propose some solutions for cooling urban neighborhoods (Ramyar, Zarghami, & Bryant, 2019). Current planning approaches and policies should effectively deal with environmental challenges, especially when looking at sustainable storm-water management (Pappalardo & La Rosa, 2019), which is also topical in Lithuania. Meanwhile, within the Indonesian regulations, flood mitigation systems that work by identifying spatial planning criteria related to housing and settlement planning and disaster mitigation are essential (Mardin & Shen, 2019). Finally, the study on *Urban Planning and Water-related Disaster Management*, edited by G. Huang and Z. Shen (2019), is worth mentioning, from which the most noteworthy output is the notion that water management is multifaceted. Furthermore, the approaches to dealing with water-related issues are diverse, such that wise water governance including the incorporation of wise water management into urban planning should be pursued in order to achieve an integrated solution for sustainability.

The adaptation to climate change prevails in measures which reduce the effect of climate change in various jurisdictions. As B. Smit and O. Pilifosova (2003) outline in one of the most detailed studies of climate change and our adaptation to it: climate change vulnerability studies now usually consider adaptation, but they rarely go beyond identifying adaptation options that might be possible. While analysing the situation in Saudi Arabia, I. R. Abubakar and U. L. Dano (2019) indicate that the implementation of adaptation strategies is in its infancy, with urban greening, public transportation, and green building projects gradually gaining prominence. Research in Brazil also indicates that policy concentrates more on adaptation rather than mitigation, and policy implementation there is yet to be realized (Sotto, Philippi, Yigitcanlar, & Kamruzzaman, 2019).

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The latest urban studies emphasise the necessity of collecting and analysing the actual data, which is of a high importance in justifying the effectiveness of certain measures introduced by legislators and practitioners. D. Feldmeyer et.al. (2019) present the developed indicators set to measure and monitor urban climate resilience for municipalities, thereby assessing the requirements of indicators and implementing a method for adapting global approaches to the local context. Other researchers present developed multi-criteria urban sustainability systems (Ali-Toudert, Ji, Fährmann, & Czempik, 2019). D. Guyadeen, J. Thistlethwaite, and D. Henstra (2019), after evaluating the strengths and weaknesses of climate change plans in 63 of the most populous communities across Canada, conclude that Canadian municipal climate change plans prioritize climate change mitigation over adaptation, but implementation, monitoring, and evaluation are relatively weak.

To summarise, the studies of other researchers support increased backing for the introduction of climate change management measures via the principle of sustainable planning in spatial planning. They also support the observation that sustainable development and climate change management measures are a growing global trend.

This paper presents an analysis of the main legal norms in the Republic of Lithuania which enable sustainable development in the context of climate change, with the purpose of demonstrating the legal constraints and finding the exact measures which have been, or soon will be, implemented.

3. The analysis of Lithuanian national regulation

In this part of the article, legislation on spatial planning shall be discussed. Firstly, the existing Spatial Planning Law, which introduces the principle of sustainable development, is analysed. Secondly, the proposed amendments to the Spatial Planning Law, which are related to climate change management, are analysed. Thirdly, the main by-law – the rules of complex plans preparation – is reviewed. Fourthly, the sustainable development and climate change measures which are implemented within the Vilnius Master Plan shall be discussed.

3.1. Introduction of sustainable development principle in the Spatial Planning Law

On 31 March 2010, the government of the Republic of Lithuania approved the Concept to Change the Law on Spatial Planning of the Republic of Lithuania (hereafter – the Concept). The approved document emphasised the importance of adopting the principles of sustainable development throughout the construction industry. Paragraph 70 of the Concept stated that the changed regulations were expected to ensure a more systematic approach to the planning process and in the development of new construction projects. Paragraph 82.1 of the Concept indicated that better conditions for both investments and sustainable development had to be a common objective.

The wording of the Concept did not make the principles of sustainable development legally binding. Despite numerous papers analysing what sustainable development is, there is no agreement on one definition which might indicate exactly what constitutes the principle of sustainable development. The term *sustainable development* has a broad meaning and is explained by such international organizations as the UN and the EU. The term *sustainable developmen*t is also widely discussed in the UN Sustainable Development platform and the European Commission 2030 Agenda for Sustainable Development, which are published online and are free to access.

On 27 June 2013, the Lithuanian government passed the Law Changing the Law on Spatial Planning of the Republic of Lithuania (hereafter – the Spatial Planning Law), which came into force from 1 January 2014. The principles of sustainable development were enshrined in the Spatial Planning Law from the outset. Article 1 indicates that one target of this law, among others, is to ensure the sustainable development of the territories alongside rational urbanisation by setting out requirements of a systematic nature.

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The inclusion of the principles of sustainable development in the new law did not by itself establish clear rules for projects to be considered as being sustainable. Still, the inclusion of the principles of sustainable development in the Law on Spatial Planning can be considered to be a tipping point for the future enactments of mandatory guidelines to promote rules related to sustainable development and tackling climate change.

Sustainability is also mentioned in sub-paragraphs 1 and 5 of paragraph 1 of Article 3, where spatial planning targets are indicated. The amended law indicates that the noteworthy spatial planning targets are: to create the conditions for the sustainable development of state territory and the implementation of a consistent spatial policy, together with a functional integration policy, all of which can help create and stimulate social, economic, and environmental development; and to create a healthy, safe, and sustainable living environment and fully-developed living conditions. In addition, part 2 of Article 3 states that, when setting planning targets for a specific region, the following aspects must be taken into consideration: public needs; the landscape and biological diversity; geographical particularities and geological conditions; existing urban, engineering, transport, and agro systems; the interests and rights of third parties, landowners, and those who use the land; other immovable property within the territory; specific architectural requirements, environmental protection, public health safety, and cultural heritage; and state and public security, defence, and other needs.

The newly adopted Law on Spatial Planning consolidated the concept of sustainable development within a legal framework regulating spatial planning and did so in a reasonably flexible way. This means that what exactly constitutes sustainable development is open to interpretation, but at the same time the Spatial Planning Law provides for a legal basis to ensure that the main values are incorporated into the spatial planning process. Municipal authorities and developers will have the freedom to meet the requirements of sustainable development during the process of preparing the relevant documents. These requirements depend not only on developers and planning, nor solely on the spatial planning process, but must factor in public concerns (since public participation in the process is ensured).

Even though the Spatial Planning Law identifies the grounds for sustainable development, it does not provide exact and specific instruments to reach this goal. This means that the principles of sustainable development can be implemented through a wide scope of solutions, and these solutions essentially rely on the decisions of the project developer.

Even the Plan of Measures for the Implementation of the National Sustainable Development Strategy, approved by the government back in 2003, does not clearly identify what are the sustainable development measures in spatial planning. The adoption of the new wording of the Spatial Planning Law was identified as one of the measures itself in the section on spatial planning in the mentioned plan. Nevertheless, the strategy mentioned is a good tool of SWOT analysis and is based on the general idea that sustainable development is a combination of social, economic, and environmental interests.

Under the initiative of the Ministry of Environment of the Republic of Lithuania, the legal gap as to what sustainable development is was filled with explanatory brochures. The participants of the program Create for Lithuania, with the help of experts working in the Ministry of Environment of the Republic of Lithuania, prepared the Sustainable Development Targets Integration into Territorial Planning Processes manual. This manual explains what sustainable development is and identifies, for example, what a sustainable city is. According to the manual, sustainable cities are the cities which are: planned compactly; well-connected; safe; integrated; resistant to change; inclusive; and make a small impact on the environment (Punyte & Simonaityte, 2018). The manual is a very good tool for presenting basic aides for sustainable development, but it is still too general and practically unapplicable, especially concerning legal applicability, because it is not a document that indicates binding rules for certain projects. All of this leaves the private investors, public authorities, urban planners, and communities in an uncertain situation.

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The Spatial Planning Law now encourages the principle of sustainable development. However, the law is lacking in specifics. Even more worryingly, the new requirements for spatial planning at both the municipal and state level make no mention whatsoever of climate change management measures.

Such uncertainty leads to a situation where no specific clear measures for sustainable development are determined, even in case law. Lithuania's higher courts are only mentioning (identifying) the existence of the principle of sustainable development but are not defining the substance of this principle. For example, the *Generalization on Judicial Practise Implementing the Legal Norms of Construction Legal Relations* (2010) of the Supreme Administrative Court of Lithuania indicates that the principle of sustainable development is applied to all construction cycles, without elaborating. No further comments or cases are given to analyse sustainable development. Accordingly, lower courts are also not covering the substance of this principle. For example, the Regional Administrative Court, Chamber of Kaunas (decision No. I-892-428/2014), addressed the principle of sustainable development only by stating that municipalities have an obligation to determine a planned territory's measures for the use, management, and/or protection of the planned territory in such a way as to ensure sustainable development and rational urbanization. The sustainable development principle is only mentioned when analysing the solutions of spatial planning documents (e.g. Supreme Administrative Court of Lithuania decision No. eAS-625-858/2015) or encouraging developments of the infrastructural projects of renewable energy (e.g. Supreme Administrative Court of Lithuania decision No. A-152-525/2015). To summarise, such mentions do not constitute clear evaluation of the substance of sustainable development. This might be caused by the lack of legal doctrine or evaluation criteria under which the specific project could be acknowledged to be meeting the requirements of sustainable development. Accordingly, the explanation of the substance of the principle of sustainable development relies on urban planners. This provides the wide range of opportunities for urban planners to interpret that their specific project meets sustainable development criteria, but it does not give any certainty to other confronting parties in the planning process (such as investors and communities).

This legal uncertainty in understanding the substance of the principle of sustainable development and the shortcoming of indicators, together with the global trend towards introducing climate change management measures, led to the necessity of amending the law and creating more specific mandatory rules. Therefore, minimal requirements on green zones in the land plot or other criteria are introduced in by-laws or master plans, and even an amendment to Spatial Planning Law is prepared.

3.2. Introduction of climate change management in the Spatial Planning Law

The Ministry of Environment prepared the amendment to the Spatial Planning Law, which was accepted into the Register of Laws on 14 May 2020 and submitted to the Parliament for approval. By introducing the law via the proposal, the Ministry of Environment indicated, among the four reasons to amend the law, the target of reaching sustainable development, encouraging coordination of the social, economic, and environmental interests, and implementing measures to mitigate the effect of climate change.

Accordingly, the climate change elements are mentioned jointly with the sustainable development elements in four different articles of the amendment.

Firstly, Article 3, where the purpose of planning is indicated, is amended by including climate change among previously indicated targets. The draft of paragraphs 1 and 5 of part 1 of Article 3 indicates that the purpose of spatial planning is to create the conditions for the sustainable development of state territory. Sustainable development is set as a priority. The mentioned draft also specifies certain criteria which help to evaluate sustainable development. These criteria are: the implementation of a consistent spatial and functional integration policy; attainning territorial cohesion; dealing with social, economic, and ecological tasks, and tasks related to the consequences of climate change in complex planning; and the lastly creating a living environment and fully-

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developed living conditions in residential locations that are healthy, safe, sustainable, and resistant to the consequences of climate change.

This indicated change to Article 3 evaluates climate change as an equal threat to other challenges. At the same time, it requires planners to indicate measures to combat climate change as targets while performing urban planning. This clearly pushes the topic of climate change management forward in national legislation. In addition, it may also eventually assure the tracking of climate change adaptation. The Paris Agreement articulates a clear mandate for all countries to undertake and document adaptation progress. Yet persistent challenges have prevented substantive developments in tracking adaptation and the assessment of adaptation actions and their outcomes (Berrang-Ford et. al., 2019).

Secondly, Article 11, where the objectives and tasks of the state level plan are indicted, is also considered for amendment. The draft of paragraphs 3 and 4 of part 3 of Article 11 indicates the tasks of the master plan at the national level. The first of these tasks is supplemented with the climate change element. The first task shall proceed as follows: optimize the urban structure of the state, social and engineering systems, and territorial and recreational structures, in order to forsee the strengthening of their resistance to extreme climate phenomena. The wording of the first and main task clearly indicates that planning should think over the climate change resistance measures. The second task of climate change mitigation is numerated among other tasks. The proposed wording of the task is as follows: to settle the principles for the rational use of agriculture, forests, fossils, and other natural resources, and to sustain ecological balance and the formation of the natural frame, preserving natural and immovable cultural heritage and valuable landscapes, thereby mitigating the impact of climate change and optimizing the system of protected territories.

The draft of paragraphs 4 and 5 of part 7 of Article 11 indicates the tasks of the master plan at the sub-national level. As at the national level plan, the sub-national level plan should also include the task related to climate change. The main task of the subnational level plan shall proceed as follows: to detail the urban, recreational, and other structures, and the systems of engineering and social infrastructure, strengthening their resistance to extreme climate phenomena under the principles indicated in the master plan of the state. And again, as in the national level plan, the second task shall be supplemented with, among others, a requirement to detail the maintainance of ecological balance and climate change exposure mitigation. The given wording not only introduces climate change management into Spatial Planning Law, but also requires the evaluation of the solutions of the plans in the process in light of climate change management and the introduction of certain measures.

The introduction of the topic of climate change into the Spatial Planning Law at the national level should not be considered as just a declaration. The Ministry of Environment is already working on the new draft of the Master Plan of the Republic of Lithuania. The conceptual part of this plan is already prepared and was approved on 5 June 2020 by the Parliament of the Republic of Lithuania. The second proposed alternative was approved, which prioritizes climate change management measures in spatial planning (TAEM Urbanistai, 2019). The proposed alternative sets a clear path for adaptation to climate change in the Master Plan of the Republic of Lithuania. With this, Lithuania will at last not be lagging behind, as international studies show that developed countries have integrated adaptation plans and policies into their developmental agenda, and only developing countries are facilitating or yet to initiate adaptation policies into their development (Sarkodie & Strezov, 2019).

Thirdly, Article 14, where the objectives and tasks of the municipal level plan are indicated, is also considered for amendment. The draft of paragraphs 2 and 3 of part 6 of Article 14 indicates the tasks of the master plan at the municipal level. Again, climate change is included as one of the main tasks. The proposed wording indicates that the main task is to: optimize the urban structure and the social and engineering infrastructure of the planned territory, and strengthen the measures of their resistance to extreme climate phenomena. In addition, the second task also includes climate change mitigation and indicates an obligation to foresee the rational preservation and

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use of: land resources, agricultural land, forests, other natural resources, climate change effect mitigation, nature's frame formation, immovable and natural cultural heritage, landscape and biological diversity preservation measures, and optimal landscaping structure. The intended amendment is an important change in the evaluation of municipal master plans and their application. These changes set the requirements for municipal planners not only to introduce certain measures, but also to establish real indicators to measure the effect of climate change mitigation.

Fourthly, Article 15, which regulates mandatory requirements for the use of territory at the municipal and local levels, is also considered for amendment. The draft of part 6 of Article 15 outlines the planning organiser's duty to indicate, in the planning works programme, the following requirements. The master plan should determine additional environmental protection in the areas of: landscaping, the protection of nature and immovable cultural heritage, climate change effect mitigation, strengthening resistance to extreme climate phenomena, public health protection, the development of urban, architectural, engineering, and social infrastructure, and other mandatory requirements.

All of the above-mentioned changes are related to one essential idea – climate change is a fact, and its mitigation should be one of the essential topics in the preparation of new planning documents. In addition, all of the measures outlined should be monitored by establishing clear indicators. Eventually, this will serve not only to help for the evaluation of certain measures, but also in providing clarity to all urban planning participants, including urban planning practitioners working at the lowest level, investors, and communities.

The intended changes should have an impact on judicial practice as well, where judges are not seeing the necessity of discussing climate change measures while analysing urban planning cases. The cases referring to climate change were associated so far with funding climate change initiatives, providing subsidies, public procurement, and the legality of the usage of such funds (Supreme Administrative Court of Lithuania decisions No. eA-2091-1062/2019; No. eA-3415-502/2019, No. A-146-330-14 and etc.; Court of Appeal of Lithuania decision No. 2-1494/2013). Thus, there is clear lack of case law in regard to explaining or indicating specific measures of climate change mitigation, which is extremely important in urban planning, while implementing sustainable development.

As already mentioned, the changes to the law only reached the Parliament of the Republic of Lithuania during the preparation of this Article. Despite the slow process of changing the Spatial Planning Law, municipal planners are already working under the principles indicated in draft law of amendments and are evaluating the climate change mitigation measures. The draft of the Vilnius Master Plan is proof of this and is analysed in section 3.4 of this Article.

3.3. Introduction of climate change management in the by-laws

The main by-law regulating the preparation of complex planning documents is the Order of the Minister of Environment on Complex Planning Documents Preparation Rules. This order was amended on 17 December 2019.

Two main changes related to sustainable development and climate change management were introduced without waiting for the adoption of the amended Spatial Planning Law.

First, an additional requirement was added to the planning works program for the master plans at the municipal level. Paragraph 83.8 indicates that the planners should foresee the complex renovation (modernization) of territories and an increase in their energy efficiency in the blocks of the cities. The same requirement was

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additionally included in paragraph 112 that names the general planning solutions, and paragraph 116 that provides details of planning solutions.

Second, the wording of subparagraph 117.2.4 was amended by including a requirement to specify structural parts of the natural frame system, where the ecological chain and separate greeneries should be analysed. In addition, the natural frame, and the ecological chain as part of it, should also be foreseen within the scheme of the present situation, as the amendment of subparagraph 105.1 indicates.

The mentioned amendments are a small, though very important step. This step should improve planning quality in that the planners should start thinking of energy efficiency and the proper relationships between the urban system and the natural frame.

Still, the main by-law lacks specific regulation with requirements, i.e. exact measures, which are very important in ensuring the proper implementation of the mentioned principles.

Nevertheless, some measures may be found in other legal acts. As an example, some measures are named in the National Strategy on Climate Change Management Policy, approved by Parliament in 2012. Paragraph 99 of this document indicates that manufacturing should be concentrated in the areas of developed infrastructure, because it may help to reduce environmental pollution.

The lack of exact measures from the legislator might be justified by the fact that the legislator leaves some space to municipal authorities and is expecting municipal authorities to introduce the exact measures themselves. This rings especially true when bearing in mind the fact that the municipal master plans may implement such a function. The Supreme Administrative Court of Lithuania had formulated the practice (decisions No. AS8-115/2005, AS17-301/2007; No. AS5-324/2007) that master plans meet the requirements of the normative legal act, indicated in part 13 of Article 2, and therefore it should be considered as a normative administrative act. This means that master plans are the law to all landowners who are planning their development in a certain municipality.

Accordingly, it was chosen to analyse the wording of the draft Vilnius Master Plan. This choice was made due to the fact that this plan is one of the most discussed planning documents in Lithuania and claims to be a most modern document in ensuring the implementation of the principle of sustainable development and climate change measures.

3.4. The analysis of Vilnius Master Plan

Vilnius is the capital city of Lithuania. According to data from the website of the Lithuanian Department of Statistics, the population of Lithuania is 2,794,184, while the population of Vilnius is 639,871 (official data of the year 2019; Official Statistics Portal, n.d.). Vilnius is by far the largest city in Lithuania, and its population is growing.

The city's current master plan (Vilnius Master Plan, adopted back in 2007) at the time of its adoption already indicated that a policy of sustainable development is a key objective for the city (Part 2.1: "Development tendencies"). The principles of sustainable development were therefore being applied in the capital long before they became enshrined in national law under the Spatial Planning Law of 2014. In some jurisdictions to date, sustainable development has been the most important discourse informing planning and a powerful rhetoric for solving environmental problems (Gazzola et. al., 2018), and Vilnius is no exception.

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Dissatisfied with some of the vague wording of the Spatial Planning Law, the city council resolved (in 2015) to revise and update the existing Vilnius Master Plan. Target 5.1 of the revised plan aims to supplement the existing master plan with the new criteria and indicators for the long-term sustainable development of the city. The revised plan introduced new criteria to measure the sustainability of new developments and actively encourage climate change mitigating measures. This local legislator's approach can be noted in other jurisdictions as well, as local adaptation policy and planning is critically important (Vogel, Henstra, & McBean, 2018).

The revised plan (*Vilnius Master Plan. Solutions. The Material Explaining the Solutions*, 2021) intends to shape the city's "green infrastructure" as a tool to increase its ecological potential and mitigate the effects of climate change. It is foreseen that this goal shall be reached by setting up additional limitations on the green areas of the city (limiting the possibility for construction in most vulnerable green territories), as well as by implementing several measures (policies). These include: promotion of the use of renewable energy sources; reduction of greenhouse gas emissions; channelling the rainwater near trees in the preparation of technical projects for streets, squares, parking lots and other hard surfaces (this measure can be integrated during reconstruction); providing a rational ratio of hard and water-permeable surfaces when planning territories; providing landscaping and technical measures for rainwater surplus storage and use when designing green areas; increasing the number of artificial water bodies, parks, and other green areas; installation of fountains in public spaces and ensuring their uninterrupted operation during heat; and the installation of free water dispensers in the city.

According to the revised plan, each of these measures shall be covered differently in intertwining spheres of lower level spatial planning and construction processes by means of promotion and prohibition.

The use of renewable energy sources is promoted by foreseeing possibilities to use agricultural land that is not intended for urbanization to produce renewable energy (solar energy), as well as by the promotion of the development and application of renewable energy sources for heating purposes. It should be noted that guidelines for the development and application of renewable energy sources for heating purposes were set by the Vilnius Heat Management Special Plan (2018), which synergizes with the revised master plan and foresees prohibitions on using non-renewable energy resources for the heating of newly constructed or reconstructed buildings in central parts of Vilnius.

The reduction of greenhouse gas emissions shall be attained by implementing solutions aimed at reducing the usage of private automobiles and the promotion of the usage of public transportation, or private transportation which uses renewable energy sources. In addition, the revised plan foresees the conversion of industrial territories near the city centre to other purposes of use (residential, commercial etc.) and the development and application of renewable energy sources for heating purposes. These methods are expected to help reduce greenhouse gas emissions. As *Lithuania's Greenhouse Gas Inventory Report 2019* (issued in 2020) indicates, in 2018 transport and energy categories composed 30.2% and 12.1% of the total national greenhouse gas emissions, respectively.

The solutions of the revised plan also intend to implement measures which would help to use rainwater much more efficiently. It is foreseen that newly developed territories will have to match the requirements set for hard and water-permeable surface percentages, so that the sewage system of the city would not get flooded in case of bigger rain storms and the rain water would be used for the proper irrigation of the green areas of the city. Also, the green areas should have the possibility to store rainwater surplus which could later be used for irrigation.

The revised plan addresses climate change as a global phenomenon. Therefore, additional measures regarding the protection of the city's residents are foreseen in case of heat waves. The plan indicates the necessity of increasing the number of artificial water bodies, parks, and other green areas, and the installation of fountains in public spaces whilst ensuring their uninterrupted operation during heat, as well as the installation of free water

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dispensers in the city. The planners are hoping that these measures will help to lower the negative effects that heat waves have on the residents of the city.

The above-mentioned measures are introduced without the prior establishment of such requirements in the Spatial Planning Law. Therefore, the Vilnius city municipality is at the forefront of the introduction of meaningful and impactive norms regarding climate change mitigation measures and, after the master plan is approved, most likely other municipalities in Lithuania shall follow the principles that have been laid out.

The importance of including climate change mitigation measures in the Vilnius Master Plan is highlighted by the fact that Article 50 of the Spatial Planning Law establishes a rule, under which the solutions of lower level spatial planning documents must not contradict higher level spatial planning documents. The same rule is applied countless times in court cases (Supreme Administrative Court of Lithuania decisions No. A-4660-556/2017; No. P-5-502/2018). Thus, every detailed plan which is a lower level spatial planning document in Vilnius city will have to be in accordance with the Vilnius Master Plan, and in some form adopt climate change mitigation measures.

Conclusions

The sustainable development principle is widely accepted, and climate change management is a reality which should also be dealt with in spatial planning. This principle was introduced in the Spatial Planning Law of the Republic of Lithuania in 2014. However, the definition of sustainable development was not explicitly provided. Further, the Spatial Planning Law lacks specific mandatory norms explaining what should be done to ensure sustainability in new developments.

The ongoing changes in the national law introduce the requirement for climate change mitigation. Still, the Spatial Planning Law is silent on the exact measures, which should be introduced to assure mitigation of the effects of climate change. A revision and improvement of the current by-law legal base is not sufficient to understand which specific measures should be taken. Mandatory guidelines could help to ensure the implementation of the principle of sustainable development principle alongside climate change mitigation measures. Meanwhile, city planners are left with the difficult task of introducing certain legal requirements to ensure sustainable development and climate change mitigation measures without any guidance or the requirement to set up indicators for the measurement of certain measures' effectiveness.

Considering that climate change mitigation is becoming one of the key parts of the drive towards sustainable development, the current revision of the master plan for the development of Vilnius strongly introduces climate change mitigation measures. Evaluating the specific measures mentioned in the paper, three main groups of measures to mitigate climate change can be identified: measures to strengthen the green areas; measures to reduce greenhouse gas emissions; and measures to promote the use of renewable energy sources. Accordingly, the first group and part of the second group of measures are directed more towards addressing the consequences of climate change. The other part of the second group of measures and all of the third group of measures are more directed towards the future and designed to combat the origins of climate change.

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INDIVIDUAL AND ORGANIZATIONAL FACTORS' EFFECT ON KNOWLEDGE SHARING BEHAVIOR

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Abstract This paper aims to assess the impact of individual factors (interpersonal trust, individual attitude, perceived benefit/costs, and individual self efficacy) and organizational factors (management support, incentives/reward, leadership, and organizational culture) on knowledge sharing intention and their impact to knowledge sharing behavior. The data were obtained by using questionnaires distributed to all researchers and staffs at Cancer Research Center C-Tech Labs Edwar Technology with 100 samples taken. This research center is the only Lab Cancer in Indonesia. Structural Equation Modeling (SEM) analysis was used to ascertain the proposed relationship. The present study found that four dimensions of individual factors (interpersonal trust, individual attitude, perceived benefit/costs, and self-efficacy) and four dimensions of organizational factors (management support, incentives/reward, leadership, and organizational culture) were significantly related to knowledge sharing intention and they mediate to knowledge sharing behavior.

Keywords: individual factors; organizational factors; knowledge sharing intention; knowledge sharing behavior

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1. Introduction

Research Center is a specific entity with different characteristics in handling human resources, as the characteristics of human resources in research institutions vary significantly from non-research human resources. In addition, the research center also has important things in their management, namely knowledge management as a place to manage both existing and future knowledge. A research center is an institution of research and development (R&D) that has management, vision and mission in a systemic way. The primary function of R&D organizations is to ensure the collection and exchange of information for an ongoing process of knowledge creation (Berends et al., 2006).

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At the research center, knowledge management is based fundamentally on the principle of knowledge formation founded by Nonaka (1994) and Takeuchi & Umemoto (1996) in A Dynamic Theory of Organizational Knowledge Creation. This definition was commonly formulated not exclusively for one or two types of organizations, but for the form of organization as a whole, including the organization of the research center. That is, every organization has the opportunity to enhance knowledge within their organization.

Bock, et al., (2016) revealed that innovation capacity for a company can be enhanced by knowledge sharing. In organizations such as research centers, this improvement in innovation has become very significant as this institution generates a lot of innovations and developments. Research developments are generated daily through a set of validated methods and procedures.

Practitioners have several concerns about whether and how to enforce knowledge sharing in organisations, and what factors can promote and impede implementation. Many studies have found models and ways to answer this issue, both quantitatively and qualitatively. One of the findings of the researchers' discussion is the findings of Pedersen's (2017) study, which notes that human factors, organizational factors and technical factors affect the sharing of knowledge among individuals. While Akhavan et al. (2013) argue that intrinsic motivational factors, extrinsic motivational factors and expectations or preferences for the process of information sharing gave rise to the interest of employees in sharing knowledge with others. A separate stream of papers is devoted to clusters, which are considered knowledge sharing and technology transfer vehicles (e.g. Androniceanu, Tvaronavičienė, (2019); Bublienė et al. (2019); El Idrissi et al. (2020); Laužikas, Miliūtė, (2020)).

2. Literature Review

Individual Factors

a. Interpersonal Trust

Trust is a multifaceted concept which conveys beliefs or expectations about other parties resulting from the party's facts, purpose, honesty, kindness or reliability (Cheng et al., 2008). Employees tend to share knowledge among themselves within trusted organisations (Abrams et al., 2003). Earlier studies found out that trust among coworkers is an essential element that was considered to have a significant impact on the sharing of knowledge (Al-Alawi et al., 2007a; Wang & Noe, 2010). Bakker, et al. (2006) also argue that in order to share knowledge effectively, trust among individuals is needed. In addition, a study carried out by Issa & Haddad (2008) shows that sharing knowledge that exists inside and throughout the organization requires mutual trust among employees. These studies suggest that mutual trust tends to affect knowledge sharing.

b. Individual Attitude

Values and attitudes affect human behaviour, in general. Several studies even suggest that attitudes of each individual may influence the process of knowledge sharing. For example Bock & Kim (2001) demonstrated that individuals preferences regarding their knowledge value or when shared with others will strengthen their relationships and are associated with positive attitudes to knowledge sharing. They also emphasized that this was linked to intention and behavior of knowledge sharing. Likewise, knowledge sharing behaviors had an effect on knowledge sharing either direct and indirect (Bock et al., 2005; Lin, 2008). Additionally, indirect effects are found linked to self-reported sharing behaviors through the positive influence of the willingness to share. Overall , these researches show that individual attitude is an essential factor which influences the desire to share knowledge.

c. Perceived benefits/costs

Most studies have put their concern on the perceived benefits / costs as one of the antecedent variables of knowledge sharing (Wang & Noe, 2010). However, theory of social exchange supports the idea that each individuals consider perceived cost-benefit ratios and make decisions based on assumptions that will result in benefits such as acknowledgement, appreciation and extrinsic incentives. According to this theory, research

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shows that the benefits felt contribute positively to the exchange of information (Wang & Noe, 2010). Furthermore, most benefits / cost are perceived within the professional community. Previous studies have shown that the sharing of knowledge is strongly connected to individual beliefs that their shared information benefits others, particularly in professional networks (Chiu et al., 2006; Siemsen et al., 2007).

d. Individual self-efficacy

Self-efficacy in relation to individual expectations regarding their ability to perform tasks is the key motivational cognitive mediator (Bandura, 2000) and is the indicator of knowledge sharing (Lee & Ahn, 2007). Consequently, the self-efficacy mechanism is thought to provide crucial facts on how each persons wish to convey specific knowledge. For example, as individuals establish expectations of self-efficacy about their success in a particular area this perception is mirrored in their trust systems (Lee & Ahn, 2007). So self-efficacy in the ability to share information can have an impact on the sharing of knowledge. Higher self-efficacy in the willingness of individuals to share information may lead to personal challenges, greater engagement and perseverance and greater happiness and achievement (Bandura, 2000). The self-efficacy principle believes that stronger self-efficacy fosters individuals to be more secured in their performance.

Organizational Factors

a. Management Support

Management has a crucial role in the development of efficient knowledge sharing. Active participation and management engagement builds knowledge sharing routine and is crucial to evaluate the effectiveness of knowledge sharing process. Support from top management improves the staffs' willingness to communicate and gain knowledge within the organisation (Wee, 2012). Management support is identified as one of the main factors affecting employees' perceptions about knowledge sharing behaviour and knowledge sharing ability (S. Wang & Noe, 2010). Lee, (2006) found that support from top management affected productivity and knowledge sharing level by influencing employee commitment to KM. Wang dan Noe (2010) also indicated that the strong indicator of employee knowledge sharing behaviour is the management support to knowledge sharing. These studies show that top management support may influence knowledge sharing.

b. Incentives/Rewards

Through cultures, incentives were regarded as the main driving force for knowledge-sharing (Yao et al., 2007). A research by Kim & Lee (2006) found that companies that prioritize performance-based programs contribute to knowledge sharing. Both theories of social exchange and social capital support the claim that organizational incentives, such as pay rises, bonuses and promotions, are related to knowledge sharing among employees. According to Nelson dan Sabatier (2006), recognition and rewards play an important role in the promotion of knowledge sharing and in the creation of a support network. To summarize, these studies suggest that incentives / rewards can affect the knowledge sharing.

c. Leadership

A leader is a determinant of the organization's course and goals, and must be ready to respond to growth (Eliyana 2010). Leadership is very central to the discussion about information systems and management in academic literature. Leadership style is associated with the acts of a leader when leading his followers or providing guidance. Leadership styles include authoritarian, egalitarian, transactional, and transformational. A good leader serves as a role model and in a way that encourages knowledge sharing and provides incentives to do so (Søndergaard et al., 2007). Chen et al (2004) found transformational leadership behavior to be an essential predictor of knowledge sharing.

d. Organizational Culture

Organizational culture refers to common values, beliefs and standards that are accepted by the members of the organization. Organizational culture is an important element in the sharing of information inside and outside the organization (Lee & Ahn, 2007). Therefore, culture that promotes knowledge sharing can contribute to an

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efficient KM network. Al-Alawi et al. (2007) found that sharing knowledge is a constructive part of organisation's culture. Whereas Connelly dan Kelloway (2003) state that workers will be able to exchange knowledge in a stimulating environment. For the exchange of useful knowledge in the organizational, cultural elements are very important (Søndergaard et al., 2007). From this analysis it is evident that knowledge sharing increases with the organizational culture.

Knowledge Sharing

Knowledge sharing is considered to be the inseparable part of knowledge management. It is consistent with the view that knowledge-management systems depend on success on knowledge sharing (Wang & Noe, 2010). The sharing of knowledge is defined as group activities which promote learning and enhance the group's ability to achieve objectives (Rosendaal & Bijlsma-Frankema, 2015). Rutten et al. (2016) notes that employee trust affects company performance while high trust value will also influence the value of information sharing. knowledge sharing is a method of social interaction involving the exchange of knowledge, expertise and skills among employees across departments or organisations. This opinion directs that the sharing of information is in fact an operation of social interaction between human subjects to share knowledge, experience and skills that someone possesses so that knowledge can be spread and used to gain potential improvements. Several other definitions of knowledge sharing which were also presented in the study by Farooq (2018) can be read in the following table 1:

Table 1. Conceptual Model of Knowledge Sharing

No	Construct	Definition	Source
1	Knowledge sharing	Sharing of knowledge is a mechanism by which individuals and groups unintentionally or intentionally transfer their knowledge for their mutual benefit	Nooshinfard & Nemati-Anaraki, (2014)
2	Knowledge sharing	Sharing of knowledge is described as one's expectations of knowledge and information exchange in order to support the organization of sharers	Witherspoon et al., (2013)
3	Knowledge Sharing	Sharing of knowledge is the practice by which knowledge providers within the company make information accessible to others	Wickramasinghe & Widyaratne, (2012)
4	Knowledge Sharing	Sharing of knowledge is described as a group activity which encourages learning and improves the ability of the group to achieve its objectives	Rosendaal & Bijlsma-Frankema, (2015)
5	Knowledge Sharing	Sharing of knowledge is a complex learning mechanism in which both implicit and explicit information is used to create awareness in organizations	Swift & Hwang (2013)
6	Knowledge Sharing	Sharing of knowledge refers to the mechanism by which team members exchange task-related ideas, information, improvements and suggestions among themselves	Eze, Goh, Goh, & Tan (2013)
7	Knowledge Sharing	Sharing of knowledge is described as the actions by which a person gives others some form of access to his or her knowledge and experience within the organization	Peyman Akhavan et al., (2013)
8	Knowledge Sharing	Sharing of knowledge is the process by which members of the company share their knowledge and experiences to increase learning capacity and develop new knowledge	Islam, Jasimuddin, & Hasan (2015)
9	Knowledge Sharing	Sharing of knowledge is an important strategic tool in organizations, and an essential resource for achieving competitive advantage	Siakas, Georgiadou, & Balstrup (2010)
10	Knowledge Sharing	Sharing of knowledge is described as individuals' willingness to share their knowledge with others within the organization	Rutten et al., (2016)
11	Knowledge Sharing	Sharing of knowledge is a process of exchanging both implicit and explicit information to produce new knowledge	Razmerita, Kirchner, & Nielsen (2016)

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12	Knowledge Sharing	Sharing of knowledge is a two-pronged mechanism by which one possesses the knowledge and another acquires the knowledge and thus effective communication becomes essential in the knowledge sharing mechanism	Ma, Huang, Wu, Dong, & Qi, (2014)
13	Knowledge Sharing	Sharing of knowledge orientation stands for the organization's propensity to promote, enable and reward the exchange of knowledge with a motivation to obtain tacit and explicit learning from employees	Vij & Farooq (2014)
14	Knowledge Sharing	Sharing of knowledge is the basic means by which workers can contribute to the development of technology, creativity and ultimately the competitive advantage	Sandeep & Rayees (2014)

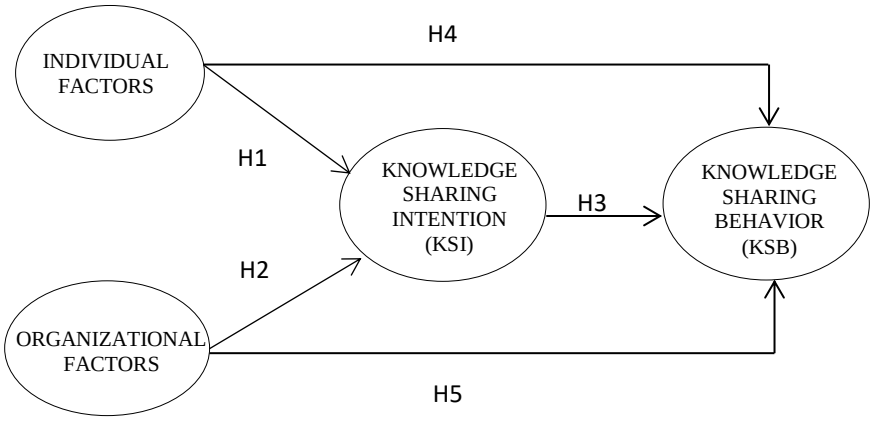

Figure 1. Research Model

Hypotheses

H1. *Individual factors are positively related to knowledge sharing intention.*
H2. *Organizational factors are positively related to knowledge sharing intention..*
H3. *Knowledge sharing intention is positively related to knowledge sharing behavior.*
H4. *Individual factors are positively related to knowledge sharing behavior.*
H5. Organizational factors are positively related to knowledge sharing behavior.

3. Method

Sample and data collection procedure

We conducted a survey among researchers and staff at the C-Tech Labs Edwar Technology cancer research center located in the Province of Banten, Indonesia, to gather data. At this institution the study population was a total of 150 researchers and staff, 100 of whom were taken as the sample. Several visits were made to get relevant data. At the beginning of the study the researchers and staff were interviewed to get a first-hand overview of the science field. Research Model is presented in figure 1 above.

Measures

Measurement of individual factors, organizational factors, purpose to share knowledge, and actions to share knowledge was taken from Pedersen (2017) and Akhavan et al. (2013), who built the instruments from previous works. Following their instrument, we used sixteen items to calculate individual factors, sixteen items for

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organizational factors, five items for knowledge sharing intention and six items for knowledge sharing behavior. All items were measured on a five-point Likert-type, ranging from strongly disagree (1) to strongly agree (5).
For more details, sixteen items of the individual factors included items of interpersonal trust, individual attitude, perceived benefits/cost, and self efficacy. Additionally, management support, incentives / rewards, leadership, and corporate culture are all part of the knowledge sharing corporate factors. In addition, knowledge-sharing goals and knowledge-sharing behavior are directly related to the questions.

Data Analysis

The Structural Equation Model (SEM) is the data analytics techniques used to address the issue in this study. There may also be a variable which plays a multiple role as independent variables in a relationship, but becomes dependent on another relationship in effect of tiered causality relationship. That dependent and independent variables may appear as factors constructed from multiple indicator variables. Similarly, in a research phase the variables can appear in the form of a single variable directly observed or calculated.

SEM modeling tested hypotheses that must be fulfilled with the following parameters in data collection and processing procedures: (1) sample size, (2) normality and linearity, (3) outliers, (4) multicollinearity, and (5) singularity. After testing SEM hypotheses, the next issue is to determine which parameters should be used to measure the experiment and the results found in the experiment. In general, the various fit index types are used to measure the degree of correlation between the model expected by the presented data. Researchers are required to use few fit indexes to test the proposed model to measure the "truth."

Some suitability index and the cut-off value is used in examining whether a model can be accepted or rejected are as described below: (1) Chi-Square Statistic, (2) RMSEA *(Root Mean Square Error of Approximation)*, (3) GFI *(Goodness of Fit Index)*, (4) AGFI *(Adjusted Goodness of Fit Index)*, (5) CMIN / DF, (6) TLI *(Tucker Lewis Index)*, and (7) CFI *(Comparative Fit Index)*.

4. Results

The result of data analysis were processed using AMOS program version 2.1. By using Structural Equation Modelling (SEM) analysis, the estimation is conducted in several stages. First, it is conducted by performing Confirmatory Factor Analysis technique and second, it continues to the Full Structural Equation Model.

Confirmatory Factor Analysis

There are two measurenment tests on confirmatory factor analysis, namely Goodness of Fit Test and Weight Factor Significance Test. This research will show the result of Goodness of Fit index Test which has standard of cut off value result (see table 2).

Table 2. Goodness of Fit Index Test Result

Goodness of Fit Index	*Cut off Value*	*Result*				*Model Evaluation*
		Individual	*Organizational*	*KSI*	*KSB*	
Chi-Square (df=98)	Small (<122,108)	1,904	1,393	0,528	0,668	Good
Probability	>0,05	0,386	0,498	0,768	0,716	Good
RMSEA	<0,08	0,000	0,000	0,000	0,000	Good
GFI	>0,90	0,991	0,993	0,997	0,997	Good
AGFI	>0,90	0,955	0,965	0,987	0,983	Good
CMIN/DF	<2,00	0,952	0,695	0,264	0,334	Good
CFI	>0,95	1,000	1,000	1,000	1,000	Good

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This table shows that the value of Chi-Square individual factors (1,904), organizational factors (1,393), knowledge sharing intention (0,528), and knowledge sharing behavior (0,668) with a significance level of Chi-Square individual factors (0,386), organizational factors (0,498), knowledge sharing intention (0,768), and knowledge sharing behavior (0,716). It indicates that the null hyphotesis stated that there is no difference between sample covariance matrix and estimated population covariance matrix received. Therefore, it means the model fits. Likewise, the measures of the other eligibility resulted in good criteria.

Full Model of SEM Analysis

After measuring the models analyzed by confirmatory factor analysis and observing that each indicator could be used to define latent constructs, a full model of SEM could be analyzed (figure 2).

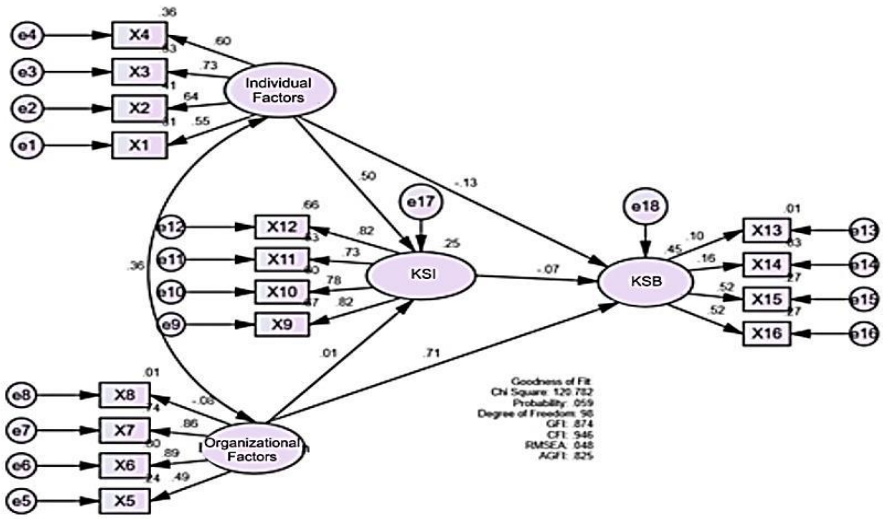

Figure 2. Structural Equation Model (SEM) Analysis Result

Table 3. Full Model SEM Feasibility Testing Result

Goodness of Fit Index	*Cut off Value*	*Result*	*Model Evaluation*
Chi-Square (df=98)	Small (<122,108)	120, 782	Good
Probability	>0,05	0,059	Good
RMSEA	<0,08	0,048	Good
GFI	>0,90	0,874	Marginal
AGFI	>0,90	0,825	Marginal
CMIN/DF	<2,00	1,232	Good
CFI	>0,95	0,946	Good

Based on the results presented in Table. 3, the value of Chi Square is 120,782 with probability = 0,059. This indicates that the null hyphotesis which states that there is no difference between the sample covariance matrix and estimated population covariance matrix is acceptable. Other indexes are also within the range of expected values, therefore the result of this model is acceptable (table 4).

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Table 4. Hypothesis Test Result

			Std.Est	Estimate	SE	CR	P
KS Intention	◄—	Individual F.	0.497	0.737	0.236	3.119	0.002
KS Intention	◄—	Organizational F.	0.010	0.021	0.259	3.080	0.001
KS Behavior	◄—	Individual F.	0.133	0.025	0.052	3.477	0.003
KS Behavior	◄—	Organizational F.	0.708	0.193	0.294	3.656	0.004
KS Behavior	◄—	KS Intention	0.071	0.009	0.028	3.319	0.003

First, parameter estimation on the effect of individual factor on knowledge sharing intention showed CR value of 3.119 with a probability of 0.002 or it is <0.05. It could be concluded that the individual factors variables affect the knowledge sharing intention. Second, Parameter estimation on the effect of organizational factor on knowledge sharing intention showed CR value of 3.080 with a probability of 0.001 or it is <0.05. It could be concluded that the organizational factors variable affects the knowledge sharing intention. Third, parameter estimation on the effect of individual factor on knowledge sharing behavior showed CR value of 3.477 with a probability of 0.003 or it is <0.05. It could be concluded that the individual factors variables affect to the knowledge sharing behavior. Fourth, parameter estimation on the effect of organizational factor on knowledge sharing behavior showed CR value of 3.656 with a probability of 0.004 or it is <0.05. It could be concluded that the organizational factors variables affect the knowledge sharing behavior. And the last, parameter estimation on testing the effect ofknowledge sharing intention on knowledge sharing behavior showed CR value of 3.319 with a probability of 0.003 or it is <0.05. It could be concluded that the knowledge sharing intention variables affect the knowledge sharing behavior.

5. Discussion

In the present study, the indirect effect of two knowledge sharing factors (individual and organizational factors) on knowledge sharing activity was explored through the mediation of knowledge sharing intention. We found these two variables to be directly influenced by the behavior of knowledge sharing through the intent of knowledge sharing. The impact of individual facts and organizational variables shown in this research is consistent with past work (e.g., Pedersen, 2017; Akhavan et al., 2013; Tan et al., 2013; Shin-Yuan et al., 2011). Detailed discussion should be examined as a recommendation of this study on the dimensions of each variables.

Furthermore, the study results show that all dimensions of individual factors (interpersonal trust, individual attitude, perceived benefit / cost, and self-efficacy) influence the conduct of knowledge sharing through the intention to share information. The interpersonal trust is one of the strongest dimensions of individual factors. Such findings indicate the role of the interpersonal trust element in the sharing of information (e.g., Niedergassel et al., 2011; Tan et al., 2013). Interpersonal trust becomes very important in research institutions because it deals with copyright, patents and matters relating to Intellectual Property Rights (IPR). In addition, the results of the research on the dimensions of organizational factors (management support, incentives/reward, leadership, and organizational culture) also show results that influence the knowledge sharing behavior. One dimension that is very influential is organizational culture. This reinforces the opinion of previous research by Tan et al., (2013) and Rego et al., (2009). In addition to being an enabler for knowledge sharing, organizational culture can also be a barrier. As research conducted by Kosonen and Kianto (2007).

The most important thing is that the results of this study strengthen the results of previous studies, however, researchers also found other factors besides individual factors and organizational factors, namely technological factors. This technological factor has also been studied by Kosonen and Kianto (2007). However, there is not too much literature discussing technological factors. Even though this technology factor is quite important in promoting and implementing knowledge sharing in research organization.

Implications and Limitations

The results of this study have beneficial implications for research institutions, especially regarding the framework of knowledge management. The findings remind us of the need for a research center to strengthen its dedication to knowledge management program and its intention to share knowledge as part of the culture of information sharing behaviour. The study highlights the role of individual and organizational factors in fostering the intention to share knowledge and increasing the sharing of knowledge. In addition, the factors that promote the exchange of knowledge do not only come from individuals and organisations, but also come from technological factors. We emphasize that, when considering such limitations, the results of this study should be interpreted carefully. We independently thought the sample size of 100 participants could be insufficient for objective validity to be developed. We suggest that future research be considered in other government-sector R&D agencies, in particular.

Conclusion

A knowledge management program will support the role of research institutions to significantly contribute to the country's economic growth and development. This work has specifically aimed to strengthen the relationship between person and organizational factors with the goal of exchanging knowledge which will eventually increase the conduct of knowledge sharing. Individual factors like interpersonal trust, individual attitude, perceived benefit / cost and individual self-efficacy need to be at the top of the agenda. Furthermore, organizational factors such as support for management, incentive / rewards, leadership, and organizational culture are also strong supporters for advancing the organization. However, in terms of management structure, research institutions are somewhat different from other institutions; thus, there are possibilities for various causes that can have different effects in individuals and organisations.

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MODERN ECONOMICS IN THE CONTEXT OF SECURITY: EFFICIENT USE OF FUNDS AND REDUCTION OF RISKS AS ONE OF THE AIMS OF PUBLIC PROCUREMENT

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Abstract. The purpose of this research is to analyse efficient use of contracting authority funds and reduction of its risks. Since all legal norms should be understood in the light of the aims of the law, this aim, together with others, is important in the interpretation of the Public Procurement Law. To interpret the aim correctly, it is important to understand its origins, history, how it is further reflected in law and how it is applied in practice. Therefore, authors analyse all those aspects using historical, descriptive, dogmatic and analytical research methods. Understanding of this principle is important in practice since it should be applied together with other principles, for example, equal treatment of tenderers and transparency, but it sometimes can even contradict them. Therefore, lack of understanding of this aim can lead to incorrect application of law. There is no publicly available research on this topic and, as one of the aims of the law, it is further developed and applied in practice. It is important for contracting authorities and tenderers to understand the meaning, possibilities and limitations of this principle. Therefore, this research is both original and practically applicable. As a result of the study, readers can gain more insight into the impact of this aim on public procurement.

Keywords: public procurement; aims; efficiency; principles; risks.

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1. Introduction

Different kinds of secure development and sustainability of countries, financial sector, market development, market performance, market mechanisms, marketing, marketing strategy and many others areas were considered by different scientists but specific issues in regulation of public procurement have never been addressed and require more in-depth analysis.

The aim of this research is to analyse one of the aims of the Public Procurement Law of the Republic of Latvia (hereinafter the PPL) provided in Article 2 – efficient use of contracting authority funds and reduction of its risks. Since all legal norms should be understood in the light of the aims of the law, this aim, together with others, is important in interpreting the PPL. This view is supported by S. Arrowsmith who concludes that there has been some uncertainty and confusion over the purposes of the procedural rules in the co-ordination directives, including regarding precisely how these rules are intended to contribute to the internal market. A precise understanding of these purposes is, however, of fundamental importance in developing and interpreting the rules. (Arrowsmith 2014) Efficient use of public funds is always an important issue for the society due to the fact that these funds are limited, but the needs of the society are not. Therefore, research on use of such an aim in public procurement is also topical. As U. Skrastiņa pointed out already in 2015, efficient public procurement politic is becoming increasingly topical in Latvia because it is a way to save budget funds, especially in a time when the number of workers in the government has fallen but the money should be given the greatest value (Skrastiņa 2015), and this observation is still valid today.

The hypothesis of this research is that the abovementioned aim is directly inferable from the public procurement directives of European Union (hereinafter the EU). To interpret the aim correctly, it is important to understand its origins, history, how it is further reflected in law and how it is applied in practice. Therefore, authors analyse all those aspects using historical, descriptive, dogmatic and analytical research methods, describing the emergence of this aim in the PPL and analysing both legislation and case law, as well as available publications on the topic.

The research results are that, in fact, efficient use of contracting authority funds is not directly listed as one of the principles of public procurement in the Directive 2014/24/EU, even though it is reasonably attributable to the procurement process. Therefore, it should be used with caution in cases when it contradicts aims explicitly listed as principles of procurement in the directive.

2. The history of the aim of efficient use of funds in public procurement

Article 2 of the PPL sets the aims of the law, i.e., the aim of this law is to provide 1) transparency of procurement; 2) free competition, as well as equal and fair treatment of suppliers; 3) efficient use of the contracting authorities' funds, minimizing its risks. Further we will analyse the origins and application of the third aim - efficient use of the contracting authorities' funds, minimizing its risks (PPL 2017).

Looking at the history of this aim on the national level and comparing previous versions of the procurement regulation from the restoration of the independence of the Republic of Latvia, formulations of this aim were as follows:

- Cabinet Regulation of 1 March 1994 No 60 "On Works and Supplies for State Needs" did not stated any aims of the regulation (Par darbiem un piegādēm valsts vajadzībām 1994);
- The law "On State and Municipal Orders" formulated it as follows – "to ensure rational use of state and municipal funds" (Par valsts un pašvaldību pasūtījumu 1996);
- The law "On Procurement for State or Municipal Needs" formulated it as – "efficient use of funds of state or local government, minimizing the risks of contracting authority" (but in the first version until 27

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November 2002 – "efficient use of funds of state or local government") (Par iepirkumu valsts vai pašvaldību vajadzībām 2001);

- The Public Procurement Law formulated is as – "efficient use of funds of state and local government, minimizing the risks of contracting authority" (PPL 2006);
- The latest Public Procurement Law contains formulation "efficient use of the contracting authorities' funds, minimizing its risks" (PPL 2017).

It can be concluded that the idea of rational or efficient use of funds was included as an aim already in the law of 1996. However, only with the law of 2001 there was a necessity to coordinate the national regulation with EU regulation. Nevertheless, the annotation of the law does not contain any explanation regarding aims specified in the law, in annotation of amendments there is also no explanation on why the formulation was changed (Par iepirkumu valsts vai pašvaldību vajadzībām, Draft 2001). Annotation of the PPL of 2006 transposing Directive 2004/18/EC of the European Parliament and of the Council of 31 March 2004 on the coordination of procedures for the award of public works contracts, public supply contracts and public service contracts does not contain any explanations regarding aims of the law, as well as the annotation of the PPL of 2017, even though the latter contains a reference that the purpose of the Directive 2014/24/EU was *inter alia* the review and modernisation of procurement regulation to increase the efficiency of public spending by facilitating the participation of small and medium-sized enterprises in the procurement and to enable purchasers to make better use of public procurement to support common public objectives (*Recital 2 of the Directive 2014/24/EU quoted*).

Regarding the history of this principle in EU, the PPL of 2017 transposed the Directive 2014/24/EU of the European Parliament and of the Council of 26 February 2014 on public procurement and repealing Directive 2004/18/EC (hereinafter the Directive 2014/24/EU), therefore it is important to understand whether the principle of efficient spending is derived from this directive since authors will not further explore the relationship between this aim and previous directives due to the limited volume of the article.

3. The place of efficient use of funds as an aim in Directive 2014/24/EU

The Recital 1 of the Directive 2014/24/EU sets that the award of public contracts by or on behalf of Member States' (hereinafter MS) authorities has to comply with the principles of the Treaty on the Functioning of the European Union, and in particular the free movement of goods, freedom of establishment and the freedom to provide services, as well as the principles deriving therefrom, such as equal treatment, non-discrimination, mutual recognition, proportionality and transparency.

Article 18 "Principles of procurement" provides that contracting authorities shall treat economic operators equally and without discrimination and shall act in a transparent and proportionate manner; the design of the procurement shall not be made with the intention of excluding it from the scope of this Directive or of artificially narrowing competition. Competition shall be considered to be artificially narrowed where the design of the procurement is made with the intention of unduly favouring or disadvantaging certain economic operators; MS shall take appropriate measures to ensure that in the performance of public contracts economic operators comply with applicable obligations in the fields of environmental, social and labour law. (Directive 2014/24/EU 2014) It can be seen that efficient use of funds is not explicitly listed beside other principles guiding public procurement on EU level.

However, the Recital 2 provides that public procurement plays a key role in the Europe 2020 strategy, set out in the Commission Communication of 3 March 2010 entitled 'Europe 2020, a strategy for smart, sustainable and inclusive growth', as one of the market-based instruments to be used to achieve smart, sustainable and inclusive growth while *ensuring the most efficient use of public funds* [emphasis added by authors]. For that purpose, the public procurement rules adopted pursuant to Directive 2004/17/EC of the European Parliament and of the

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Council and Directive 2004/18/EC of the European Parliament and of the Council should be revised and modernised in order *to increase the efficiency of public spending* [emphasis added by authors], facilitating in particular the participation of small and medium-sized enterprises in public procurement, and to enable procurers to make better use of public procurement in support of common societal goals. (Directive 2014/24/EU) As Mario E.Comba notes, the Directives of 2014 introduce for the first time in their recitals efficiency in public spending and, at the same time, reinforce the importance of the approximation of laws as a legal basis (Comba 2014).

This suggest that, at least when drafting the Directive 2014/24/EU, efficiency of public spending has been on the minds of the lawmakers. Also, the term "best value for money" is used in few places (Recital 47, 91), however, only in relation to the research and innovation and environmental protection. The wording suggests that best value for money is one of the aims of contracting authorities (for example, Recital 91 provides that this Directive clarifies how the contracting authorities can contribute to the protection of the environment and the promotion of sustainable development, whilst *ensuring that they can obtain the best value for money for their contracts*).

Therefore, it can be concluded that the idea of efficient spending of funds is present in the Directive 2014/24/EU, but it is not explicitly listed as one of its principles.

But, as S. Arrowsmith explains, in fact, the directives cannot be concerned directly with value for money as the internal market provision on which the directives are based do not confer a power to regulate for this purpose. These may be invoked only for two purposes that relate to the internal market, namely to support the "four freedoms" and to eliminate appreciable distortions of competition – as Advocate General Fennely has emphasised, "the internal market is not a value-free synonym for general economic governance". Ensuring value for money, either in a wide sense of deciding how to balance costs with other elements in a project, or in a sense of obtaining the best possible terms from the market for what is required, has no connection to either supporting the four freedoms or eliminating distortions of competition (Arrowsmith 2014).

Also Mario E. Comba, analysing the idea of efficiency of public spending in depth, has concluded that, as for efficiency for public spending, the first problem is if the EU has competence in this field, considering articles 2 ff of the Lisbon Treaty and considering the subsidiarity principle. All the other new objectives of the Directive (green, social, innovative, corruption) can be connected to specific EU policies. Efficiency in public spending cannot, because it rests exclusively with the competence of MS. He further states that according to the doctrine analysed in his paper, one has to conclude that efficiency in public spending cannot be an objective of the Directive and that the citations of that scope in the recitals of the 2014 Directive are only the result of "confusion". The consequence is that all the rules contained in the Directive which seem to be grounded solely on efficiency in public spending have to be carefully examined and their effects verified in the light of the legitimate objectives of the Directive. Just to give an example, arts. 37 and 38 of Directive 2014/24/EU, allowing provisions on centralised purchasing and occasional joint procurement, should be strictly interpreted and verified against their effect on cross-border procurement (as it is in fact warned by recital 53) because the fact that they are often proclaimed, especially by MS (like Italy), as a perfect tool for efficiency in public spending is not sufficient to justify in light of the Directive a possible negative effect on cross-border procurement (Comba 2014).

This conclusion is based *inter alia* on view of other authors, e.g., as Mario E.Comba puts it, one of the most accurate studies on the subject by Arrowsmith and Kunzlich states that the only legal objective for the public procurement directives is the development of the internal market, through three main means: the prohibition of discrimination, the requirement of transparency in order to prevent discrimination and finally the removal of restrictions on the access to the market. In this framework, there is no room for pursuing efficiency in public spending, which, according to Arrowsmith and Kunzlich, is not and cannot be an autonomous objective of EU Directives on public procurement (Comba 2014).

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Therefore, as far as the EU is concerned, this aim is not directly inferable from the procurement directive and it is even suggested that it should be used with caution if it contradicts the principles explicitly listed in the Directive 2014/24/EU. This creates a question on relationships of different aims, and one must admit that there is a room for possible conflicts between different aims in practice and risks for contracting authority to apply the regulation incorrectly.

Regarding case-law Mario E. Comba has concluded that the relevant European Court of Justice case law does not analyse carefully the issue of the purpose of the public procurement directives, limiting itself to repeat the formula which refers to the elimination of trade barriers and fostering competition (Comba 2014).

4. Possible conflicts of aims when applying the law

It is important to highlight that MS's approach to value for money in its narrow sense may differ according to their factual circumstances, such as the degree of training of officials, extent of corruption and nature of the market. This may be reflected in, *inter alia*, the different emphasis given by different MS to transparency and, in particular, to the role of discretionary decision-making. This creates significant potential for conflict between national interests in value for money and the EU's own transparency principle as it is employed to address the issue of the internal market (Arrowsmith 2014). According to S. Arrowsmith so far as the objective of best value is concerned, the transparency is seen in government procurement systems as the most appropriate means of ensuring best value in general, as well as an essential means of ensuring that procurement is not influenced by protectionist considerations in contravention of international rules prohibiting discrimination. However, the extensive limitations on the discretion of procurement officials which the concept of transparency demands may prevent officials from maximising value for money, particularly in complex and high-value procurement transactions. *For example*, while formal tendering procedures which forbid negotiations with suppliers may help to remove opportunities for improper influences on the selection process, it may be difficult to elicit the most appropriate proposals from bidders without such negotiations (Arrowsmith 1998).

From similar perspective, according to Dekel, on the one hand, commitment to equality may be viewed as an intrinsic value of the public tender mechanism, in light of the Government's status as the public's trustee. On the other hand, it can be argued that Government's commitment to equal opportunity in its contracting is purely instrumental and only justified if it promotes economic efficiency or prevents corruption. It follows from the latter that if the commitment to equal opportunity fails to serve these purposes or even runs counter to any of them, it should give way to these more important, independent values. Typically, this distinction will have practical significance when a particular public tender process pits equality against efficiency. The following example can serve to illustrate this distinction: kept by a traffic jam from reaching the procuring entity's office on time, an offeror is slightly late in submitting her offer. It later transpires that hers was the best offer, far better than the runner-up's. If equality is considered to be of instrumental value only, the tendency to overlook the flaw and accept the better offer will be greater than if the equality is perceived as an intrinsic public tender value (Dekel 2008).

These are only two examples, but they remind us about the practical importance of understanding the application and hierarchy of different aims. It is also important to understand the value national legislator is allowed to allocate to each aim, i.e., whether and to what extent it is allowed for the MS or contracting authority to modify those principles in case of EU public procurement regulation. This should be explored further in another article.

5. The view of the Supreme Court

It seems that the Latvian legislator has not paid special attention to the fact that the Article 18 of the Directive 2014/24/EU does not refer to efficient use of funds as one of the principles of procurement, at least explicitly.

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In the light of the above it is interesting to see that the Supreme Court of the Republic of Latvia has done the same – in its summary of case law in public procurement it starts first chapter "Legal regulation and Principles" by referring to the EU directives 2004/17/EC and 2004/18/EC and further provides that from these legal acts the basic principles of public procurement can be concluded, quoting Article 2 of PPL, *inter alia*, efficient use of state and municipality funds (Supreme Court 2017). The same conclusion is drawn also in its judgements, taking it even one step further – the Supreme Court has concluded that the basic purpose of public procurement law is to ensure equal treatment in the award of procurement, which would exclude unfair competition between tenderers, and grant pre-known advantages to a particular tenderer against other competitors; thus, *the main objective of the public procurement regulation is achieved – to save public funds* [emphasis added by authors] (Supreme Court SKA-58/2013).

Also in a case regarding contracting authority rights to issue a complaint on decision of the Procurement Monitoring Bureau, the Supreme Court has stated that, even though for the contracting authority it might seem that the decision of the Procurement Monitoring Bureau is directed against the contracting authority, the difference in interests is apparent; *the common and only interest is to use the state budget resources as efficiently as possible*, and the higher authority in the procurement process, like in any administrative process, prevents errors of the lower authority (Supreme Court SKA-446/2008). The same idea appears later – court stated that requirement for the association of suppliers to establish itself according to a specific legal status, if this is necessary for the successful implementation of the terms of the contract, is an exceptional case. However, the efficient use of state and municipal funds, minimizing the risk of the contracting authority, cannot be recognized as an exceptional circumstance, as such interest exists in every procurement and *is one of the objectives recognized by the Directive* and the Public Procurement Law, which are generally taken into account when developing specific norms (Supreme Court SKA-1/2016).

Accordingly, in Supreme Court's opinion saving of public funds is the main aim of public procurement, even though, at least regarding regulation on EU level, such conclusion is questionable.

6. Possible explanations regarding different approaches

Such a mismatch, as it first appears, can be seen also from the EU perspective. As Mario E.Comba puts it, it remains, however, to explain the presence of so many references in official European documents to the connection between public procurement and value for money. A possible explanation of this potential contradiction is that value for money is a consequence of a public procurement, not an objective: "better value for money is certainly one of the benefits intended to follow from the internal market and, in particular, from the procurement directives (…) On the other hand, the EC procurement rules are not directed at achieving value for money per se" (Citation of Arrowsmith and Kunzlich). Mario E. Comba concludes that, in effect, what can be said is, elaborating from this position, that the Treaty only assumes the point of view of economic operators wanting to sell their products, services or works in other MS and therefore does not care about possible positive consequences of an increase in cross-border trade like the saving of public money. In other words, what happens in reality is the same thing, but it is seen as removing trade barriers and discrimination from the point of view of the Treaty – while it is seen as value for money from the point of view of the contracting authorities of the MS. In effect, the pursuit of efficiency in public spending is a competence of the MS, whose legislation, under different legal schemes and with different tools, regulates public procurement under that perspective (Comba 2014).

Also S. Arrowsmith points out that from the perspective of those who fund the procuring entity, control of expenditure is the primary concern. Once a decision to spend funds on a particular project or service is taken, the question arises of how to obtain value for money in providing the project or service. This refers, in particular, to ensuring that the goods, works and/or services are effective in meeting governmental objectives and that they are

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acquired on the best terms available, taking into account the need to balance cost and other considerations, such as product or service quality (Arrowsmith 2014).

In line with the idea above is the practice of the Supreme Court, i.e., it has set that there are aspects of procurement process that it does not evaluate. The Supreme Court has pointed out that, despite the fact that one of the goals of public procurement is to ensure efficient use of state and municipal funds, it is not the task of the court to make sure that the particular procurement is economically beneficial or useful to the contracting authority. The purpose of ensuring the efficient use of state and municipal funds in the PPL is related to the norms that regulate the selection criteria of the tenderer, including the right to reject unreasonably cheap tenders. However, in case of violation of the Law on Prevention of Squandering of the Financial Resources and Property of a Public Person or other regulatory enactments, the court may adopt an adjacent decision in accordance with Article 288(1) of the Administrative Procedure Law, but for this reason the decision of the Procurement Commission cannot be declared unlawful (Supreme Court SKA-122/2015).

The court has admitted that, regarding on whether the requirements are efficient enough to achieve the aims, the court is limited in its assessment, and it depends from considerations of the contracting authority. From the view of the PPL it is only important whether the requirements are equal to all tenderers and are not discriminatory. The economic feasibility and adequacy of the requirements, insofar as it does not discriminate against the tenderer or distort competition, shall be assessed by the tenderer who chooses to participate in the procurement or not and at what price. (Supreme Court SKA-134/2013; SKA-410/2013) Determining the qualitative requirements of the subject of the procurement, in so far as it does not unduly restrict competition, is merely the discretion of the contracting authority. Neither the possible tenderer nor the court can intervene within the competence of the contracting authority to determine the requirements which the procurement object must meet (Supreme Court SKA-1315/2015).

Therefore, also the Supreme Court has divided the aspects of legality and economy of the procurement, leaving the latter to the competence of the contracting authority. Of course, when referring to the directive and formulating statements, this difference should be kept in mind because a direct reference that the efficiency of spending is one of the aims of the procurement directives still remains misleading.

7. Additional aspects regarding efficient use of funds

Previous conclusions of the court also point out two additional aspects of the regulation. First is the existence of a separate set of regulation on efficient spending of public funds. Article 1 of the Law on Prevention of Squandering of the Financial Resources and Property of a Public Person sets that the purpose of this law is to ensure that the financial resources and property of a public person is utilised lawfully and in conformity with the public interest, to prevent the squandering and ineffective utilisation of such financial resources and property, as well as to restrict the corruption of State officials. Article 3 of this law provides that a public person, as well as a capital company shall administer the financial resources and property rationally, that is (Publiskas personas finanšu līdzekļu un mantas izšķērdēšanas novēršanas likums 1995):

1) actions shall be such as to achieve the objective with the minimum utilisation of financial resources and property;

2) property shall be alienated and transferred to the ownership or use of another person at the highest price possible;

3) the ownership or use of property shall be acquired for the lowest price possible.

Hence, it could be suggested that the principle of effective use of funds in general is already an aim of a different law (of course, there could be some nuances regarding persons concerned by this law and PPL) and breaches of this law should be accordingly prevented. On national level also the Law On Budget and Financial Management

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provides that heads of authorities financed from the budget, institutions non-financed from the budget and local governments, as well as of capital companies, in which a State or local government capital share has been invested, shall be responsible for the observance, implementation and control of the procedures and requirements laid down in this Law, as well as for the efficient and economic utilisation of budgetary funds in conformity with purposes intended (Likums par budžetu un finanšu vadību 1994). Application of these laws is outside the scope of this article.

Second aspect is the understanding of the meaning of the aim. Dekel has pointed out that, having established that the public tender mechanism is intended to achieve, *inter alia*, economic efficiency, it is worth recalling that such efficiency is a complex concept and that economically efficient contracting therefore may be defined in different ways (Dekel 2008). To understand what an efficient use of the contracting authorities' funds is, one should be able to understand the meaning of words "efficient use", since the term "contracting authority" is defined in the law and, although confusion may arise in some situations, ownership of funds is also mostly clear. As defined by Oxford dictionary, "efficient" is "(of a system or machine) achieving maximum productivity with minimum wasted effort or expense" (Oxford n.d.). Since the term "efficient use of funds" is used, it could be formulated as – achieving maximum value with minimum expense, or, in other words, obtaining best value for money. As provided above, according to the Supreme Court, in relation to public procurement this aim is related to the norms that regulate the selection criteria of the tenderer, including the right to reject unreasonably cheap tenders. Of course, the practical application of this aim will differ in each situation, but the authors agree that it manifests itself most obviously in case of contract award criteria. The relationship between different evaluation criteria is a separate topic, analysed in more detail in the doctoral thesis of U. Skrastiņa (Skrastiņa 2015).

Further, minimization of contracting authorities' risks is also a broad term that could include safe products, works or services (related to technical specification), reliable offer (e.g., tender security) and safe contract conditions (contract security etc.). As the Supreme Court has put it, the aim of public procurement procedure is, on the one hand, to protect tenderers' right to free competition and equal and fair treatment, on the other hand, the contracting authority's interest in obtaining the best value, including the cheapest offer, while ensuring the efficient use of funds. Effective use of state and municipal funds, minimizing the risk of the contracting authority, does not only include the formal choice of the cheapest offer, but also the choice of a safe and serious offer (Supreme Court SKA-24/2014). Regarding unreasonably cheap tenders the Supreme Court has explained that the procedure set in law is aimed at enabling the tenderer to justify the fact that his bid, although low in price, is serious and genuine, and for the procurement commission not to reject an objectively more advantageous offer. Also, taking into account requirements of the Law On Prevention of Squandering of the Financial Resources and Property of a Public Person an objectively unjustified rejection of an offer with a lower price is not permissible (Supreme Court SKA-182/2012).

It can be concluded that this aim has a complex nature and it can manifest itself in different situations during the procurement process, therefore creating necessity to apply it in relation to other principles.

Regarding the aim of efficient use of funds, one should also keep in mind that, even though the place of this aim in the hierarchy of the EU public procurement principles is questionable, when comparing the procurement systems, efficiency is one of the indicators that is evaluated. For example, in an assessment of the European Bank for Reconstruction and Development procurement system of Latvia scores high in uniformity and competition, but low in efficiency of the public contract (European Bank for Reconstruction and Development 2011). As U. Skrastiņa points out, legal regulation is closely linked to the economic efficiency of the procurement, and these two aspects are inseparable, but focusing only on the legal aspect alone can lead to a successful procurement, but low economic efficiency (Skrastiņa 2015). And public procurement is the field where both of these aspects are equally important to obtain goals set for the procurement process.

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Conclusions

1. It can be concluded that the hypothesis that the aim of efficient use of public funds is directly inferable from the public procurement directives proved to be wrong – it is not explicitly defined as one of the principles of public procurement in Directive 2014/24/EU (for example, in Article 18).

2. According to some authors, it is even suggested that efficient use of funds "is not and cannot be an autonomous objective of EU Directives on public procurement" (Arrowsmith, Kunzlich, Comba), considering the EU competence.

3. The Public Procurement Law states efficient use of funds as one of the aims of the public procurement and neither the legislator, nor the Supreme Court of Latvia has paid specific attention to the fact that such an aim is not defined in the Directive 2014/24/EU.

4. Considering the differences between principles listed in the Directive 2014/24/EU and the aims of the Public Procurement Law, these principles could collide, and both the contracting authorities and other persons involved in procurement process should be aware of such a possibility and possible limitations of the use of principle of efficient spending, since it may have a practical implication on the decisions in procurement process.

5. The Supreme Court, however, has ruled that conflicts related to the efficiency of public spending should be resolved according to the Law on Prevention of Squandering of the Financial Resources and Property of a Public Person, providing a mechanism that *prima facie* does not contradict the principles of EU public procurement regulation.

6. The concept of efficient public spending is complex in its nature and it is important for contracting authorities and Member States to understand its place in the procurement system.

7. Further research is needed to conclude the specific relationships between other procurement principles both on EU and national level and develop guidelines for cases of conflicts.

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EXPLORING BRAND LOYALTY TOWARD TRADITIONAL CONFECTIONERIES IN AN EMERGING MARKET

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Abstract. The purpose of this paper is to empirically explore the effects of brand dimensions, including brand image, brand value, brand impact, and brand satisfaction, on the brand loyalty of purchasers in an emerging country, Vietnam. The data were collected using paper-based surveys with a collected total of 310 responses from participants who had purchased traditional confectionery products. Structural Equation Modelling (SEM) was used to fully test the proposed hypotheses. The main findings reveal that brand image, brand impact, and brand satisfaction are important drivers of customers' brand loyalty. Among these brand dimensions, brand image is found to have the strongest effect on brand loyalty, while brand value had no impact on brand loyalty. Based on the findings, theoretical and practical implications are suggested for stakeholders, marketers, producers, and policymakers to build customer brand loyalty toward traditional confectioneries. Further research directions are also presented in this study.

Keywords: Traditional Confectioneries; Brand; Brand Loyalty; Customers; Structural Equation Modelling (SEM).

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1. Introduction

In 2018, the rate of Gross Domestic Product (GDP) growth of Vietnam recorded its highest level at 7.08%, making the nation one of the top growing economies in the region and the world. The average nominal GDP per capita reached approximately US$ 2,600 (GSO, 2019). Moreover, since the population ranks 14th in the world (about 95 million), Vietnam became an enormous market for attracting various business investment, and is forecasted to be among the top 20 markets in the world by 2050 (GSO, 2019; PwCVietnam & VCCI, 2019). Additionally, according to Nielsen (Nielse, 2019), Vietnam's Consumer Confidence Index score had the biggest gain in Asia Pacific, and became the third most confident country in the world, attributing to an increase in the purchasing power of customers, especially in the areas of food and beverages in this emerging country. In the food and beverage industry, revenue in the confectionery segment will amount to US$ 1,355 million in 2020, and the average per capita consumption is expected to stand at 2.3 kg in 2020 (Statista, 2019). In Vietnam, confectionery consumption characteristics have a clear seasonal nature while the market gradually grows from the Mid-Autumn Festival to the Lunar New Year. During this period, consumers tend to purchase more traditional products such as mooncakes, candied lotus, coconut candy, squash, soursop, and green bean cakes from local brands such as King Do, Gia Bao, Bao Hien Rong Vang, or Bao Minh (VietnamNews, 2018). Therefore, the Vietnamese confectionery market is recognized as a precious production hub and dynamic consumer market with great potential for growth for confectionery producers. However, to compete with imported products from China, Thailand, Malaysia, or other global market players such as Orion, Lotte, Nestlé, or Mondelēz, domestic manufacturers should pay more attention to customers in terms of improving quality, packaging, marketing campaigns, and especially brand loyalty for traditional confectioneries that express the history and the marvelous culture of Vietnam.

A brand can be defined as a symbol or a name associated with tangible and emotional attributes in order to differentiate one producer's goods or services from rivals' goods (Aaker, 2013; Seetharaman et al., 2001). Given that the importance of brand multi-dimensions for products, determinants of brand loyalty toward traditional confectioneries have not yet been investigated in Vietnam. This paper, therefore, aims to explore the influence of brand image, brand impact, brand value, and brand satisfaction on brand loyalty toward these products in this developing market.

To be consistent with these objectives, this research is structured as follows. First, the theoretical background on brand dimensions and hypotheses are discussed in Section 2. This is followed by the development of a research model in Section 3. Next, the questionnaire and measures, sample and data collection, and data analysis methods are explained in Section 4. Afterward, results, discussion, and implications are provided in Section 5. Finally, the conclusion and limitations of the study and future research directions are presented in Section 6.

2. Literature review and hypothesis development

2.1. Brand Image

According to Keller (2013), brand image is considered a perceptual subjective phenomenon reflected through consumers' feelings for products due to their memories. Similarly, it can be also defined as buyers' feelings and thoughts about a brand (Roy & Banerjee, 20078). Brand image has a multifunction of intangible and tangible features allowing customers to recognize a product (Bivainienė, 2007). In other words, brand image assists consumers in identifying their wants and needs with a brand. Moreover, it helps them distinguish the brand of one producer from others (Anwar et al., 2011). Therefore, brand image serves as an important marketing instrument in building brand impact and forming customer loyalty (Sweeney & Swait, 2008). A study by Islam & Rahman (2016) emphasized that the more an attractive brand image creates a positive brand impact, the better consumers will associate with that brand. Moreover, brand image will increase the value for consumers. In their study,

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Faircloth et al. (2001) determined brand value could be directly or indirectly promoted through brand image. Their results were echoed by other studies when it was proved that brand image positively impacted brand value in consumers' eyes (Chinomona et al., 2013; Puška et al., 2019; Puška et al., 2018).

Several studies on brand dimensions have confirmed the significant relationship between brand image and brand satisfaction (Chao et al., 2015; Davies et al., 2003). Brand image also has a positive influence on the brand loyalty of consumers (Chen & Tseng, 2010; Ogba & Tan, 2009; Puška et al., 2018; Tan et al., 2011). Likewise, Puška et al. (2019) asserted that brand image created a satisfying brand for consumers, entailing their brand loyalty. Hence, the following hypotheses are developed.

H1: Brand image will have a positive influence on the brand impact.
H2: Brand image will have a positive influence on the brand value.
H3: Brand image will have a positive influence on the brand satisfaction.
H4: Brand image will have a positive influence on brand loyalty.

2.2. Brand impact

According to Puška et al. (2019), brand impact refers to a psychological reaction that entails certain customer positive or negative feelings. Brand impact was determined to have a positive influence on the satisfaction of consumers (Mishra et al., 2016; Puška et al., 2019). Furthermore, Chaudhuri & Holbrook (2001) and Bahadir et al. (2008) argued that firms can improve their brand value by enhancing the brand impact on consumers. Also, many studies are confirming the positive influence of brand impact on brand value (Bahadir et al., 2008; Puška et al., 2019).

Chaudhuri & Holbrook (2001) concluded that brand impact was a key predictor of customer brand loyalty because when they feel joyful, affectionate, or happy with a brand, they show higher commitment to the brand. This finding was confirmed by other studies (Matzler et al., 2008; Park & Kim, 2016; Puška et al., 2019). The following set of hypotheses are therefore proposed.

H5: Brand impact will have a positive influence on brand value.
H6: Brand impact will have a positive influence on brand satisfaction.
H7: Brand impact will have a positive influence on brand loyalty.

2.3. Brand Value

Bolton & Drew (1991) defined brand value as the brand assessment of customers due to their perceptions of that brand. Brand makes a great contribution to the sustainable competitive advantages of a firm, and brand value is the foundation of what producers obtain (Kotler et al., 2014). Leroi et al. (2014) and Giovanis & Athanasopoulou (2017) suggested two approaches in determining brand value: one-dimensional and multi-dimensional. The one-dimensional approach is the understanding of the brand value comprising the price and the quality of the product the consumer receives. Meanwhile, a multi-dimensional approach is the understanding of consumers from multiple dimensions, including social, conditional emotional, functional, and epistemic (Sheth et al., 1991).
According to Cronin et al. (2000), there exists a significant relationship between brand satisfaction and brand value. It was stated that high perceived value leads to high satisfaction (Erciş et al., 2012). Moreover, the finding of a study conducted by Vranesevic & Stancec (2003) determined that brand value assisted firms in gaining competitive advantages and maintaining relationships with customers. This research result was echoed by other studies (Huang et al., 2016; Lam & Shankar, 2014; Pan et al., 2012; Puška et al., 2018; Taylor et al., 2004). Therefore, the following hypotheses emerge.

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H8: Brand value has a positive influence on brand satisfaction.
H9: Brand value has a positive influence on brand loyalty.

2.4. Brand Satisfaction

Satisfaction is defined as the fulfillment response of customers based upon the assessment that a service or product feature provides a pleasurable level of consumption (Oliver, 2010). In other words, it is defined as the cumulative satisfaction of the overall evaluation of customers based on the experience with a service, product brand, or actual purchase. Moreover, brand satisfaction plays a vital role in preserving brand value and retaining customers, resulting in brand selection (Puška et al., 2019). This finding is consistent with a study by Lai et al. (2009) wherein they stated that brand satisfaction was an indispensable requirement for customer repurchase intention. Hence, consumer satisfaction will affect brand loyalty once the image and value of such brands are considered (Jones & Suh, 2000; Puška et al., 2018; Taylor et al., 2004; Veloutsou, 2015). Hence, we propose the following hypothesis.

H10: Brand satisfaction has a positive influence on brand loyalty.

2.5. Brand Loyalty

Brand loyalty is defined as the positive feelings of a customer toward a brand when he is ready to pay a higher price for that brand. Moreover, he tends to suggest that brand to other people (Giddens, 2002). Chaudhuri & Holbrook (2001) stated that brand loyalty evoked a customer's preference for a certain brand over a while.
Brand loyalty consists of two factors, attitudinal and behavioral (Aaker, 2013). Behavioral loyalty explains the repeated buying of a brand over time, whereas attitudinal loyalty refers to a dispositional commitment based on particular preferences of some unique value associated with a brand (Chaudhuri & Holbrook, 2001; Huang et al., 2015). In addition, according to Chaudhuri & Holbrook (2001), brand loyalty is a decisive driver for a company's profitability and competitive advantages. Hence, every company desires to have strong brand loyalty (Morrison & Crane, 2007).

Based on the above discussed theoretical background and hypothesis development, the following research model is proposed (Figure 1).

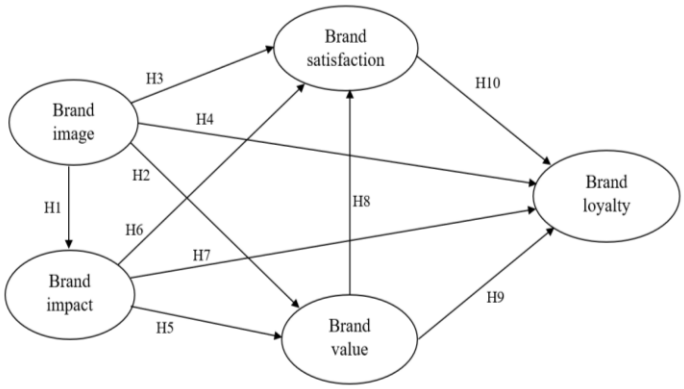

Figure 1. The proposed research model

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3. Research methodology

3.1. Questionnaire and Measures

Items for measuring the constructs in the proposed research model of this study are first identified (see Table 1). For the reliability and validity of the constructs, most items are adopted from previous studies and were carefully translated into Vietnamese based on the back-translation recommended by Behling & Law (2000). To ensure the face validity of the measured items, two experts in brand development and two marketing scholars were invited to review the questionnaire. As most of the scales were taken from foreign research, a pilot survey of 20 samples was conducted to improve the wording, readability, clarity, and comprehensiveness of the questionnaire. Following comments and feedback from respondents, some items were amended. Specifically, 3 new items were suggested for the *brand image* construct. The final questionnaire comprised 23 items measuring 5 constructs, and is shown in Table 1. All the items were measured on a 5-point Likert scale ranging from 1 for 'strongly disagree' to 5 for 'strongly agree.'

For *the brand image*, a total of 5 items were used. Of these, 3 items regarding the flavor, nutrition value, and expiry date were self-developed according to the suggestions of the respondents, and 2 items were taken from Matzler et al. (2008) and Cho & Fiore (2015). To measure *the brand impact*, 3 items were adopted from prior research conducted by Mishra & Das (2016) and Chaudhuri & Holbrook (2001), and the other item regarding pride from using a brand was recommended by the respondents. For *the brand value*, 4 items were taken from Giovanis & Athanasopoulou (2017) and Nyadzayo & Khajehzadeh (2016). To measure the *brand satisfaction*, 5 items were adopted from Kuikka & Laukkanen (2012) and Nyffenegger et al. (2015). Finally, 4 *brand royalty* items were taken from prior studies by Chaudhuri and Holbrook (2001), Giovanis & Athanasopoulou (2017), and Krystallis & Chrysochou (2014).

Table 1: Constructs and items

Construct	Question	**Source**
Brand Image (IMA)	This traditional confectionery product has a unique and mild sweet flavor. This traditional confectionery product has high nutritional value. This traditional confectionery product *has* a fairly *long shelf life.* This traditional confectionery product has an attractive appearance and color. The quality of this traditional confectionery product is better than average.	Self-developed (Cho & Fiore, 2015; Matzler et al., 2008)
Brand Impact (IMP)	This traditional confectionery brand makes me happy. I feel good when I use this traditional confectionery brand. This traditional confectionery brand gives me pleasure. I feel proud to use this brand.	(Chaudhuri & Holbrook, 2001; Mishra et al., 2016) Self-developed
Brand Value (VAL)	The traditional confectionery brand justifies its price. The quality of traditional confectionery brand justifies its price. I get an excellent traditional confectionery brand concerning price. My satisfaction is great concerning the price of this traditional confectionery brand.	(Giovanis & Athanasopoulou, 2017; Nyadzayo & Khajehzadeh, 2016)
Brand Satisfaction (SAT)	I am pleased with this traditional confectionery brand. I am content with this traditional confectionery brand. I am always satisfied with this traditional confectionery brand. The best ingredients are used in this traditional confectionery product. Overall, I am satisfied with this traditional confectionery brand.	(Kuikka & Laukkanen, 2012; Nyffenegger et al., 2015)

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Brand Loyalty (LOY)	I will purchase this traditional confectionery brand the next time I purchase a confectionery product. I intend to continuously purchase this traditional confectionery brand. I will be willing to pay a higher price for this traditional confectionery brand over other brands. I will recommend this traditional confectionery brand to my friends.	(Chaudhuri & Holbrook, 2001; Giovanis & Athanasopoulou, 2017; Krystallis & Chrysochou, 2014)

3.2. Sample and data collection

Respondents participating in this research were Vietnamese aged 18 or over who had purchased traditional confectionery products. Paper-based surveys were utilized in order to collect data from nine confectionery stores in cities in the North Central and Central coastal areas of Vietnam (e.g. Hue, Da Nang, Quang Binh, and Khanh Hoa). With a population of more than 20 million, ranking 2nd in Vietnam (GSO, 2018), along with royalty purchasing characteristics of customers (Thanh & Huong, 2016), these areas are relevant and eligible to investigate brand loyalty for traditional confectionery products.

Convenience sampling was used, and the data collection period lasted 2 months from November 2019 to January 2020. A total number of 450 surveys were distributed (50 at each store). Of these, 425 surveys were returned. After eliminating surveys with unanswered items, invalid responses, and outliners, 310 usable responses were used for further analysis. The sample profile is illustrated in Table 2.

4. Data Analysis Method

As suggested by Kline (2010), a Structural Equation Modelling (SEM) should be used to analyze the complicated path model. This analysis technique has also been widely adopted in empirical research that investigated the antecedents of customer brand loyalty (Rahi et al., 2017; Soomro, 2019). Following suggestions by Anderson & Gerbing (1988), SEM involves two stages of analysis, including a confirmatory factor analysis (CFA) and a structural model evaluation. CFA is meant to assess the validity of constructs and measurement in the proposed research model in terms of having good indicator loadings, composite reliability (CR), convergent validity, and discriminant validity. Structural model evaluation is then used to test the hypotheses. In SEM, some commonly-applied fit indices, including the chi-square to degree-of-freedom ratio ($\chi 2/df$), goodness-of-fit index (GFI), comparative fit index (CFI), adjusted goodness-of-fit index (AGFI), Tucker and Lewis index (TLI), and root mean square error of approximation (RMSEA) are used to test the goodness-of-fit (GOF) of the measurement and structural models. According to Henry & Stone (1994) and Hair et al. (2014), a model fit is reasonably confirmed to be good when $\chi 2/df$ is less than 3, the values of GFI, AGFI, CFI, TLI are greater than 0.90, and RMSEA is less than 0.08.

5. Results

5.1. Sample Profile

Among 310 respondents, approximately 63 percent were female. Concerning age, 26.1 percent were under 25, and 63.2 percent were aged 26-40. The respondents were quite educated; 25.2 percent held a college degree, and 39.3 held a bachelor's or master's degree. A majority of the respondents were employed and were students, accounting for 55.5 percent and 30.3 percent, respectively. Notably, in terms of monthly disposable income, 39 percent of respondents saw earnings of US$ 251-500 per month and were indicated to be middle class in Vietnam, accounting for 40 percent of the entire population by income (Thanh & Huong, 2016). Therefore, it is reasonable

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to assert that the sample in this study can represent the entire population of Vietnam. Furthermore, 64.8 percent of respondents reported that they lived in a family of 5 members and more (see Table 2).

Table 2: Demographic profile of the respondents

Demographic Characteristics		Frequency	Percentage
Gender	1. Female	195	62.9
	2. Male	115	37.1
Age of Respondent	1. Under 25	81	26.1
	2. 26-30	116	37.4
	3. 31-40	80	25.8
	4. 41 or Above	33	10.6
Education Level	1. Common	61	19.7
	2. High School Degree	49	15.8
	3. College Degree	78	25.2
	4. University Degree	98	31.6
	5. Postgraduate	24	7.7
Employment Status	1. Student	94	30.3
	2. Employed	172	55.5
	3. Unemployed	25	8.1
	4. Pensioner	19	6.1
Income in US$	1. Under 250	101	32.6
	2. 251-500	121	39.0
	3. 501-750	59	19.0
	4. 751-1000	25	8.1
	5. Over 1001	4	1.3
Number of Household Members	1. 1-2	49	15.8
	2. 3-4	60	19.4
	3. 5-6	120	38.7
	4. 7 or more	81	26.1

5.2. Reliability and Validity

The results of the multiple fit indices gained from Confirmatory Factor Analysis fulfilled the rule of thumb and all the resultant statistics satisfied the suggested levels (Chi-square = 303.433; df = 198; $p < 0.001$; $\chi 2/df = 1.532$; GFI = 0.923; AGFI = 0.901; CFI = 0.966; TLI = 0.960; RMSEA = 0.042). Therefore, the sample data can be concluded to fit the model.

The results of the descriptive analysis in Table 3 demonstrated that brand value received the highest mean score (M = 3.479), whilst respondents at least agreed with the statements within the brand image construct (M = 3.117). To access the internal consistency of each construct, Cronbach's alpha (α) was calculated. It is suggested that the common acceptable threshold level for α value should be greater than 0.7 (Hair et al., 2014). The results illustrated in Table 3 showed that all the constructs' α values, ranging from 0.804 to 0.867, indicate good reliability.

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Table 3: Descriptive statistics and reliability and convergent validity

Construct	Mean	Standard Deviation	Cronbach's Alpha
Brand Image	3.117	0.573	0.867
Brand Impact	3.341	0.583	0.804
Brand Value	3.479	0.592	0.825
Brand Satisfaction	3.394	0.586	0.862
Brand Loyalty	3.399	0.642	0.846

As suggested by Fornell & Larcker (1981) and Hair et al. (2014), convergent and discriminant validities were calculated to test construct validity. To examine convergent validity, we examined standardized factor loadings (FLs), composite reliability (CR), and the average variance extracted (AVE). As shown in Table 4, the relevant data had strong convergent validity when all FLs were greater than 0.5; CR was from 0.804 to 0.868, and AVE exceeded 0.5.

In order to test discriminant validity, the squared root of AVE for each construct was compared to its cross-correlation with other constructs. All AVE scores exceeded the inter-construct correlation, satisfying the criteria to establish discriminant validity in this study (Table 4).

Table 4: Convergent validity and discriminant validity

Construct	FLs	CR	AVE	IMA	IMP	VAL	SAT	LOY
IMA	0.667 – 0.795	0.868	0.568	**0.745**				
IMP	0.642 – 0.732	0.804	0.506	0.279	**0.711**			
VAL	0.564 – 0.877	0.808	0.521	0.291	0.251	**0.722**		
SAT	0.617 – 0.846	0.865	0.562	0.342	0.317	0.427	**0.750**	
LOY	0.576 – 0.899	0.853	0.593	0.537	0.475	0.285	0.571	**0.770**

Hypothesis Testing

The structural model was applied to test ten proposed hypotheses. The results of hypothesis testing are shown in Table 5. The results showed a good model fit when the GOF indices were Chi-square = 285.542; df = 197; $p < 0.001$; $\chi 2/df = 1.449$; GFI = 0.927; AGFI = 0.907; CFI = 0.971; TLI = 0.966; and RMSEA = 0.038. Specifically, 51.90 % of the variance of traditional confectionery brand loyalty was predicted in this model (see Table 5).

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Table 5: Hypotheses testing and results

H#	Hypothesis Testing			B	S.E.†	*t*-Value	*p*-Value	Results
H1	Brand Image	→	Brand Impact	0.316	0.079	4.011	***	Supported
H2	Brand Image	→	Brand Value	0.417	0.093	4.486	***	Supported
H3	Brand Image	→	Brand Satisfaction	0.150	0.076	1.969	**	Supported
H4	Brand Image	→	Brand Loyalty	0.378	0.073	5.154	***	Supported
H5	Brand Impact	→	Brand Value	0.081	0.080	1.008	0.314	*Rejected*
H6	Brand Impact	→	Brand Satisfaction	0.210	0.065	3.200	**	Supported
H7	Brand Impact	→	Brand Loyalty	0.269	0.063	4.294	***	Supported
H8	Brand Value	→	Brand Satisfaction	0.391	0.080	4.919	***	Supported
H9	Brand Value	→	Brand Loyalty	0.029	0.062	0.469	0.639	*Rejected*
H10	Brand Satisfaction	→	Brand Loyalty	0.361	0.074	4.902	***	Supported

Note: *** $p < 0.001$; ** $p < 0.05$; ** and *** denote statistically significant at the levels of 5% and 1%, respectively. † Standard Error.

Regarding path analyses, eight proposed hypotheses were supported; however, the other two were rejected. Notably, all four paths starting from brand image directly influenced brand impact ($\beta = 0.316$, $p < 0.001$), brand value ($\beta = 0.417$, $p < 0.001$), brand satisfaction ($\beta = 0.150$, $p < 0.05$), and brand loyalty ($\beta = 0.378$, $p < 0.001$). Hence, hypotheses 1, 2, 3, and 4 were supported. Moreover, the relationship between brand impact and brand value was insignificant ($\beta = 0.081$), $p > 0.05$). Subsequently, the relation path between brand value and brand loyalty was also insignificant. Due to these results, hypotheses 5 and 9 were rejected. Brand impact and brand value had a positive and significant influence on brand satisfaction ($\beta = 0.210$, $p < 0.05$ and $\beta = 0.391$, $p < 0.001$ respectively) in support of hypotheses 6 and 8. Both relation paths, including brand value and brand satisfaction ($\beta = 0.391$, $p < 0.001$), and brand satisfaction and brand loyalty ($\beta = 0.361$, $p < 0.001$), were also found to be positive and significant, thus supporting hypotheses 8 and 10.

6. Discussion and implications

The purpose of our study was to assess which determinants influenced brand loyalty toward tradetional confectionery products in Vietnam. Accordingly, the study proposed and tested a model combining brand multi-dimensions. Our findings have significant implications for both theory and practice.

Brand satisfaction was proven to have a greater positive and significant effect on customer brand loyalty than brand impact. This finding contradicts previous research (Hsieh & Li, 2008). However, it supports studies by Zahorik & Rust (1993) and Puška et al. (2018). Surprisingly, the findings of the study revealed that brand value has an insignificant influence on brand loyalty. Its indirect effect on brand loyalty is mediated by brand satisfaction. This finding echoes earlier research (Al-Msallam, 2015; Alhaddad, 2014; Elsäßer & Wirtz, 2017). However, brand impact has the biggest significant influence on brand satisfaction, rather than brand image and brand impact. This finding demonstrates that consumers satisfied with a brand will make greater contributions to increase brand loyalty. Hence, traditional confectionery manufacturers in Vietnam should find measures and strategies in regard to making customers truly satisfyed.The results also revealed that brand image is a key driver of brand impact and has the biggest contribution to the formation of the brand loyalty of consumers. The finding is consistent with past research when it is concluded that a positive brand image will help to build brand loyalty (Hsieh & Li, 2008; Nyadzayo & Khajehzadeh, 2016). In emerging countries like Vietnam, the confectionery industry is highly competitive. Accordingly, traditional confectionery producers have to make every effort to diversify types and flavors, along with innovating packaging and investing, in building a widespread distribution

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system to meet the taste, convenience, and ease of purchase expectations of consumers. Furthermore, because most traditional confectioneries are produced by small branded establishments in regions across the nation, confectionery associations should be established in order to orient, direct, and create favorable conditions and a legal corridor for traditional confectionery producers to promote their brand images. Also, more and more Vietnamese customers pay attention to food safety issues (H. V. Nguyen et al., 2019; T. T. H. Nguyen et al., 2019), so traditional confectionery manufacturers must meet all food safety requirements as it directly affects consumer health. They should have a certificate of eligibility for food safety and apply standards of food hygiene and safety, such as ISO 9000 or ISO 22000. Further, because of the increasing consciousness about the sugar intake of customers, more sugar-free, organic, and low-calorie products with high nutritional value should be offered. Specifically, taking full advantage of unique, traditional confectioneries made completely with natural ingredients originating from Vietnam, the "Vietnamese people give priority to using Vietnamese goods" campaign should be often promoted in provinces and localities to propagate and stimulate patriotism so that traditional confectioneries are not only common products but also gifts of Vietnam's traditional flavors in diplomatic rituals, receptions, or meetings.

Conclusion and further study

This research is one of the first studies investigating the influence of the multi-dimensions of brand on brand loyalty toward traditional confectioneries in emerging countries like Vietnam. The results of the study showed that brand image affects brand loyalty more than brand impact and brand satisfaction. Therefore, it can be concluded that manufacturers of traditional confectioneries should invest more in developing the quality of products and innovating packaging to attract and satisfy customers. In addition, brand promotion and development campaigns should often be promoted in provinces nationwide.

Despite the significance of its findings, the study has several caveats. First of all, the study only investigated a sample in an emerging country, which may affect the generalizability of the results since the preferred type of confectioneries often differ according to differences in regulatory norms, cultures, tastes, and preferences of customers. Future research may consider a comparative analysis of brand loyalty toward traditional confectioneries among various countries to identify similarities and differences in brand loyalty. While this is consistent with numerous prior studies, future research is recommended to include the actual purchases of traditional confectionery purchasers. Finally, future studies may examine the moderating influence of individual variables such as ages, gender, lifestyle, and education on brand loyalty.

Limitation

This paper still has some limitations:

- The scale is still limited in many aspects, it is necessary to add demographic characteristics to find the relationship between these factors with each other. This is also a direction for further research.
- The sample is still quite small so the reliability is certain, so the results are not very comprehensive.

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JOB MISMATCH: THE PHENOMENON OF OVERSKILLED EMPLOYEES AS A RESULT OF POOR MANAGERIAL COMPETENCES*

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Abstract. Businesses in current era are challenged by many sustainability issues, where one extremely important is regarding labor market and HR transformation. In this article we have looked at the aspects of human capital which are necessary for long term sustainability, and that is the relation between the workplace design and the skills and abilities of the employees. The paper presents the views and opinions of various authors and the results of several research articles on skill and educational mismatch to highlight the importance of proper job design. The article also presents the results of own research of 200 Slovak companies focused on changes in HRM under the influence of ongoing changes. The main findings are the differences in skills and educational mismatch between countries, which have also been analyzed from the point of view of trust in management and quality of management as well as the involvement of line managers and HR departments in recruitment, selection and employee assessment processes. From the point of view of Slovak Republic, findings are presented which contradict the generally discussed topic of educational mismatch and point to the insufficient design of the workplaces and the related low utilization of the human capital potential in the country.

Keywords: skill mismatch; job design; human resources; education mismatch

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Introduction

The most significant trend of the last decades, as well as for the next decade, has been the digitization of the world of work as an essential accompaniment to the Fourth Industrial Revolution. In connection with the emergence of Industry 4.0, it is mainly expected to have a significant impact on human resources, changes in the requirements for their structure, development and efficient use (Nováková, R. et al. 2017a; Wojcak, E. et al. 2018; Stachová, K. et al. 2019). A significant impact on employment, education, development and requalification of workers is expected from the social point of view. Attention of strategic challenges in management and development of human capital (Oborilová, A. 2011), as well as organizations and countries, is drawn on trends in the development of new working skills developed in coordination with physical and information technology elements and analyzed in the light of the expected structural changes (automation) and the increase in basic of literacy requirements (Hecklaua, Galeitzkea, Flachsa, Kohlb 2016; Dušak, M. et al. 2017; Nováková, R. et al. 2017b). The development of human capital requires to be addressed in the context of the need to adapt to the challenges related to the development of Industry 4.0 and to develop the skills that reflect these demands across all generations active on the labor market. Slovakia can be ranked among the countries with the highest proportion of jobs at risk of automation (OECD 2018) as with the arrival of Industry 4.0, there are massive changes in the structure of jobs. Given that the forthcoming 4th industrial revolution is only at its initial stage, it is the direct responsibility of basic scientific research to evaluate ongoing changes, to highlight timeliness and possible impacts.

In this context, many researchers are focused on what may be the new HR approaches and trends that will create higher pressure on HR and broader scope of responsibilities (Plaskoff, 2017, Baran et al. 2018, Ulrich, 2016, KPMG 2018) in order to cope with Industry 4.0 changes. However HR and their role in organization has yet had different shapes and forms depending not only on individual company specifics or industries, but also country and culture related specifics. As Ulrich (2016) pointed out, the main purpose of HR is to deliver business value. The business value which is nowadays highly sought is talent (Allen, Ulrich 2013) through internal sources or on the labor market. Talented employee that fits the job design is today perceived as hard to find on the labor market, on the other hand the collocation of job mismatch is used more and more often when speaking about the actual and potential employees. Job mismatch on the labor market is although mostly seen in the association with country policies and interventions or interested organizations and parties (McGuinness et al. 2017), however we see a lack of insight of the role of HR practices and its development stage on this topic in academic research. As the literature is highly inclined towards the need of HR transformation with the respect to Industry 4.0 challenges, we aim to uncover the possible effects of HR involvement and role on job mismatch. The need to research this topic is highly driven by the increased perception of existing job mismatch in Europe, and its negative effects on the economy (Mavromaras et al. 2013, OECD 2015, Bennet and McGuinness 2019, European Commission 2017). In this article we focus on comparing a variety of researches on the topic of job mismatch, with the further analyzed example of Slovak Republic.

1. Literature review

Overeducation and overskilling

Many research articles as well as policy statements in recent times have been focused on overeducation and overskilling in the context of the situation on labor markets, pointing to the fact that labor force abilities and knowledge supply and employer's demand are not in balance. However, studies have shown each term refers to different phenomena. (McGuinness & Byrne, 2014; Mavromaras et al., 2010, Green & amp; Zhu, 2010). McGuiness defines overeducation as a condition of having a level of education higher than that required to adequately perform a specific job (McGuiness, 2006). Overeducation however does not have to directly take into account the level of individual skills of the employee, so the term overskilling speaks more directly about the abilities and skills of employees. O'Leary describes overskilling as a measure of under-use in the labor market, which is more representative and more robust then overeducation (O'Leary et al., 2009). The topic of intensity and

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adequacy of knowledge and skills of employees is currently in focus of many researchers as well as the companies themselves. Most often, situation such as overskilled or underskilled (undereducated) employee are of high interest. It should be pointed out that while being overskilled has more of negative impacts, according to Sequeda et al. being underskilled at the job entry could be seen as positive, from the point of view of utilization of further learning and education investments. It is indisputable that internal and external education systems and development programs are the key to solving the situation of having underskilled employees. Many researchers point out that employee education and employee knowledge are key to maintaining the competitiveness of the organization (Lorincová, Potkány, 2016; Hitka et al., 2018, Joniaková et al., 2017).

On the other hand negative effects of overeducation or overskilling may result in opposite situation, meaning decrease in individual and organizational performance which can lead to endangering future competitive positions. From the point of view of individual employee Dolton and Vignoles point out negative effects associated with lower wage compared to other employees with the same qualification who are matched at their job (Dolton, Vignoles, 2000). Other authors complement these effects with lower job satisfaction, lower productivity, higher stress at job, lower creativity and so on (Korpi, Tåhlin, 2009, Montt, 2017).

According to several authors, employees who posses wide range or specific skills and/or are well educated for their work position are more likely to feel engaged and satisfied at the job when challenged at work, having resourceful environment, being recognized for achievements and encouraged to use fully their knowledge and skills (Rich et al., 2010, Xanthopoulou et al., 2009, Kampf et al., 2017, Hitka et al. 2015). In the context of the range of tasks that employees perform, Layear and Gibbs discuss the effect of narrowly defined jobs on the person-job fit. In centralized organizations with functional organization structures based on units and subunits the job designed tend to be more narrow, closely related to knowledge and skills needed only for specific subunit and thus are more suitable for narrowly skilled employees (Lazear and Gibbs, 2009). On the other hand many innovative and high performing organization show that decentralized decision-making leads to increase in employee performance (Rajan and Wulf, 2006). These corresponds with the process management approach, which keeps the focus on processes, not on individual activities. The main principle of organization on a process management approach is not based upon the principle of labor division, but on the principle of integration of activities into integrated processes. (Oborilová, 2013) The process model is based on a relatively large organizational structure that allows the operational teams to be defined. In a process-oriented organizational structure, process teams with considerable autonomy work on the basis of the enterprise's business principle. (Papulová, Gažová, 2015)

Various imbalances in work environment whether it is the shortage of skills or overskilling is referred to as skills mismatch. Skill mismatch occurs when the supply and demand of skills do not fit each other in any direction (Cappelli, 2015). Current research state in the topic of employee mismatch shows, that most surveys focus on skill gaps and individual characteristics, training practices or recruitment practices (e.g. continuing vocational training survey, CVTS; UK employer skill survey; European company survey, ECS), however the role of management and managerial skills and its effect has not had enough attention in the research.

Several authors highlight the importance of organizational part in employee mismatch and the deficiency in knowledge given the personnel policies and their impact on employee mismatch and skill utilization (Cedefop, 2012; Oyer and Schaefer, 2011, Jankelová et al., 2017). Perceived overskilling or overqualification of an employee may not rise only from wrong selection of the employee. Another point of view on overskilled and overqualified employees rises from the opportunities and positive effects of surplus knowledge and skills of the employee. These however must be utilized in order to provide the company additional benefits. This concerns the job design perspective, while some authors state that the emergent issue of overqualification is clearly the result of poor or inadequate job design (Fine and Nevo, 2011, Erdogan et al. 2011).

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Job design and skill utilization

Many authors based on their research have clearly stated that person-job fit plays a critical role in organizational effectiveness because the fit increases employee's satisfaction which lead to higher commitment to the organization. (Hambleton et al., 2000, Lauver and Kristof-Brown, 2001, Hackman, Oldham 1975). These characteristic also imply the outcome of higher employee engagement in the organization.

Job design can be understood as a human resource management tool that describes the content on person´s work tasks, activities, responsibilities and their organization in the context of achieving expected individual, group and organizational outcomes (Grant & Parker, 2009, Durai, 2010). According to Tims and Bakker the traditional approach to job design was up-bottom based on managerial responsibility to design employee jobs (Tims and Bakker, 2010). This approach has been confronted with current specifics of work and organizational environment, which are specific with the context of high intensity and dynamism of changes as in the external environment of the organization, also in the internal environment, meaning job requirements or task intensity and complexity.
Some authors discuss the extend of employees involvement in their job design, arguing that their proactivity in so called job crafting may result in beneficial cooperation with management in order to provide the employee a satisfactory job, tasks and responsibilities (Fuller, Marler and Hester, 2006; Tims and Bakker, 2010; Parker & Collins, 2010; Poór et al. 2018) This cooperation leads to matching the needs and abilities (skills) with the opportunities and demands from the company environment. In the context of satisfactory utilization of employee skills is often spoken its impact on employee creativity (Lin and Liu 2012; Zhou and Hoever 2014; Coelho and Augusto, 2010).

The need for a more free and open organization, where employees are given room for self-realization, cooperation and the application of entrepreneurial practices within the organization, is emphasized in the approach referred to as intrapreneurship. Several empirical studies show the important role of intrapreneurship for organizations. (Kubišová, M., Holienka, M. 2016)

Intrapreneurial climate helps to create a workforce that can maintain its competitiveness and promote a culture conducive to high achievement. It brings a lot of advantages to employees as well, mainly independence and flexibility (Zeldes, 2013). Stopford and Baden Fuller (Stopford, 1994) emphasize five characteristics of intrapreneurial environment, namely proactiveness, learning ability, team orientation, learning capability and willingness to improve. What is more, intrapreneurial organizations promote teamwork of various specialists and support competitive rivalry (Holienka, Kubišová, 2014). Holienka and Kubišová highlight, that building the intrapreneurial environment can be very challenging especially for larger companies.
According to results of study by Tims et al., the predefined tasks in job definition do not leave the room for employees to best fit their characteristics to the job. Instead of designed jobs for employees, the authors argue, employees should also search for opportunities how to use their own abilities and skills in the best possible way (Tims et al., 2015).

Following the literature gap in the interconnections between perceived overeducation or overskilling in the context of HR, and the current state of knowledge, the findings of our article call for intensifying and extending this researched area.

2. Research methods

The aim of this article is to analyze the possible impact of HR management and its practices on job mismatch based on extensive research of secondary data analyzing mismatch specifics for European countries. Based on the analysis we present the relations between mismatch and quality and reliability of managerial work and competencies. Within secondary data we collected and analyzed results from several studies and surveys from OECD data, PIAAC (The Programme for the International Assessment of Adult Competencies survey),

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International Executive survey, Global Competitiveness report and European Company Survey. These surveys present wide country range results which provides us possibilities to understand the effects and relations in the topic of mismatch on cross-country level. This allows us to detect dependencies that may affect the reason for the issue of job mismatch in general, thus the results of our study may be beneficial for all countries within this context.

The research was complemented with our own primary research that is in line with world and European studies and further specifies the current issues of employees in the question of employment and job changes. Own research data were collected in 2018 as a part of a research project. Research tool used was a questionnaire which was directly distributed to HR managers of companies in Slovakia. Research sample consists of 217 questionnairs distributed to Slovak companies of which 200 where complete. From the research sample 116 companies represented industry sectors, 58 sectors of services and 26 from other sectors. The research sample was also categorized based on company maturity, while for the purpose of our research we compared group of 58 starting and growing companies and 142 mature companies. The sample group consisted of 74 SMEs and 126 large companies.

The main research question was focused on the reasons for changes in job positions, being "What in your company affects the most the changes in job positions (changes in work content)". Respondents could choose from following options, while they could select all fitting answers (YES/NO):

- Change of strategic priorities / objectives;
- Growth of the organization;
- Change in processes / business activities;
- Change in business model of the company;
- Automatization/digitalization;
- Change in the quality or structure of school graduate profiles;
- Problems filling specific expert positions;
- Change in laws or business environment;
- Nothing.

For the statistical evaluation of research results on the sample of 200 Slovak companies we used Chi squared test of independence to determine the significance of differences among sample groups (sector, maturity, size of company). We further calculated Phi coefficient to present the extent of relation between examined variables. The statistical significance was set at level $p<0.05$. Both statistical tests are suitable for analysis of qualitative data in our research. Fort the research purposes we chose to analyse Slovak companies, while Slovakia ranks among countries with the lowest level of retaining and attracting talented employees while ranks highly in perceived overeducation. Throught the complementary analysis we aim to identify whether the attitude towards job design is uniform or the differences occur at different business categories.

3. Research results

In the Science and Policy Report of European Commission focused on occupational mismatch in Europe, the authors presented PIAAC dataset (collected by OECD) analysis based on computing 21 mismatch measures or indicators. Based on the variables the type of mismatch was divided into educational mismatch and skill mismatch. Educational mismatch variables were focused on the education level of individual while skill mismatch variables focused on the levels of numeracy and literacy and their utilization. The survey assessed working age adults (16-65) in 24 countries, excluding students or in internship adults, with the final sample size around 55,000 respondents. (Filsi, et al. 2014). The figure 1 presents percentage of matched individuals, skill mismatch and educational mismatch in 17 EU countries.

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Country	Matched	Severely mismatched	skill mismatch Over skilled	education mismatch Over educated	Mixed
Austria	0.383	0.079	0.184	0.287	0.067
Belgium	0.324	0.080	0.207	0.307	0.082
Cyprus	0.398	0.094	0.176	0.280	0.051
Czech Republic	0.396	0.075	0.193	0.253	0.083
Denmark	0.326	0.097	0.180	0.313	0.084
Estonia	0.302	0.098	0.165	0.349	0.087
Finland	0.362	0.088	0.251	0.210	0.089
France	0.296	0.062	0.129	0.431	0.083
Germany	0.394	0.079	0.155	0.293	0.079
Ireland	0.326	0.099	0.129	0.379	0.067
Italy	0.501	0.034	0.116	0.319	0.030
Netherlands	0.380	0.076	0.249	0.223	0.073
Poland	0.447	0.050	0.169	0.276	0.058
Slovak Republic	0.393	0.064	0.247	0.222	0.075
Spain	0.349	0.076	0.102	0.416	0.057
Sweden	0.374	0.096	0.217	0.227	0.085
United Kingdom	0.324	0.080	0.164	0.345	0.088
EU17 (unweighted)	**0.369**	**0.078**	**0.178**	**0.301**	**0.072**

Fig. 1. Percentage of individuals in different typologies of job mismatch
Source: Flisi et al. (2014)

In the figure 1 we have observed several important results. The countries surveyed may be divided into two groups. First group achieves higher percentage of overskilled compared to overeducated. In this group Finland (25.1 per cent), Netherlands (24.9 per cent) and Slovak Republic (24.7 per cent) have the highest percentage of overskilled individuals compared to other countries. The second group consists of countries where there is more overeducated individuals then overskilled. In this group the highest percentage of overeducated can be observed in France (43.1 per cent), Spain (41.6 per cent) followed by Ireland (37.9 per cent) and Estonia or United Kingdom. Interestingly when the country achieved high percentage in one type of mismatch it has achieved a low percentage in the other. When we look at Slovak Republic, Finland or Netherlands they all have the lowest percentage in education mismatch. The same pattern can be observed in France, Spain or Ireland where they achieve the lowest percentage in skill mismatch.

Figure 2 presents the position of countries based on the proportion of skill mismatch and education mismatch. Similarities can be observed in a group of Slovak, Czech and Polish respondents, where they all have much higher proportion of overskilled individuals then overeducated. Contrast may by Spain, Ireland or Italy which have the lowest proportion of skill mismatch compared to education mismatch.

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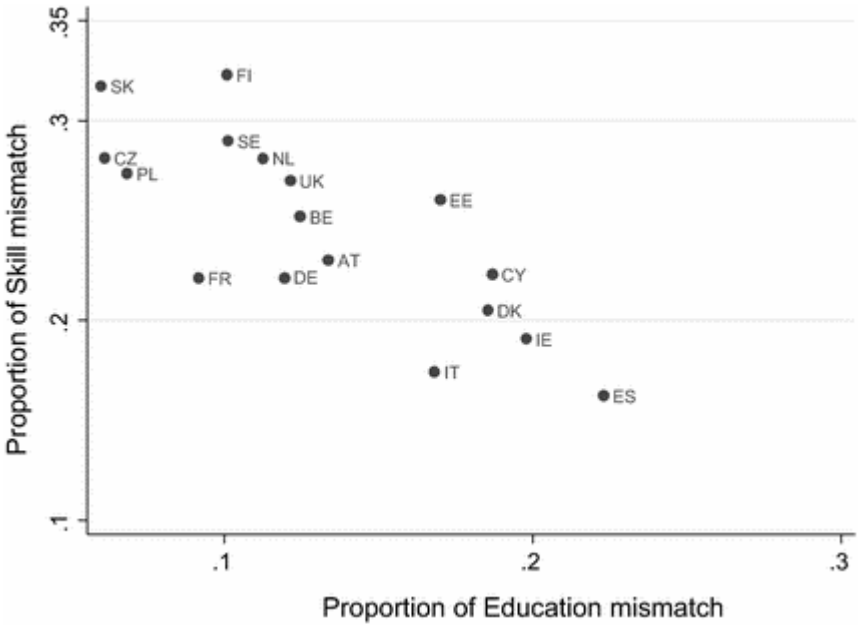

Fig.2. Proportion of skill and education mismatch
Source: Flisi et al. (2017)

Similarly to the question of skill mismatch we looked at the results of study by Dickerson et al. based on the dataset of European Skills and Jobs Survey (ESJS) carried out by Cedefop (2012). Based on the data, authors have developed an index of skill underutilization which ranges from 0 to 5 (5 meaning skills are a lot higher than required). Figure 3 presents average indexes in cross country comparison. (Dickerson et al, 2015)

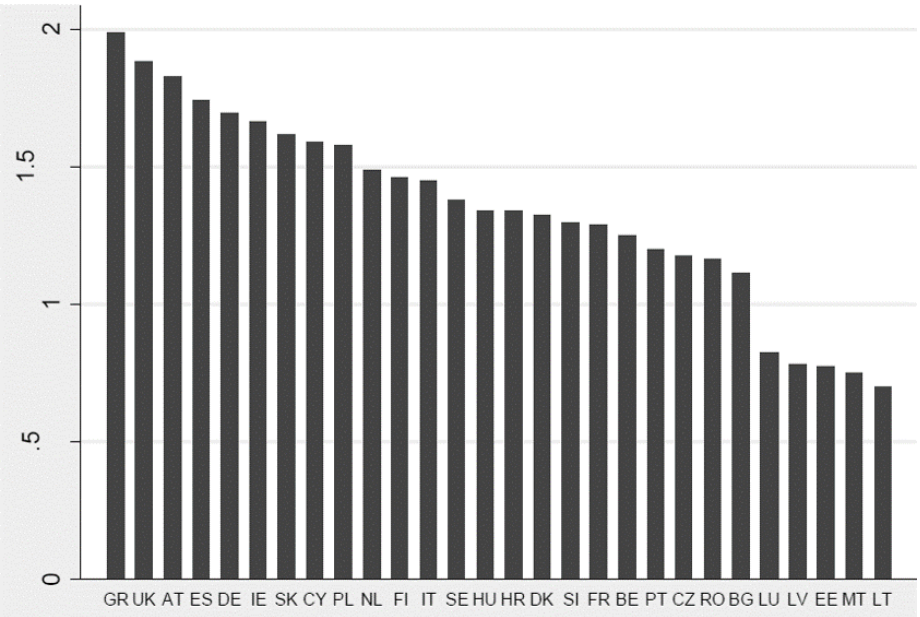

Fig. 3. Index of skill underutilization
Source: Dickerson et al. (2015).

Compared to previous results presented in Figure 1, we may observe some disparities in the context of skill mismatch. These disparities may be a result of different survey question, whilst in the analysis by Flisi et al. the

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final percentages where computed by adding several indexes (in skill mismatch mainly focused on literacy and numeracy), in Dickerson et al. study where used specific question of perceiving skill utilization of an individual at the job, based on the main question „"Overall, how would you best describe your skills in relation to what is required to do your job?" However when we look at results of Finland, Netherlands and Slovak Republic (achieving highest percentages in skill mismatch in Figure 1), we can see that also in the study of Dickerson et al. they rate above average index, Slovak Republic ranking as seventh highest skill underutilization. In this study rank very high United Kingdom, Spain or Ireland which have high percentage of overeducation, thus individuals from these countries may also perceive that their skills are not adequately utilized.

Based on the literature review we further focused on examining management role within the complex question of job mismatch and the possible connections. Using results of Cranfield Network on International Strategic Human Resource Management (Cranet) we looked at the results of study presented in International Executive Report 2017. The survey was conducted in 2014/2015 on 35 countries and more than 6000 respondents (mostly HR managers). The survey was focused on analyzing HR practices and activities. Figure 4 presents the differences among countries surveyed in the question of responsibilities of management in recruitment and selection.

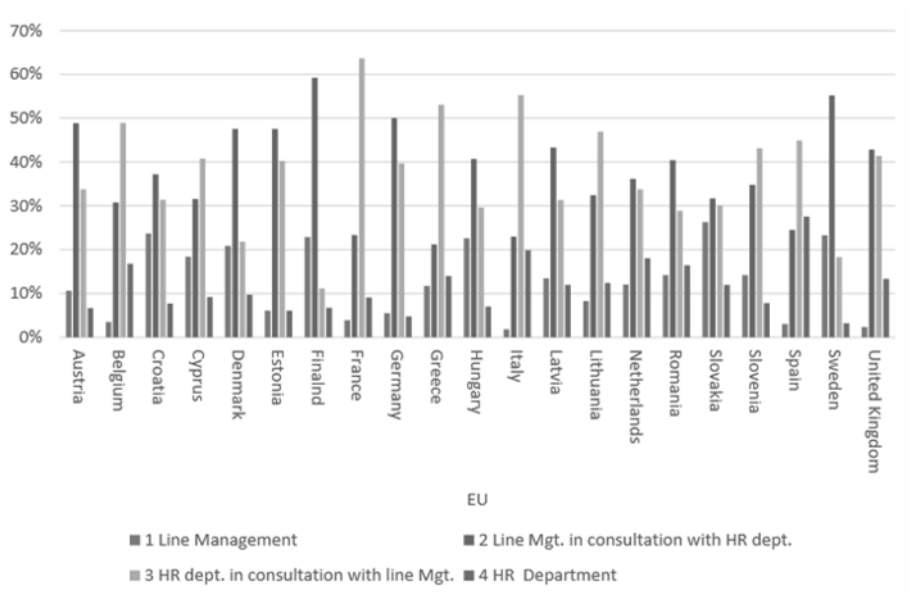

Fig. 4. Primary responsibilities for recruitment and selection
Source: Cranet (2017)

These results show interesting differences between countries, especially in comparison of the role of line management versus HR management. While line management alone has the primary responsibility for recruitment and selection mostly in Slovak republic, Croatia, Sweden, Finland or Hungary it has the lowest in United Kingdom, Spain, Italy or France. On the other hand HR department is most responsible for recruitment and selection in Spain, Italy, Netherlands, and Belgium. In developed and high performing, strongly innovative countries (based on Innovation Scoreboard) the most often possibility was line management in consultation with HR department. This was however not very often in countries like Spain, Greece, Italy, France or even Slovak Republic. Further in Figure 5 we looked at primary responsibility for pay and benefits and the differences among countries.

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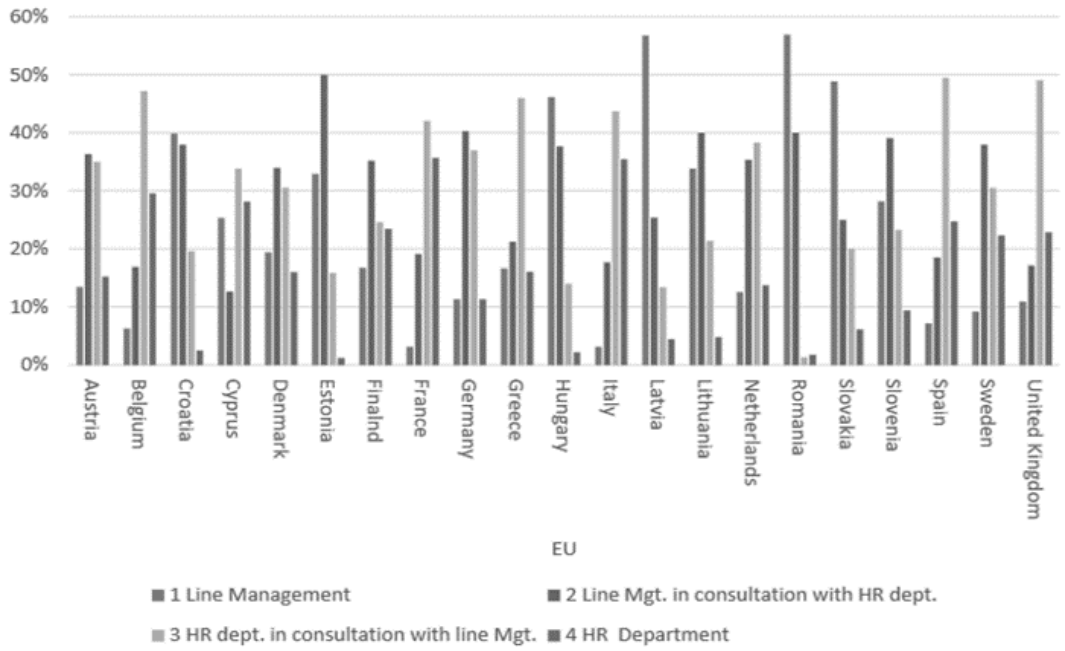

Fig. 5. Primary responsibility for pay and benefits
Source: Cranet (2017)

The highest contrast can be observed also in the option of line management having the primary responsibility for pay and benefits. It is most common in Romania, Latvia, Slovak Republic and Hungary. Solely HR department is responsible for pay and benefits mainly in Italy, France, Belgium or Cyprus. Yet in high performing, innovative countries such Germany, Austria, Sweden, Netherlands, Denmark or Finland it leans more towards the combination of both managements.

From the comparison of mismatch either skill or educational we can see that most countries that are on the edge with responsibilities of solely HR or solely Line management tend to have on or other extreme very high – skill or education mismatch in mismatch reports.

Further we looked at result of The Global Competitiveness Report 2016-2017 published by World Economic Forum. We looked at selected indicator of "Reliance on professional management" where respondents answered to the question "In your country, who holds senior management positions in companies? [1 = usually relatives or friends without regard to merit; 7 = mostly professional managers chosen for merit and qualifications] (The Global Competitiveness Report 2016-2017). Results of selected countries are presented in Table 1.

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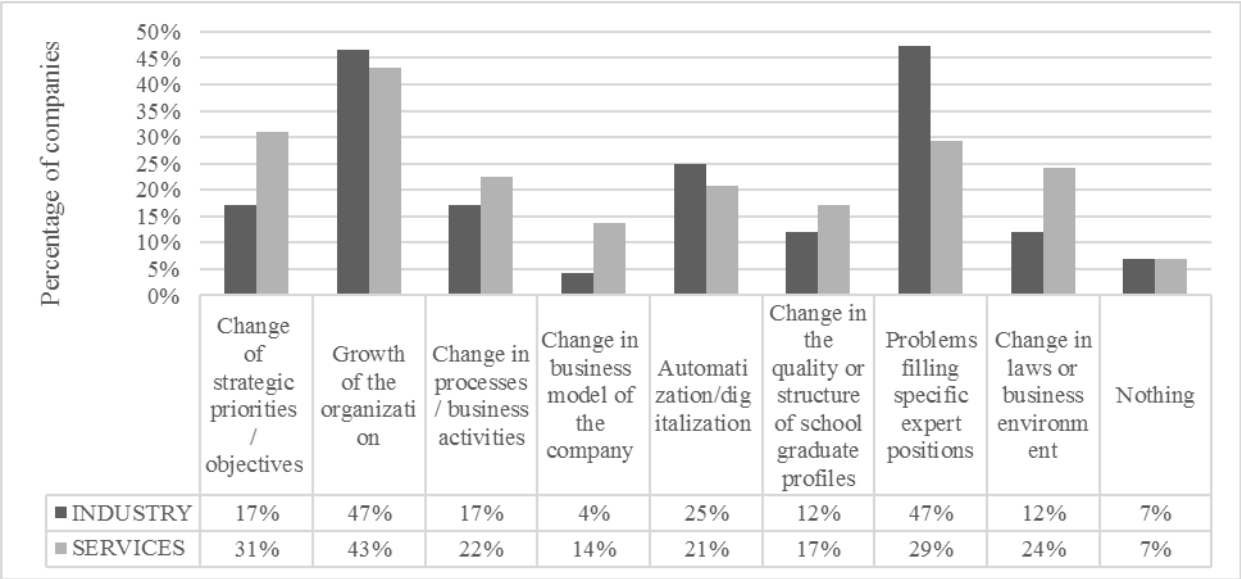
Tab. 1. Reliance on professional management according to Global Competitiveness Report

	value	*rank/138*
Finland	6.3	1
Sweden	6.3	2
Netherlands	6.2	6
Ireland	6.2	7
Switzerland	6.1	8
Germany	5.7	15
Austria	5.5	23
France	5.5	22
Estonia	5.3	27
Czech republic	5.3	29
Spain	4.7	37
Slovak Republic	4.5	52
Poland	4.3	64
Italy	3.7	102
Hungary	3.6	108

Source: The Global Competitiveness Report 2016-2017

While this question is focused on senior management solely it may give us a glance at the situation in selected countries. While the trust in quality of management is very high in innovative countries (ranked as innovation leaders and strong innovators in European Innovation scoreboard), it is much worse in countries like Spain, Slovak Republic, Poland, Italy or Hungary (which rank as moderate innovators). In the context of our article, the quality of management based on true capabilities and qualification may strongly impact the way employee skills are utilized as well as the percentage of job-person fit. If in these countries managers tend to have these positions regardless to merit it may have large effects on the quality of their decision making in the context of business prosperity and long term sustainability. To complement the understanding why managers decide to change job positions we looked at the sample of 200 Slovak companies. Table 2 shows the distribution of answers of companies among industry sectors and sectors of services.

Tab. 2. Percentage comparison of companies from industry and services in reasons for change in job positions



Source: own processing

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As a main reasons that affect changes in job positions see most Slovak companies the growth of the organization, where there is not seen a large difference between industry and services. For industry however is important factor at the same level "Problems filling specific expert positions" which is observably more than among services. For services it was in case of more 31 per cent the change of strategic priorities/objectives followed by problems filling specific expert position and changes in laws or business environment. The least companies saw change in business model or change in the quality or structure of school graduate profiles as the reason for job position changes. Following table 3 presents statistical results of analyzing differences between industry and services.

Tab. 3. Statistical results of comparison between industry and services

	Industry	**Services**	**Chi square**	**p value**	**Phi coefficient**
Change of strategic priorities / objectives	17%	31%	4.31	0.04*	+0.16
Growth of the organization	47%	43%	0.19	0.66	-0.03
Change in processes / business activities	17%	22%	0.67	0.41	+0.06
Change in business model of the company	4%	14%	5.03	0.03*	+0.17
Automatization/digitalization	25%	21%	0.4	0.53	-0.05
Change in the quality or structure of school graduate profiles	12%	17%	0.87	0.35	+0.07
Problems filling specific expert positions	47%	29%	5.22	0.02*	-0.17
Change in laws or business environment	12%	24%	4.17	0.04*	+0.15
Nothing	7%	7%	0	1	0

Source: own processing

Significant differences were observed only in four options. Companies in the sectors of services see a reason of change in strategic priorities/objectives significantly more for change in job positions than companies in industries, as well as change in business model and change in laws or business environment. On the other hand companies in industry see significantly more the problems in filling specific expert positions as a reason for change in job positions than companies in services with the difference being 18 per cent.

To see if the differences occur also on the basis of the firm size we have compared SMEs and large companies as well, presented in Table 4. Significant difference was found in the question of change in business model, where large companies see this as a reason for changes in job positions significantly more than SMEs (chi-square statistic is 3.8966 with p-value 0.048385). Interestingly, while problems in filling specific expert positions are often a reason for change in job positions there is no difference between SMEs and large companies.

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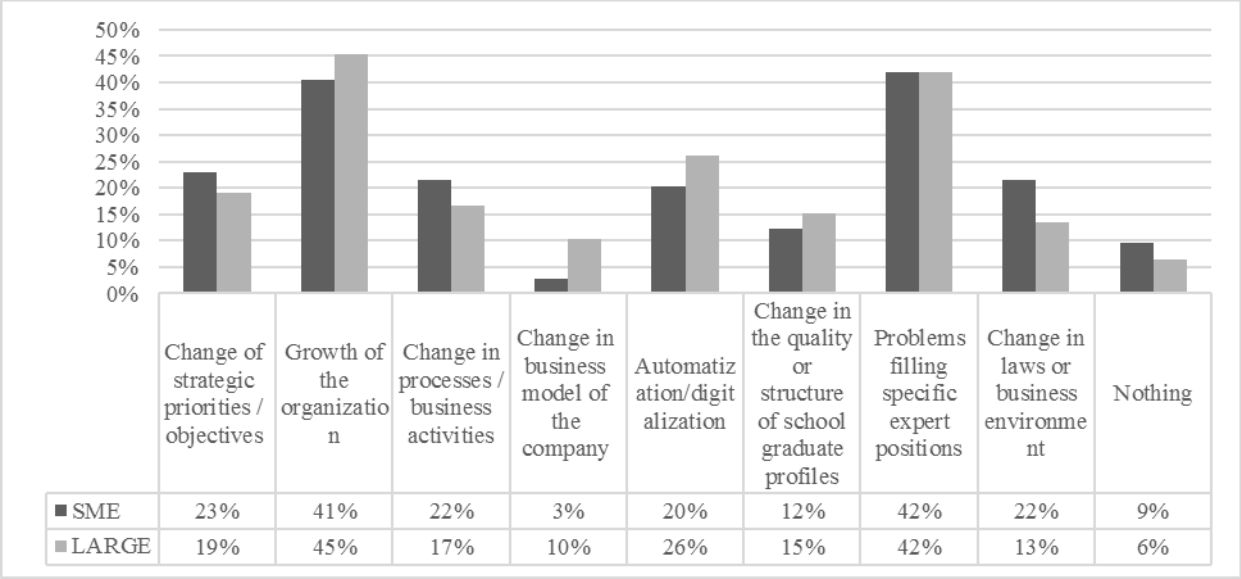
Tab. 4. Percentage comparison of SMEs and large companies in reasons for change in job positions

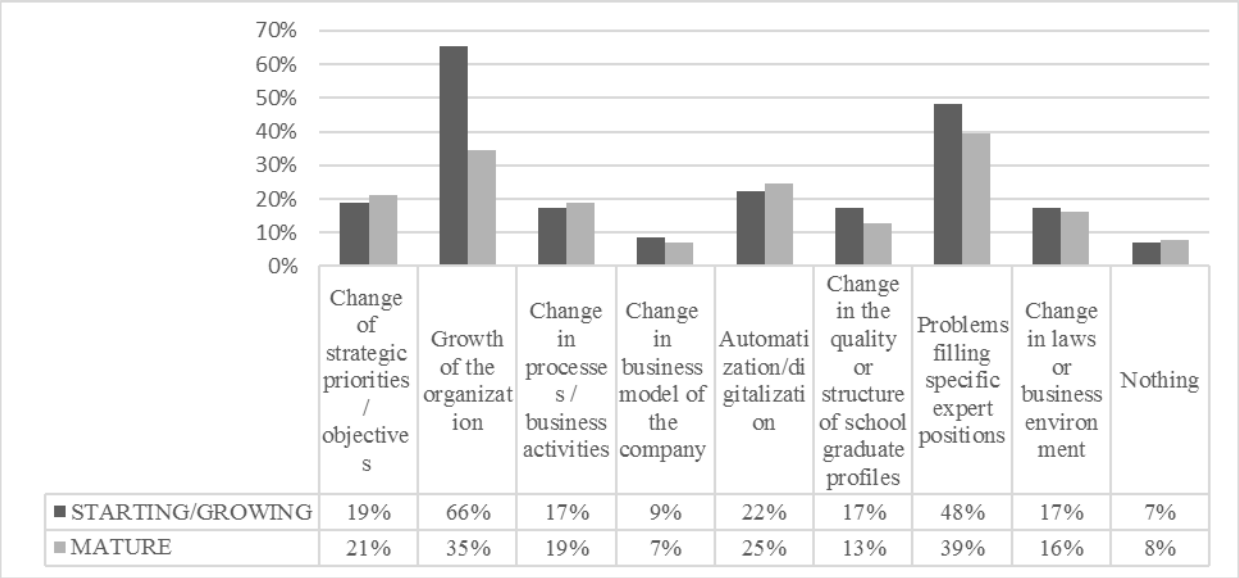


	Change of strategic priorities / objectives	Growth of the organization	Change in processes / business activities	Change in business model of the company	Automatization/digitalization	Change in the quality or structure of school graduate profiles	Problems filling specific expert positions	Change in laws or business environment	Nothing
SME	23%	41%	22%	3%	20%	12%	42%	22%	9%
LARGE	19%	45%	17%	10%	26%	15%	42%	13%	6%

Source: own processing

When looking at behavior on the basis maturity level of companies statistically significant difference (Chi square 16.11, p value <0.0001, Phi 0.28) was found only in option growth of organization as the reason for changes in job positions, where starting/growing companies perceive this by 29 per cent more than mature companies. Percentage comparison are presented in table 5.

Tab. 5. Percentage comparison of starting/growing and large companies in reasons for change in job positions



	Change of strategic priorities / objectives	Growth of the organization	Change in processes / business activities	Change in business model of the company	Automatization/digitalization	Change in the quality or structure of school graduate profiles	Problems filling specific expert positions	Change in laws or business environment	Nothing
STARTING/GROWING	19%	66%	17%	9%	22%	17%	48%	17%	7%
MATURE	21%	35%	19%	7%	25%	13%	39%	16%	8%

Source: own processing

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Discussion

Presented results of educational and skill mismatch as well as the role of line and HR management and reliance on management quality show several differences between countries. It must be taken into account, that there is not only one factor that influences the state of mismatch and each country specifics may result in higher differentiation of these factors among countries. We have focused our attention on the role of management and its possible influence on the phenomenon of skill or educational mismatch. We have observed that countries like Slovak Republic, Finland, Netherlands or Sweden have similarly higher percentage of overskilled individuals rather than overeducated. Finland and Slovakia are similarly sized countries based on population, with Sweden and Netherlands having higher population but still being middle sized. On contrary countries which have larger proportion of overeducated individuals are mostly very large (by number of inhabitants) such France, Italy, Spain or United Kingdom. The similarity between France, Italy and Spain may be seen in the lower proactivity and very high youth unemployment rates that can affect the perceived phenomenon of over education.

While Slovak Republic seem to be similar to Finland, Sweden or Netherland in mismatch statistics it is markedly lagging in the innovation performance of the economy. Finland, Sweden and Netherlands, all having more overskilled individuals are the Europe's strongest innovators, but Slovakia ranks very much behind. According to macroeconomic indicators, Slovakia has been one of the fastest growing economies in recent 15 years, yet it has not moved in the innovation performance compared to other countries. With these information and high percentage of overskilled individuals the role of management and their capabilities must be questioned. Our assumptions are supported by the intensity of involvement of HR managers into development of business strategy presented in Figure 6 as well as the approach to decision-making on daily tasks presented in Figure 7.

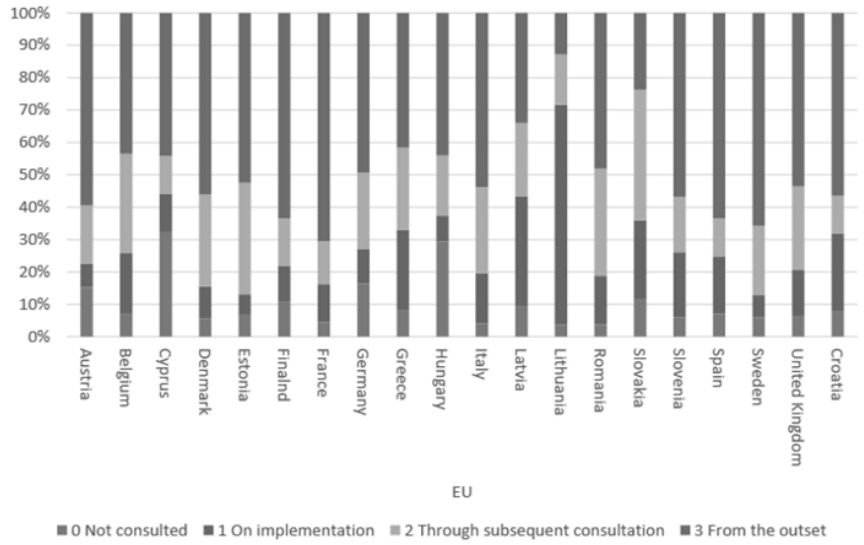

Fig. 6. Stage at which the person responsible for personnel/HR is involved in development of business strategy
Source: Cranet (2017)

These studies clearly present that while in Finland or Sweden HR is involved to development of business strategy from the outset in more than 60 per cent of companies, in Slovakia in less than 25 per cent. Similarly joint decision-making in daily tasks is most often in Finland, Sweden or Denmark (most innovative countries) but it is almost the least in Slovak Republic. For Romania, Croatia and Slovak Republic is top-down the most common way of decision-making in daily tasks.

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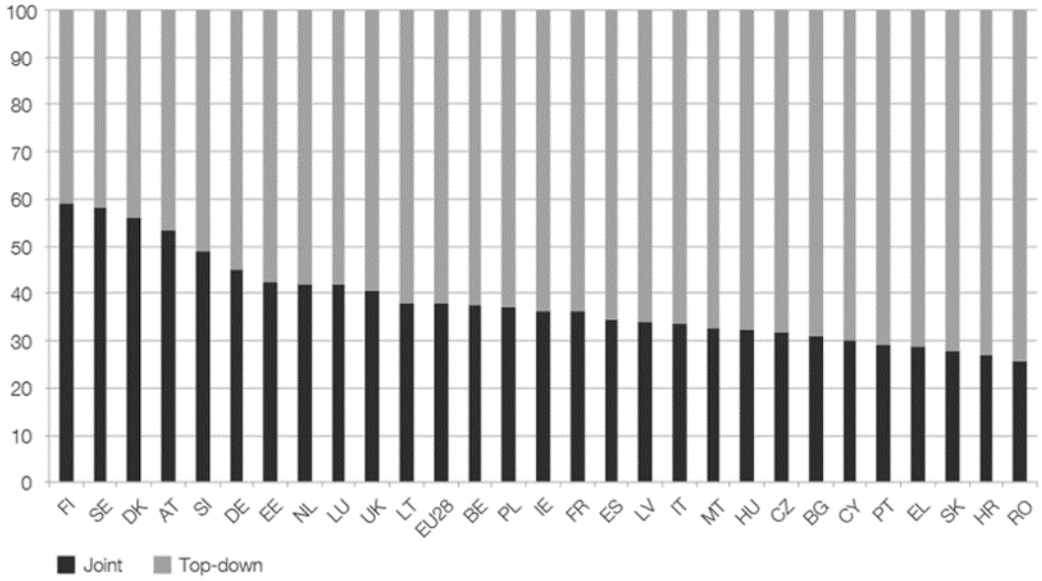

Fig. 7. Establishments types – decision-making in daily tasks (in %)
Source: 3rd European Company Survey, 2015

Slovak economy is specific with the large number of foreign investors than enhance the economy. In the expansion of activities of companies and foreign investors and in the development of the companies that come to Slovakia, the top-down approach and the involvement of only the line managers lead to skills mismatch. Despite that we have been among the fastest growing economies in the last 15 years, we are not lining up in innovation. Employees recruited do not fit their jobs perfectly and cannot fully use their potential. The creation of a business strategy does not take into account HR which results in the fact that potential of the human capital is not used from the beginning.

The fact that the problem is not in the education is also confirmed by the state, where Slovak Republic attracted many foreign companies and also dramatically decreased its unemployment from more than 18 per cent in 2004 to 6.6 per cent in 8/2018. Weststar (Weststar, 2009) confirms our premise and suggests that attention should be shifted away from education reform towards considering the impact of workplace or job design. Similarly according to OECD study outcomes "a competitive and open business environment that favors the adoption of superior managerial practices is associated with lower skill mismatch"(McGowan and Andrews, 2015). The importance of skill utilization is not only from the point of view of general economic and innovation performance. Appropriate skill utilization is a motivating factor for an individual and perfect job match leads to increase in one´s creative, satisfaction as well as performance. Thus work that is experienced as motivating and meaningful by employees is found to also contribute to the organization's core (Steger, Dik, & Duffy, 2012).

Based on study by Qunitiny, no significant relationship between skill mismatch and firm size was found which is in line with findings of our research, where no significant difference was found in the question of problems in finding specialists and experts for work position between SMEs and large companies. Quintini further suggests that better human resource policies at large firms can make it possible to transfer their workers to better matches inside the firm, lowering mismatch (Quintini, 2011).

It is especially important for foreign investors to question the traditional job design characteristic. While Slovak employees are often underutilized it is up to the employers to review their current processes coming from top management to HR and create an organizational structure and culture that allows individuals to co-create their jobs and fully utilize their skills. This is especially important because of the fact that Slovak Republic performs extremely low in the ability to either attract or retain talent, as presented in Table 6. This means that not only is

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Slovak Republic not able to attract skilled and talented workforce from foreign countries, Slovak companies are not even able to retain the talented, which results in migration of talent to foreign countries.

Tab. 6. Country comparison in capacity to retain and attract talent

	Country capacity to retain talent		*Country capacity to attract talent*	
	value	rank/138	value	rank/138
Switzerland	6.1	1	6.3	1
Germany	4.8	17	16	4.7
Austria	4.6	24	4.0	34
Czech republic	3.6	59	3.3	70
Slovak Republic	2.6	123	2.0	132

Source: The Global Competitiveness Report 2016-2017

The cheap labor force and the low level of higher education of the population in the past could still have an impact on the attitude towards Slovak employees. This approach is though highly outdated and may result in increase in gap between high performing economies and Slovak Republic especially in the era of dynamic changes in environment due to impact of Fourth Industrial Revolution. Workplaces should be reformed in order to create better job-person match and provide employees with adequate levels of autonomy, control and responsibility on individual as well as team level. To gain the sustainability of skill utilization it must go hand in hand with education as on the country level as on company level in form of lifelong learning. Importance of education to create individuals with expert skills is supported by our findings where more than 40 per cent of Slovak companies find difficulties to fill specific expert positions.

Conclusion

The problem of job mismatch is the result of poor adaptability of companies to long-term changes and transformations in their economies. Choosing and recruiting staff to fill specific positions has historically accelerated the involvement of line managers in these processes, which based on our findings led to generate skill mismatch. Line managers tend to search candidates for a job based on education, previous experiences, and practical skills, while modern human resource management trends emphasize the importance of transferable capabilities that the modern education system also focuses on. This is also evidenced by the results of our research, which point to this problem mainly from the point of view of the industry for which the occupation of niche positions is specific. In the job positions of services that are more widely described and with the broader range of usability capabilities, the problem is not so big. Education mismatch occurs in countries where was an increase in educational level of population or high unemployment, which did not force companies to adapt to changes. In reflection to ongoing transformation of business environment driven by disruptive changes, this topic calls to follow examples, where countries have already successfully implemented changes in internal HRM processes.

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TOWARD THE BEST PRACTICE EMISSIONS REDUCTION IN AN EMERGING ECONOMY: AN ANALYSIS OF CEMENT MANUFACTURING IN INDONESIA*

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Abstract. Cement manufacturing is an energy-and carbon-intensive process and a prominent contributor to global anthropogenic greenhouse gases (GHGs). Within emerging economies, this industry's considerable potential to pollute can be exacerbated by outmoded plant or practices, and management's limited capacity to remediate. In this context, the current study analyses the case of Indonesia's leading producer, recording variations in greenhouse gas (GHG) sources to pinpoint opportunities for reduction. Emissions, measured 20% higher than the 2030 global industry target, occur from the calcination process, abetted by fuel combustion. Reductions should be focused on reducing the clinker-to-cement ratio and promoting the uptake of alternative fuels. Avenues lie in increasing the use of clinker substitutes such as fly ash and limestone, and employing fuels derived from waste and biomass. Both sources are abundant in Indonesia. Further declines in GHGs could be achieved through technological innovations such as the upgrading of kilns. The inquiry provides recommendations for emission mitigation in the cement industry not only in Indonesia but also in other developing countries.

Keywords: emission intensity, reductions, clinker substitutes, alternative fuels, kilns

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JEL Classifications: L61, O14, Q56

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1. Introduction

Emerging economies can be significant contributors to global GHG growth (Olhoff & Christensen, 2018). Indonesia, as part of that grouping, is rated as the world's eighth largest emitter in absolute terms, though GHG output per capita only ranks 100th. By 2030, the national government is committed, through domestic funding, to reduce 29% of emissions based on 2000 levels (Janssens-Maenhout et al., 2017; Dasih & Widodo, 2019). Energy use is one of the priorities, together with control of forest fires and peatland degradation (Haryanto & Martawardaya, 2015). Approximately one-third of GHGs from energy consumption comes from the industrial sector (BPPT, 2016). It has been prioritized for emission mitigation by the government, especially in strongly-contributing industries such as cement, iron and steel, and paper (Iklim, 2010; Ke et al., 2012). Cement-making is the most significant of these fields, accounting for 20% of national total manufacturing GHGs, specifically CO_2 (Panjaitan et al., 2018). It consumes about 7% of the total energy supplied in Indonesia, comprising nearly 40% of its total production costs (Haryanto & Martawardaya, 2015; Panjaitan et al., 2018). Coal is the focus and usage had risen from 10.54 million in 2010 to 16.16 million tons in 2018 (Ali et al., 2011; Ke et al., 2012; Haryadi & Suciyanti, 2018). This increase is driven by the growing demand for cement, resulting from economic growth and the continued effort to provide adequate infrastructure in the country (Iklim, 2010; Ke et al., 2012). It is estimated that the industry's emissions will quadruple by 2030 compared with the 2005 level (Iklim, 2010; Ke et al., 2012; Olivier et al., 2017). As a consequence, it has been prioritized for attention by the Government (BPPT, 2016).

Studies have been conducted to examine the potential for emission reduction in the global cement industry (Hasanbeigi et al., 2010a; Iklim, 2010; Ali et al., 2011; Ke et al., 2012). The International Energy Agency (IEA) concentrates on four measures, namely, improving thermal and electric efficiency by adopting state-of-the-art technologies, encouraging clinker substitution, using alternative fuels (AFs) which have lower carbon impact or are carbon-neutral, and involving carbon capture storage (CCS) technology (WBCSD-IEA, 2009). Investigations from an engineering technology perspective are becoming more numerous (WBCSD-IEA, 2009; IEA, 2017). Yet, most measures are capital intensive and pose inherent difficulties in a developing economy. Accordingly, industry has limited funds for improvements to achieve anything near world best practice (Haryanto & Martawardaya, 2015; Panjaitan et al., 2018).

Grubler (2012) states that policies or strategies applied in developed countries should not be directly translated to developing ones. It is important to realize that the transition will not always produce the same results if implemented elsewhere. In general, the existing process is probably uniform, but the exact mechanism of change is not understood. Therefore, policy-making needs to consider local conditions which usually have different factors influencing abatement options.

Several issues bear upon the industry's willingness to reduce its emissions. Financial gain or cost savings (e.g. products with lower cost and better quality compared with competitors) are dominant influences in adopting changes or innovations (Okereke, 2007; Urbancova, 2013), followed by complying with regulations, market demand, and moral/social concerns (Tsitsiragos, 2016). An overarching inquiry is needed to provide a framework for reducing emissions that is suitable for the conditions of the cement industry in Indonesia. It begins by presenting a GHG emissions inventory from the case study company in Indonesia, leading to identification of ways to foster mitigation.

Given this background, the present inquiry aims to chart the potential for energy reform and emission reduction in the Indonesian cement industry. Taking a case study approach, it assesses the environmental performance of the country's leading producer, which operates a series of plants across the archipelago and accounts for about two-thirds of the market (Board, 2019). Conscious of the operating constraints mentioned, the work evaluates the local opportunity to establish appropriate mitigation measures. The findings could assist other nations, which experience manufacturing conditions similar to those in Indonesia.

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2. Cement Production

Cement is a primary building material for infrastructure. Remarkably, this industry, viewed globally, produces around 5% of all human-made GHGs (WBCSD-IEA, 2009; Haraguchi et al., 2017). Strategic steps are required in carbon management to reduce pollution. The impetus is not only to meet government and international targets but also to improve competitiveness, enhance economic and social values and ensure a better environment.

Cement manufacturing falls into wet and dry modes. In the wet process, water is added to the raw materials to form a slurry, while the dry method prepares a fine powder by grinding and drying such inputs. It is the less energy intensive means, because the wet method needs extra heat input to remove moisture in the slurry (Ke et al., 2012).

The production process can be divided into the preparation of raw materials, followed by clinker and cement making (Figure 1) (Afkhami et al., 2015; Panjaitan et al., 2018). The basic ingredients, such as limestone, clay and correction materials, are crushed and ground to produce raw meal. A crusher is needed for crushing, while a roller mill grinds the mixture. To this point, mechanical force is paramount, powered by equipment which uses electricity supplied from outside the plant. Next comes the most energy-intensive process, clinker making. It starts with pre-heating to eliminate water content by utilizing hot gas from a kiln. The products move on to the heat- and emissions-intensive calcination stage in a rotating kiln to produce clinker. They will then undergo rapid cooling using air exchange. The resulting clinker is mixed with additives to produce cement (WBCSD-IEA, 2009; Afkhami et al., 2015; Panjaitan et al., 2018).

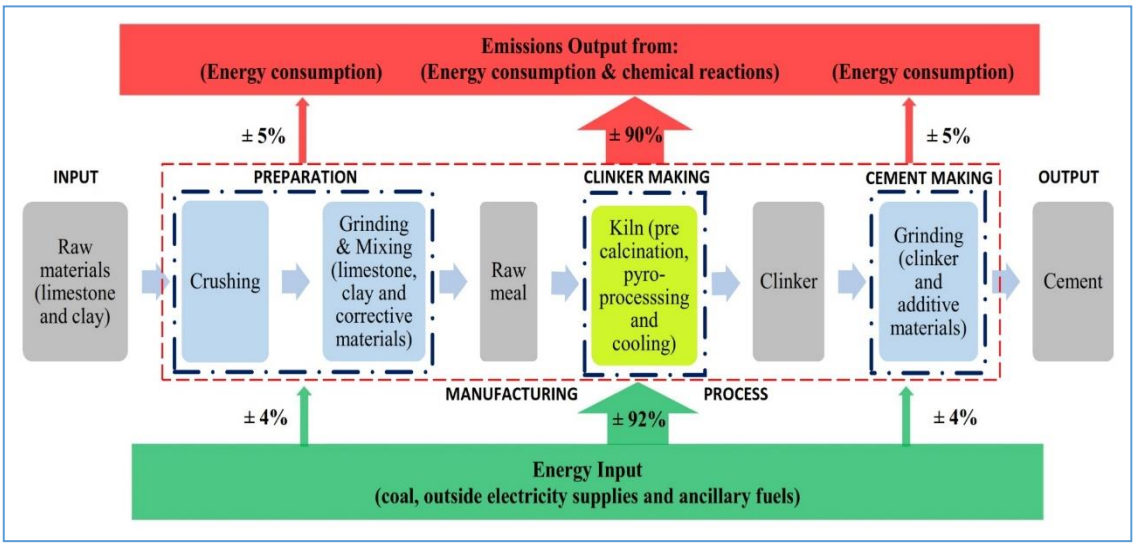

Fig. 1. The process of cement production
Source: Authors, based on (WBCSD-IEA, 2009; Galvez-Martos & Schoenberger, 2014; Afkhami et al., 2015; Stafford et al., 2016)

3. Computational Methods

The Indonesian government has set out its Minister of Industry Regulation No. 12/2012, which governs the reduction of cement emissions and has quantitative targets. However, it has not been followed by a scheme offering rewards for reaching goals or, otherwise, penalties. Some developed countries have implemented a carbon tax policy to encourage the use of alternative energy by making it cost-competitive with cheaper fuels. The Indonesian government has not yet implemented such a tax because it is concerned that it will reduce the

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performance of industries, which are essential contributors to state revenues. The economic and political environment in the nation is such that taxes or strict controls on the sector are ineffective or even impractical in seeking mitigation measures. A comprehensive study is required to find out how to incentivize companies to reduce emissions voluntarily.

An appropriate strategy is also needed in managing carbon to produce attractive and feasible abatement options for decision-makers. The study begins by taking an emissions inventory within the cement production process. It will lead to the identification and implementation of ways to foster mitigation. We collect and analyze data to examine the sources and amounts of emissions in the overall context of environmental performance. The abatement projections are derived by comparing inventory results with key indicators to achieve sustainability in the global cement industry, adjusting for local conditions. The paper does not discuss microeconomic issues but, instead, focuses on the practical reality of the cement industry in Indonesia. It is part of a comprehensive investigation that will result in a broader collection of studies, which will examine the potential for emission reductions and costs, and the response of management to emission reduction options.

Compared with developed countries, emerging economies have limited access to capital and lack the knowledge, public acceptance and government support to reduce emissions (WBCSD-IEA, 2009; Iizuka, 2015). Their advanced counterparts have pioneered solutions in the cement industry by adopting the latest aids, such as state-of-the-art kiln technology and CCS (Jordal et al., 2017; Nabernegg et al., 2017). These approaches complement the use of alternative fuels (AFs) (e.g., tires and industrial waste) (WBCSD-IEA, 2009; Bakhtyar et al., 2017). With this backdrop, we analyze the operations of the leading cement company in Indonesia with a view to reforming energy sources and targeting emission reduction.

3.1. Guidelines for Calculating and Reporting GHG Emissions

An initial issue is to examine and measure the sources of GHGs in cement production (Galvez-Martos & Schoenberger, 2014; Feiz et al., 2015). The Cement Sustainable Initiative (CSI)-World Business Council for Sustainable Development (WBCSD) has issued harmonized guidelines for monitoring performance, reporting, and calculating emissions for the industry worldwide (WBCSD, 2011; Geng et al., 2019).

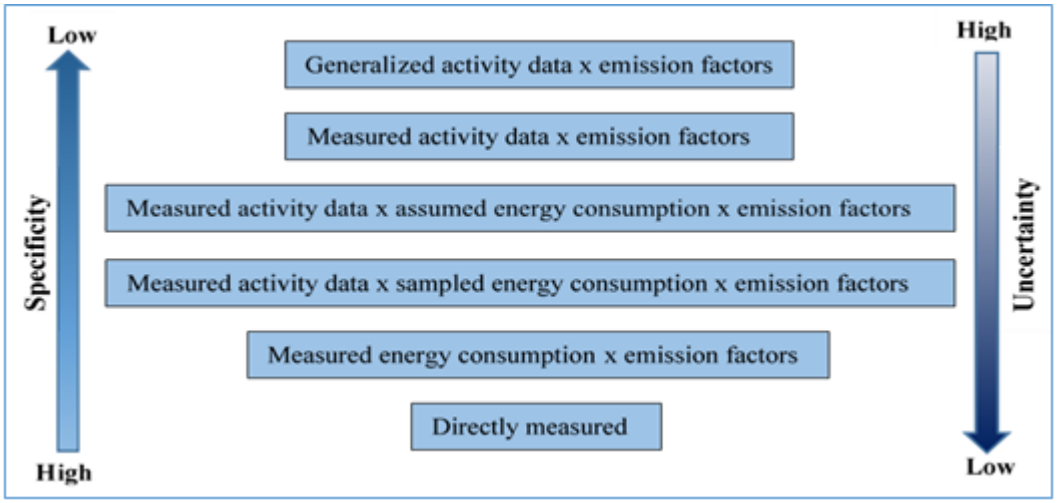

Fig. 1. Emissions measurement methods
Source: (Wright et al., 2011; Williams et al., 2012)

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Operating in about 100 countries, the CSI is a program of the WBCSD. It aims to develop management guidance and minimize the impact of cement production by addressing various issues to do with production inputs and outputs. The Initiative also provides accurate and detailed data that enable the industry to identify factors and levers that can influence emissions and develop practical climate mitigation strategies.

Andrew (2018) states that calculating emission intensity in the Indonesian setting often encounters problems caused by inconsistencies in the figures. The method used will be determined by the availability of specific information. Data provide different levels of specificity and uncertainty, as outlined in Figure 2 and the points below (Burritt et al., 2011; Wright et al., 2011; Society, 2012):

- Use of non-specific data such as the national average energy consumption and Intergovernmental Panel on Climate Change (IPCC) default emissions factors have the highest level of uncertainty and a low level of specificity.
- Use of specific data such as estimating the amount of fuel consumption from purchase costs in a year and using country/technology-specific emission factors will increase specificity and reduce the uncertainty involved.
- Use of technology-specific data or direct measurement has the least uncertainty but requires a high level of specificity, requiring, for example, a direct measure of energy consumption and emissions, and analysis of equipment based on design specifications, age, and maintenance.

Establishing operational limits is the priority in framing the emissions inventory. It is calibrated by "scope", which relates to the sources of direct and indirect emissions as per Table 1.

Table 1. The sources of emissions

Emission	Definition	Sources
Scope 1	Direct emissions occur from sources that are owned/ or controlled by the company.	Combustion in boilers, vehicles and elsewhere.
Scope 2	Indirect emissions arise from purchased electricity in company-owned/controlled equipment. Emissions occur at the facility where electricity is generated.	Purchased electricity.
Scope 3	Indirect emissions are an optional reporting category because activities of the company occur around sources not owned or controlled by the company.	Extraction and production of purchased materials, use of bought products, transportation of purchased fuels and services.

Source: (WBCSD, 2011)

Direct emissions (Scope One), constituting up to 90% of the industry total, arise from facilities owned or controlled by the company, caused by burning fossil fuels like coal and industrial diesel oil (IDO), calcination, and on-site transportation (WBCSD, 2011; Hong et al., 2015). Net emissions are calculated as direct emissions minus those from AF usage (Feiz et al., 2015; Hong et al., 2015; Dietz, 2017). The WBCSD have provided data and means for calculations of direct emissions in cement production, as seen in Table 2.

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Table 1. Guidelines for calculation of direct CO_2 emissions from the cement industry

Emission components	Parameter	Unit	Proposed source of parameters
CO_2 from raw materials: Methods based on clinker output			
Calcination of raw material for clinker production	Clinker produced	tons	Measured at the plant level
	Emission factor clinker	t CO_2/t clinker	Default = 0.525 (CSI-WBCSD); or as calculated in detailed output method
Calcination of dust	Dust leaving kiln system	tons	Measured at the plant level
	Emission factor clinker	t CO_2/t clinker	Measured at the plant level
	Dust calcination degree	%	Measured at the plant level
Organic carbon in raw materials	Clinker produced	tons	Measured at the plant level
	Raw meal: clinker	fraction t/t clinker	Default = 1.55; can be adjusted
	TOC content of the raw meal	mass fraction	Default = 0.2%; can be adjusted
CO_2 from kiln and non-kiln combustion			
Conventional fuels	Fuel consumption	tons	Measured at the plant level
	Lower heating value	GJ /t fuel	Measured at the plant level
	Emission factor	t CO_2/GJ fuel	IPCC/CSI defaults or measured
Alternative fossil fuels and mixed fuels	Fuel consumption	tons	Measured at the plant level
	Lower heating value	GJ /t fuel	Measured at the plant level
	Emission factor	t CO_2/GJ fuel	CSI defaults or measured
	Biogenic carbon content	mass fraction	CSI defaults or measured at the plant level
Biomass fuels	Fuel consumption	tons	Measured at the plant level
	Lower heating value	GJ /t fuel	Measured at the plant level
	Emission factor	t CO_2 /GJ fuel	IPCC/CSI defaults or measured
Wastewater combusted	-	-	Quantification of CO_2 not required

Source: (WBCSD, 2011; Perindustrian, 2014)
Note: AFs = Alternative Fuels, TOC = Total Organic Carbon

Indirect (Scope Two) emissions are generated from operating activities undertaken or controlled by other entities. They are not significant compared with the direct variety. Based on the WBSCD Protocol, companies are asked to monitor their direct emission intensity. Under the Kyoto Protocol of 2009, non-CO_2 emissions from cement production are ignored because they are not dominant (WBCSD, 2011; Andrew, 2018).

3.2. Key Indicators for a Sustainable Cement Industry

The collaboration of the CSI-WBCSD and IEA has established key indicators to enable moves towards sustainability in global cement production (Table 3). They serve as guidelines for companies to plan for future operations. Of concern are activities which can support the achievement of SDS (sustainable development scenario) emission intensity targets of 0.55 t CO_2e/t by 2030. Meanwhile, the average emission intensity in the industry globally is around 0.7 t CO_2e/t cement (Bakhtyar et al., 2017).

Table 2. Indicators for Sustainability Goals in the Global Cement Industry

Indicator	SDS Target in 2030
Emission Intensity (Direct Emission) (t CO_2e/t cement)	0.55
Clinker to Cement Ratio	0.64
Electricity intensity (kWh/t cement)	87
Alternative fuels use (% of thermal energy)	18
Thermal energy intensity of clinker (GJ/t clinker)	3.3

Source: (IEA, 2018)

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4. The Case Study

The case study was carried out at the premier cement group in Indonesia. It has four integrated production plants and uses a dry process. On average, the clinker-making kilns operate 24 hours a day for between 330 to 340 days annually, while the other production equipment, such as the crusher, grinder and mill, run around 220 days per annum. We start by reviewing direct and indirect emission performance and profiles before turning to the need for international benchmarking.

4.1 Direct Emissions (Scope 1)

4.1.1 Calcination

Calcination occurs when limestone is subjected to hot gas at 1500ºC in a kiln, generally referred as pyroprocessing. Limestone, which is basically calcium carbonate ($CaCO_3$), decomposes into calcium oxide (lime) (CaO) and carbon dioxide (CO_2). This chemical process produces most of the CO_2 emissions involved in clinker production and that of the final product, cement (Ali et al., 2011; Stafford et al., 2016).

Therefore, the CSI-WBSCD recommends using clinker data rather than final cement production data in calculations. It follows that estimating the clinker fraction in cement to calculate clinker production can be undertaken only if cement data are available (WBCSD, 2011).

The method for estimating CO_2 emissions from clinker production employs the equation (WBCSD, 2011; Damayanti & Lestari, 2013; Energy, 2017; Andrew, 2018):

$$\mathbf{E_{clc} = (EF_{clc} + EF_{toc}) \times (Q_{clc} + (Q_{ckd} \times F_{ckd}))} \quad (1)$$

In which:

E_{clc} is the CO_2 emission released from the production of clinker (CO_2e tons).
EF_{clc} is the emission factor for clinker (0.525 t CO_2e/t clinker).
EF_{toc} is the emission factor for carbon-bearing non-fuel raw material (0.01 t CO_2e/t clinker produced).
Q_{clc} is the quantity of cement clinker produced (tons).
Q_{ckd} is the quantity of cement kiln dust (CKD) produced (tons).
F_{ckd} is the degree of calcination of cement kiln dust. If the information is not available, the degree is assumed to be 100%, such that F_{ckd} =1.

Based on production data from 2017, the subject company produced 10,534,385 tons of clinker and CKD. Its GHG emissions from the calcination process reached 5,635,896 t CO_2e.

4.1.2 Kiln and Non-Kiln Fuels

In the direct manufacturing situation studied, the primary source of energy is coal, with usage of 2,364,077 t/year, which collectively accounts for 98% of Scope One energy consumption (Figure 3). Since high-grade Indonesian thermal coal is routinely exported, low-calorie (≤ 4200 kcal/kg) lignite is used in kilns with a usage index of 0.22 t coal/t clinker. The required thermal energy to produce clinker is 3.3 GJ/t clinker. It can be noted though, that, per unit weight, lignite combustion produces less pollution due to its calorific value and carbon component (25%–35%) which are lower than those of high-grade coal such as anthracite (86%–97%) (EIA, 2018).

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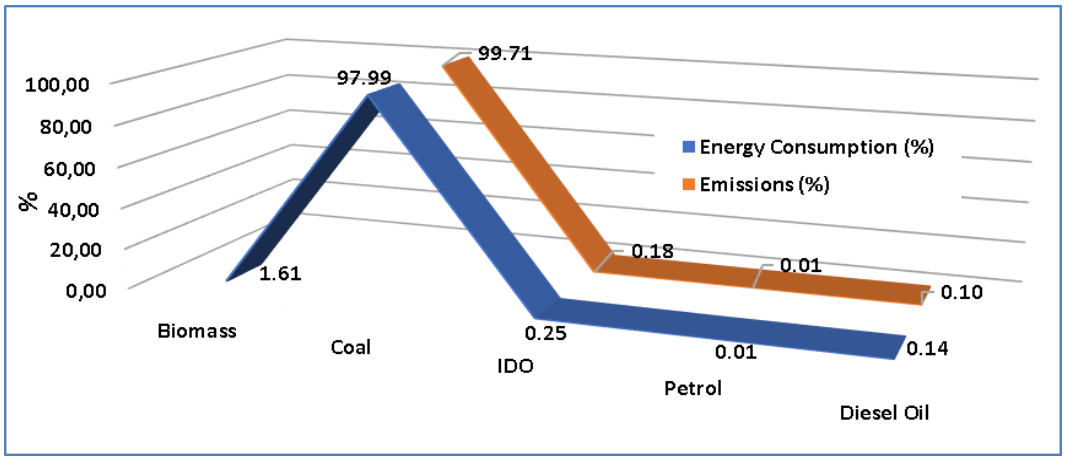

Fig. 2. Energy consumption and emissions by sources in the company studied, 2017

The company has also begun to use biomass as an AF, though only in limited quantities. According to the guidelines, reporting of emissions from AFs must be carried out separately, and emission factors for those such as biomass are absent (WBCSD, 2011). Emissions generated from the energy sources currently in use at the plants equal 3,754,822 t CO_2e, well below that of the chemical process producing calcination. Thus, the total direct emissions (Scope One) emanating from calcination and energy for non-kiln and kiln use equal 9,390,718 t CO_2e.

4.2. Indirect Emissions (Scope 2)

The indirect emissions calculated at the sites relate to electricity purchased from the state electricity company. Consumption in the year under study totaled 1,270,981 MWh, consisting of power for cement production and for supporting ancillary equipment (e.g. offices, lighting). Electricity is used in equipment such as the crusher, grinder, kiln and packer.

Based on the corporate analysis, the average electricity index was 93.7 kWh/t cement, whereas global electricity relativities are estimated from 91-130 kWh/t (Olivier et al., 2017; IEA, 2018). The indirect emissions generated from the recorded electricity usage amounted to 1,095,586 t CO_2e, with the emission factor reaching 0.862 t CO_2e/MWh (JCM, 2017).

4.3. Emission Profiles

The total GHGs from direct (Scope One) and indirect emissions (Scope Two) from the company in 2017 were 10,486,303 t CO_2e. Of this volume, the chemical reaction in calcination is the leading emitter with 53.7 % of the total, followed by the combustion of coal in the kiln at 35.7 %, and electricity at 10.4% (Figure 4).

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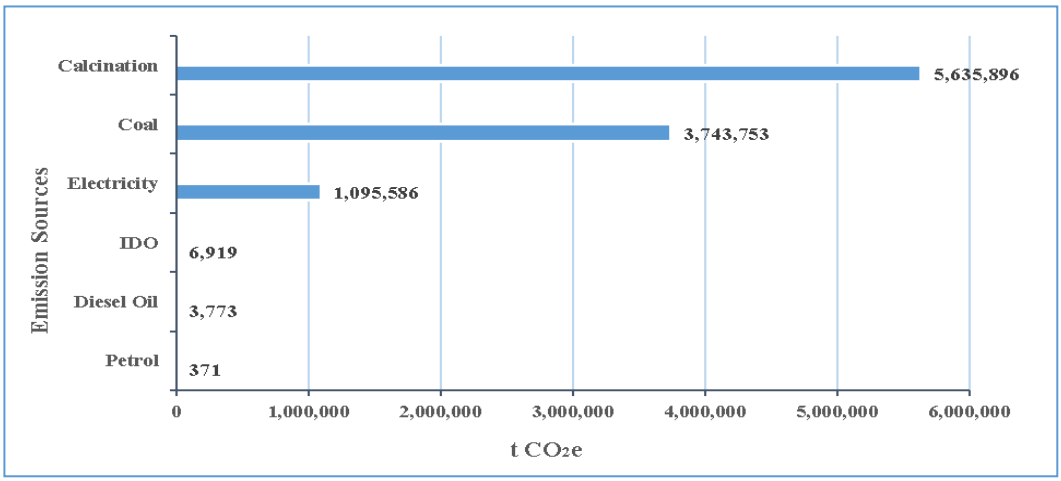

Fig. 3. Emissions (tons of CO_2) by sources in the cement company studied, 2017

The direct emission intensity is 0.696 t CO_2e/t cement, higher than the SDS target of 0.55 t CO_2e/t. Meanwhile, the indirect emission intensity (Scope Two) from the company remains at a reasonable level. The firm is planning to utilize waste heat from the combustion in the kilns during calcination via a Waste Heat Recovery Power Generator (WHRPG) with a capacity of 30.6 MW. It should lower electricity supplied by outside parties by 165 million kWh annually. This reduction promises savings of up to IDR 120 billion (US$ 8.5 billion) and will curtail emissions by 122,000 – 150,000 t CO_2e/year (Indonesia, 2018b). The indirect emissions intensity (Scope Two) will fall from 0.08 to 0.07 t CO_2e/t cement.

4.4. Benchmarking

In order to establish the environmental performance benchmarks of different firms, the data used as indicators must be clearly defined. They help to analyze the gap between the company studied and world best practices. For its part, the firm can determine priority actions for emission abatement projection based on the indicators. This step must be followed by considering possible resources at the local level, along with conditions which support and hinder implementation.

At present, the Indonesian firm's ratio of clinker to cement (or the clinker factor) is 0.8, higher than the global average of 0.77 (Schneider et al., 2011). World best practice is posted by Switzerland's LafargeHolcim and Brazil's Intercement at 0.73. Furthermore, the Indonesian enterprise's use of AF is very much lower, at around 1.2%, when compared with Mexico's Cemex (26.2%), Germany's Heidelberg (21%), Switzerland's LafargeHolcim (16.5%) and Thailand's Siam Cement (11%) (Figure 5).

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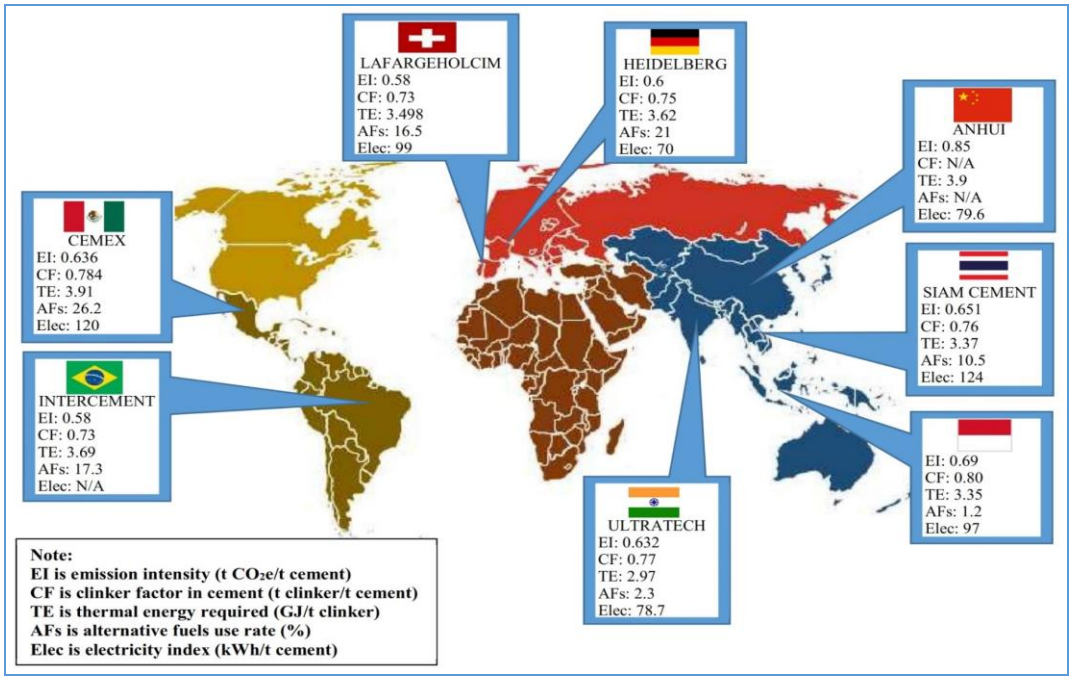

Fig. 4. Overview of Environmental Performance in the Global Cement Industry in 2017
Source: (Limited, 2017; SCG, 2017; Cemex, 2018; Conch, 2018; Heidelberg, 2018; Intercement, 2018; LafargeHolcim, 2018)

4.5. Abatement Projection

Reduction plans in the company should focus on lowering the ratio of clinker to cement, utilization of AFs and decreasing the thermal energy intensity of clinker (Figure 6).

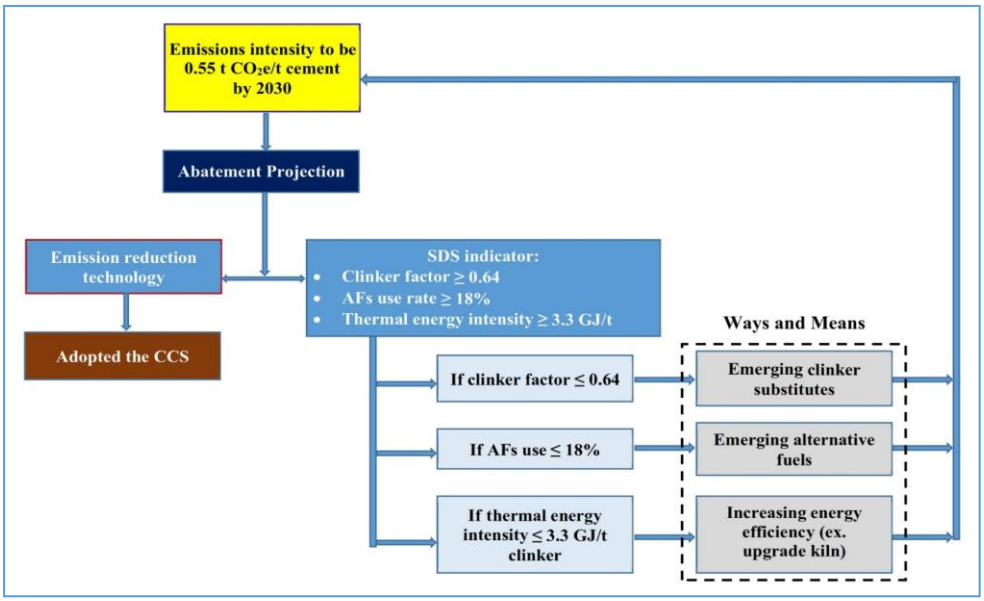

Fig. 5. Schematic diagram for identifying abatement projections
Source: (Chowaniec, 2012; Galvez-Martos & Schoenberger, 2014)

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4.5.1. Reduction of Clinker/Cement Ratio

The substitution of limestone for 10-12% of the composition of the final output does not decrease the quality of cement or concrete robustness. However, beyond that ratio, it can weaken the product and so increase the quantity needed to obtain the specific engineering strength expected (Mohammadi & South, 2016; Scrivener et al., 2018).

To meet the SDS target, operators must increase the number of clinker replacements which will reduce the clinker/cement ratio and emission intensity. Besides limestone, fly ash is used as a clinker substitute. Around the world, the absorption of substitutes has risen from 5 to 35% of the composition of cement (Chowaniec, 2012; Gao et al., 2015). Fly ash is a fine powder derived from waste generated from burning coal in power stations and factories. It contains silica oxide (SiO_2), aluminum (Al_2O_3), iron (Fe_2O_3), and calcium oxide (CaO). It can reduce water needed and increase concrete strength (Chousidis et al., 2015; Mengxiao et al., 2015).

Fly ash remains in limited use in the case study company. Its use could rise due to its availability throughout Indonesia, mainly from burning coal in power generation. Nationally, the installed electricity capacity is 59,600 MW. Around 70% of plants are steam powered and consume coal with the capacity to produce up to 10 million tons of fly ash per year (Jayaranjan et al., 2014; Notonegoro, 2018). Even so, much is discarded in landfill because of restrictive government regulations (Irawan, 2018). Policies, especially public ones, which support manufacturers to utilize waste, are needed. They can reduce negative impacts, such as pollution and costs in handling.

Utilization of clinker replacement materials in the company will potentially reduce emissions by 0.91 t CO_2e/t clinker subtitute, due to lowered emissions from chemical processes in calcination and constraints in coal usage. It is equivalent to cutting emissions by 930,000 t CO_2e/year for every 10% increase in the clinker substitute. The use of substitutes such as fly ash, furnace slag, trass (soft rock or soil from volcanic ash), and limestone is the most economical, effective, and easily accessible way to overcome emissions (CEMBUREAU, 2012; Gao et al., 2015). These materials, in general, can be added directly to cement to increase its volume and reduce solid waste, and they do not require pyroprocessing. Such steps can save a significant amount of energy and emissions (CEMBUREAU, 2012; Chowaniec, 2012).

4.5.2. Alternative Fuels (AFs)

Non-renewable fuels such as liquid natural gas (LNG) and industrial diesel oil (IDO) have a lower carbon content than coal. However, utilization of the former is not possible in the situations studied because of the absence of pipeline infrastructure. IDO is possible but economically infeasible owing to high operational costs (UNFCCC, 2011). Therefore, it is necessary to find AF sources which avoid significant obstacles involving availability and price. Cement companies in many countries have started reducing GHGs through using, as the primary agents, refuse-derived fuel (RDF) from industrial and municipal solid waste (MSW), and biomass (Kara, 2012; Hong et al., 2018).

The company studied has also begun to use RDF from MSW as an alternative fuel. RDF is abundant in many developed countries. In 2015, its utilization rate (mainly from tires, and commercial and industrial waste) reached 39% in Europe, compared with Indonesia which recorded under 2% (Hong et al., 2018; Indonesia, 2018a). In Indonesia, MSW is also abundant -- in 2017 around 66 million tons (Prastowo, 2012; Ridlo, 2014; BPS, 2018). It has a high-calorie value, superior to lignite, ranging from 5,100-5,200 kcal/kg due to plastic, paper and biomass (Ummatin et al., 2017; BPS, 2018). Yet, managing MSW is still a major challenge facing many developing countries. Indonesia's population of more than 260 million notwithstanding, budget constraints limit the availability of adequate waste treatment facilities (BPS, 2018). The use of RDF as an AF is expected not only to impact economically because of lower costs, but also to assist in handling MSW (Genon & Brizio, 2008; BPS,

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2018; Farizal et al., 2018; Hong et al., 2018). The downside could be the larger amounts of heavy metals in the waste gas, so the quality and the quantity of RDF should be carefully analysed (Genon & Brizio, 2008). Utilization of one ton of RDF in the company studied could reduce coal consumption by 1.44 tons and emissions by 2.3 t CO_2e. Scaled up, 164,000 tons of RDF could replace 10% of coal use during a year and reduce emissions by 374,372.5 t CO_2e.

Biomass is widely available in developing countries (Rahman et al., 2014; Brunerová et al., 2018) and, as an AF in Indonesia, can produce energy of around 756 million GJ/year. This capacity consists of 614.6 million GJ/year from agricultural residues or crops, and 141.5 million GJ/year from forest waste (Prastowo, 2012; Ummatin et al., 2017). Biomass from rice husk has been taken in by the firm. In 2017, 45,070 tons generated 575,599 GJ of energy. It led to a reduction of emissions equivalent to 96,434 t CO_2e. Additionally, ash from burning rice husk can be used as a pozzolanic material because it has a high silica content, and is also a potential substitute for clinker (Kumar et al., 2013; Singh, 2018). However, it tends to be financially unviable because it requires complex processes such as grinding to a very fine particle size, contributing to air pollution and an increase in emissions. It further requires controlled combustion (Rahman et al., 2014).

The biomass from agricultural sources such as rice husk, palm shells, and coconut fiber generally comes from rural areas. Rice husk has considerable potential, the annual availability of 66,411,469 tons equivalent to approximately 369 million GJ/year or 60% of the total energy from crops in Indonesia (Prastowo, 2012; Ummatin et al., 2017). The rice husk resource within 200 km from the cement plants studied amounts to 867,625 t/year. Of it, at least 563,957 t/year is available within less than 75 km (UNFCCC, 2011). The CO_2e emission reduction in rice husk tonnage to replace coal isequivalent to 0.97 t CO_2e/t biomass, with a calorific value of approximately 12.771 GJ/t (UNFCCC, 2011; Anshar et al., 2016), in some instances approaching that of lignite but beneficially derived from renewable sources. It has the potential to lower the use of lignite by up to 750,000 t/year, equal to reducing emissions by approximately 1,200,000 t CO_2e/year.

Although the cost of purchasing AFs is less than that of fossil fuels (and can even be free), their utilization will require expenses for installation and transportation. These materials, in general, need additional processing before they can be engaged, such as separating, drying, crushing/shredding and mixing (Chinyama, 2011; Deolalkar, 2016). Given several different AFs, companies tend to avoid installing excessive handling and feed equipment. Therefore, cement plants generally only use one or two types (Deolalkar, 2016). It is necessary to look for suitable AFs which are widely available at economical prices.

AF utilization will likely encounter obstacles due to a lack of support from regulations, policies, public acceptance, infrastructure and technical capabilities (Hasanbeigi et al., 2012). Emerging economies such as Indonesia need to learn from developed partners in drafting legislation and standards which can encourage usage, followed by an audit and an initiative to convince the local community of the advantages of using AF from waste. Government support is needed, such as in providing infrastructure, subsidies in waste management, tax incentives and other financial assistance. Since the characteristics of waste in various places or countries can be different, it is necessary to map types and availability. This step can help to determine the right technology.

4.5.3. Plant Technology Improvement

Efforts to reduce the intensity of heat and electricity consumption in cement production focus on updating kiln technology, responsible for the most energy-consuming calcination processes (Smidth, 2006; IEA, 2009; Madlool et al., 2011). Means to limit waste and emissions follow the best available technology (BAT) approach. BAT for kilns currently uses a five or six-stage pre-heating technology with a pre-calciner (Figure 7). It can achieve a thermal energy consumption of 2.9-3.1 GJ/t clinker, significantly below the global target (IEA, 2018). Such CCS technology can also offer notable emission reductions. However, it is still in its early stages and has not been

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widely implemented (Jordal et al., 2017; Nabernegg et al., 2017; Olivier et al., 2017).

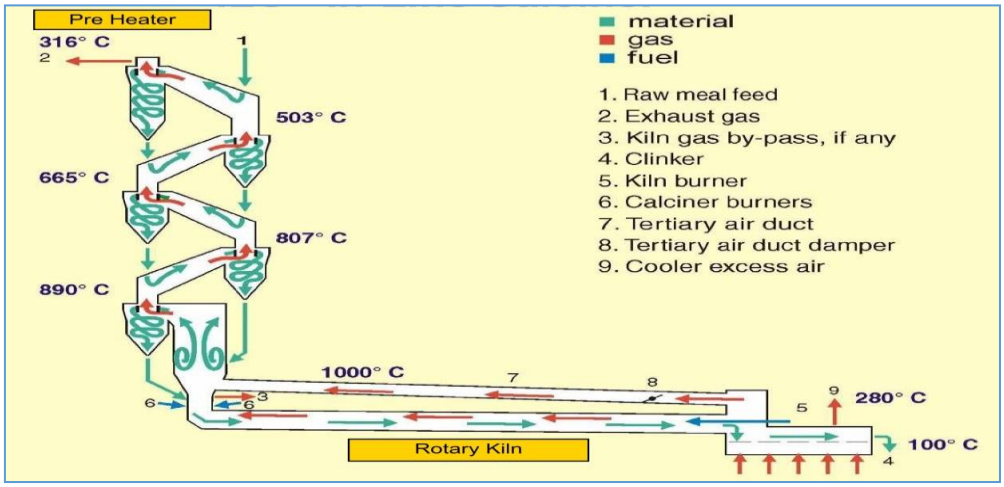

Fig. 6. Five pre-heaters kiln with pre-calciner
Source: Adapted from (Smidth, 2006)

The company studied uses kilns with a four-stage pre-heater with a pre-calciner. The average thermal energy requirement has reached the 2030 SDS target. Upgrading from four-stage preheating with a pre-calciner to five stages can reduce heat consumption by 6 % or 0.2 GJ/t clinker, cutting emissions by 225,000 t CO_2e/year. Six stages can post up to 12% falls or 0.4 GJ/t clinker, offering reductions of 445,000 t CO_2e/year. The capital cost to upgrade pre-heating from four to five stages, or five to six stages, is at least US$2.54/t clinker. It will increase the production cost index of cement by 2.5% to five stages, or 5% to six stages (Table 4).

Table 4. Heat consumption and cost for kiln technologies

Process	Fuel use (GJ/t clinker)	Energy Reductions	Cost (US$/year ton clinker)	Ref
Wet process	5.9-6.7	-	-	(Smidth, 2006; IEA, 2009; Madlool et al., 2011; Worrell et al., 2013)
Dry process	4.6	22-31%	50-100	
• 1-stage pre-heater	4.2	29-37%	68-118	(Smidth, 2006; IEA, 2009; Hasanbeigi et al., 2010b; Madlool et al., 2011; Worrell et al., 2013)
• 2-stage pre-heater	3.8	36-43%	70.5-120.5	
• 4-stage pre-heater	3.3	44-51%	85-135	
• 4-stage pre-heater + pre-calciner	3.1	47-55%	103-148	
• 5-stage pre-heater + pre-calciner	3.0-3.1	49-54%	105.5-150.5	(Smidth, 2006; IEA, 2009; Price et al., 2009; Hasanbeigi et al., 2010b; Madlool et al., 2011; Worrell et al., 2013)
• 6-stage pre-heater + pre-calciner	2.9	51-57%	158-157.5	

The high investment costs and complexity in changing the pre-heater structure within existing process engineering can hamper implementation (Price et al., 2009). Conventional economic policies such as providing broad manufacturing energy price subsidies can also restrain technological progress, as currently observed in Indonesia. They can prevent uptake of more efficient technology by key industry players (Summerbell et al., 2016).

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Conclusions

At the cement operation studied, nearly 78% of total energy consumption comes from direct (Scope One, in-plant) coal and fuel oil burning, followed by (Scope Two) imported electricity at 22%. Emissions from calcination account for 53.7% of the total, coal utilization for 35.7%, electricity 10%, and the rest from fuel oil. The direct emission intensity is around 0.69 t CO_2e/t cement. The company needs to reduce this figure by 20% to meet the global target of 0.55 t CO_2e/t cement by 2030, equivalent in its case to 1,969,892 t CO_2e.

This inquiry analyzed measures which have the potential to drive such emission reductions. Following both the "low-hanging fruit" rule in project management and the rational choice model of economics, the ones adopted should center first on processes that create the most accessible emissions, namely, calcination and coal combustion. They are interrelated; calcination is a clinker formation process that requires heat from coal combustion. The firm's ratio of clinker to cement is currently 0.8 or 25% higher than the global SDS indicator for 2030. The use of AFs is still less than 2%, while the global aim is 18% by 2030.

Fulfilling its objectives, this paper has identified three ways in which the Indonesian cement industry can move towards world best practice.

- First, the use of clinker substitutes such as limestone and fly ash reduces direct emissions from two primary sources at once, namely, from the chemical reaction in calcination and from energy use. The cost of procuring clinker substitutes is generally less than orthodox clinker production because the material is mostly in the form of waste and involves savings in raw materials, electricity and fuels. Utilization of clinker replacement materials by 10% can reduce the emissions intensity by 11%, a positive elasticity.
- Second, the use of AFs such as RDF and biomass, all to hand in the country, can support conservation, increase income, and reduce negative impacts on the environment and local communities. Utilization of biomass in the plant can reduce emissions intensity by 13%.
- Third, improving kiln technology: adopting five stages can reduce emissions intensity by 2.4% and six stages by 4.8%. Refurbishing entails significant investment costs and technical complexity.

The first two options above provide opportunities to achieve global targets for emissions intensity in 2030. Besides being able to reduce absolute emissions significantly, they can also increase product competitiveness, conserve non-renewable resources, and lower raw materials uptake and waste disposal. However, in keeping with an emerging economy, cost constraints and lack of supporting public policy can block implementation. Financial assistance from the government is needed, such as subsidies in waste management and tax incentives. Also required are policies which support other parties to utilize waste and improve technical capabilities in adopting appropriate technology.

From, all these investigations, the present analysis is able to provide recommendations for the national cement industry in choosing emission reduction measures. It is expected to help other countries which have similar conditions to those of Indonesia. The findings are both timely and spatially opportune, since nations which have significant sources of clinker substitute materials and AFs are spread throughout Southeast Asia and the developing world.

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ANALYSIS OF SELECTED INDICATORS OF TAX COMPETITION AND TAX HARMONIZATION IN THE EU*

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Abstract. The paper aims to provide an analytical view of the harmonization of income taxes in the European Union. The aim of the theoretical part is to provide an overview of the literature that deals with the issue of tax harmonization and tax competition. This section contains the views of experts on tax competition and tax harmonization. The paper explores the current state, as well as the development in the field of income tax harmonization, and competition in the Member States. The aim of the analytical part is to compare income taxes in the countries of the European Union and to bring proposals for the solution of tax harmonization. The analysis focuses solely on the most important direct taxes, personal income tax, and corporate income tax. The results of cluster analysis using four tax determinants suggest the future of the direct tax harmonization process. The graphical analyzes indicate, that the process of tax harmonization could begin with the harmonization within countries that are geographically and politically close together. Harmonization would bring together countries with a similar tax burden and could continue in other interested European Union countries.

Keywords: taxation; income taxes; tax harmonization; tax competition

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JEL Classifications: H24, H25

1. Introduction

The European Union is using several incentive tools to sustain its economic growth. Harmonization of tax systems is (should be) one of them. The harmonization is a compromise of economic, legal, political and administrative rules to support the Unions common market. However, there are the Member States having

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objections to the income tax harmonization. Many politicians and experts support the idea of tax competition, which forces governments to be more efficient. The European Union seeks to push the boundaries of harmonization, thereby overcoming the barriers to the common market. It can be said that harmonization contributes to the economic growth of the European Union, but there are objections from the Member States, which objective is to protect sovereignty.

2. Theoretical background

In the area of tax harmonization, greater progress has been made especially in the field of indirect taxes. The reason is the elimination of the last barriers to the free movement of goods. Less progress has been reached in harmonizing direct taxes. The explanation for this is that the Member States consider interventions in the tax base and tax rates as an interference with internal affairs. (Horváthová, Mokrišová 2017)
According to Široký (2006), there are some limits in the European Union for individual types of taxes:

- indirect taxes are the focus of interest and harmonization;
- personal income tax remains within the competence of national governments;
- social and pension mechanisms serve to eliminate discrimination against nationals;
- corporate income taxes are intended to support the free movement of capital.

Tax harmonization is a multidimensional process of convergence and assimilation of the different tax systems of several countries by creating collective regulations and applying collective taxation principles based on economic, political and other resolutions to achieve the set objectives. (Lenártová 2012)
According to Nerudová (2014), the process of tax harmonization can be divided into three phases. The first is the type of tax that needs to be harmonized, the second is the harmonization of the tax base and, the last but not the least is the harmonization of the tax rate.

Table 1. Classification of tax harmonization

according to the used methods	
Positive harmonization	• implementation of directives, regulations and other legislative instruments, • the result is the same rules in all member states.
Negative harmonization	• the work of the European Court of Justice - tax case law, • does not create the same rules for all member states.
according to the current development	
Direct harmonization	• the classic process of harmonization through tax directives.
Indirect harmonization	• achieving harmonization through other areas of law.
by territorial point of view	
Vertical harmonization	• harmonization of tax systems according to different levels of government.
Horizontal harmonization	• harmonization of national tax systems.
according to the tax system	
Total harmonization	• all provisions of the tax system.
Partial harmonization	• selected provisions of the tax system.

Source: authors according Nerudová (2011)

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In case there are identical tax rates, then we are talking about a, so called, total explicit tax harmonization, whereas, if there are similar tax rates, we are talking about partial explicit tax harmonization. The total harmonization, besides tax rates harmonization, means structural harmonization or harmonization of the tax structure. The harmonization of direct taxes mainly relies on the following main objectives: avoiding tax evasion and elimination of double taxation (Kozuharov, Ristovska, Ilieva 2015).

Široký (2013) considers tax coordination to be the first step towards the harmonization of tax systems. Some authors distinguish tax harmonization according to the methods used. Among the methods used in tax harmonization, transposition or implementation could be involved (Matoušek 2005).

The harmonization in the field of direct taxation is stagnant, as there are different accounting systems in the Member States, as well as the reluctance countries to further harmonization is relatively strong. The Ruding Committee founded in 1992 had to find out whether the different corporate taxation causes differences in the EU common market. Research has shown there are barriers to the free movement of capital and investment caused by the different structure of corporate taxation in individual member states.

Based on the research, four variants of corporate income tax harmonization were proposed (Mečár, Jurčíková 2006), which should result to changes in domestic taxation, a common consolidated tax base, a European corporate tax, and a mandatory harmonized tax base. The primary objective of the European Commission in the area of direct taxation was to harmonize tax rates. At present, the target has changed, and the European Commission is trying to harmonize the tax base. According to Nerudová (2011), the advantages of introducing a common consolidated tax base include introducing fair tax competition, eliminating barriers to mergers and acquisitions, reducing company costs, reducing government administrative costs and guaranteeing tax neutrality.

As the previous endeavors by the European Commission to submit the Common Corporate Tax Base (CCTB) have failed, and new aspects have arisen that increases the demand for a common viewpoint to corporate taxation in the European Union Member States, the Commission announced in October 2016 to re-launch the proposal-directive for a common consolidated corporate tax base (CCCTB) (Gondor 2017).

Peter van der Hoek (2003) presents a comprehensive review and analysis of tax harmonization and tax competition in the European Union. Small European Union country members tend to set lower effective tax rates than larger member countries.

An avid advocate for tax competition is Sinclair Davidson, whose attitude towards tax harmonization is very critical. Efforts to introduce tax harmonization are called a tendency to set up a tax cartel. (Davidson 2007)
The disadvantages of tax harmonization are, higher tax rates, slower economic growth, a decline in Member States' fiscal autonomy, intervention in Member States' national sovereignty and a threat to national budget revenues. Schultzová (2010).

A great deal of literature exists about tax harmonization and tax competition. One stream of authors advocates tax harmonization and the other advocates tax competition. Several authors have analysed the role of other variables in tax competition and tax harmonization (Hindriks et al., 2008; Zissimos and Wooders, 2008; Pieretti and Zanaj, 2011; Sanz-Córdoba and Theilen, 2018). International tax competition among countries is examined by several authors in their works (Cassette and Paty, 2008; Devereux et al., 2008; Heinemann et al., 2010; Cassette et al., 2013; Redoano, 2014; Altshuler and Goodspeed, 2015).

Vito Tanzi is one of the supporters of the idea of tax harmonization. In his work he describes several arguments for the introduction of tax harmonization. It mainly discusses the impact of lower tax rates of neighboring countries on the national economy. (Tanzi 1995)

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Different tax policies create difficulties in requiring taxpayers' tax obedience. The increased mobility of production factors makes it easier for taxpayers to circumvent tax obligations. (Daly 1994). Corporate tax levels have fallen substantially in Europe during the last decades. A broad literature has identified tax competition as one reason for this decline in corporate tax levels (Streif 2015).

Nerudová (2011) includes among the disadvantages of tax competition unsatisfactory composition of government spending, ineffective delivery of public services, a distortion of investment flows, effects on world prices and inefficient allocation of resources.

In 2003 the European Council adopted a voluntary code of conduct against harmful tax competition, and more ambitious proposals for corporate tax harmonisation have been proposed, including the introduction of a single EU corporate tax (Conconi, Perroni, & Riezman, 2008). In the tax literature is proposed tax harmonisation to correct the alleged inefficiencies caused by tax competition (Boadway & Tremblay, 2011; Wilson, 1999; Wilson & Wildasin, 2004).

Restrictions on freedom of movement on the internal market are generated by differences between national tax systems so that some degree of tax harmonization in the Member States of the European Union is necessary (Matei, Pirvu 2011).

A lot of countries not agree with full tax coordination (Marchand, Pestieau, & Sato, 2003). An alternative is partial tax coordination, which seems to be a more realistic policy option (Beaudry, Cahuk, & Kempf, 2000; Betterndorf et al. 2010; Brøchner et al. 2007; Bucovetsky 2009; Burbidge et al. 1997; Konrad & Schjelderup 1999).

The topic of taxes and cross-border trade is also discussed in Hečková, Štefko et al. (2019). Cardarelli, Taugourdeau, and Vidal (2002), Catenaro and Vidal (2006), and Itaya, Okamura, and Yamaguchi (2008) have investigated the likelihood of tax harmonization among noncooperative governments.

3. Material and methods

The research sample represents 28 Member States of the European Union. The input data are secondary, obtained from Eurostat and OECD databases. We have watched:

- the share of personal income taxes in the country's gross domestic product;
- the share of corporate income taxes in the country's gross domestic product;
- the personal income tax rate;
- the corporate income tax rate.

Cluster analysis is a group of procedures designed to decompose a set of objects into several relatively homogeneous subsets (clusters) so that objects belonging to the same cluster are as similar as possible, while objects originating from different clusters should be as different as possible. All clustering procedures are based on some measure of distance or similarity between units (Trebuňa, Béreš 2010). Kalina, Vašaničová and Litavcová (2019) also deal with statistical analyzes in their works.

The basic methods of clustering we used were:
Hierarchical methods are based on sequentially joining of clusters, their number decreases continuously until finally all clusters are combined into one. The result is graphically displayed as tree diagram respectively cluster dendrogram.

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Ward's method involves an agglomerative clustering algorithm. It looks for groups of leaves that it forms into branches, the branches into limbs and eventually into the trunk. Ward's method starts out with n clusters of size 1 and continues until all the observations are included into one cluster.

Ward's method use the Euclidean distance defined by the formula:

$$d_{ij} = \sqrt{\sum_{k=1}^{n} (x_{ik} - x_{jk})^2}$$

Where x_{ik} is the value of „k“ variable for i-th object and x_{jk} is the value of „k“ variable for j-th object. For calculated distance is than determined the rule of linking statistical units into clusters.
There were „p“ objects in the analysed group, namely 28 countries in which were pursued „k“ quantitative characters (4 variables), the distance d_{ij} between i-th element and j-th element was Euclidean distance.

Result of cluster analysis can be viewed using the dendrogram, which was created by using statistical program R 3.4.1. The Ward method was chosen within the hierarchical procedure.

The next individual graphs show the percentages of personal income taxes and corporate income taxes in the country's gross domestic product and the country's total taxes.

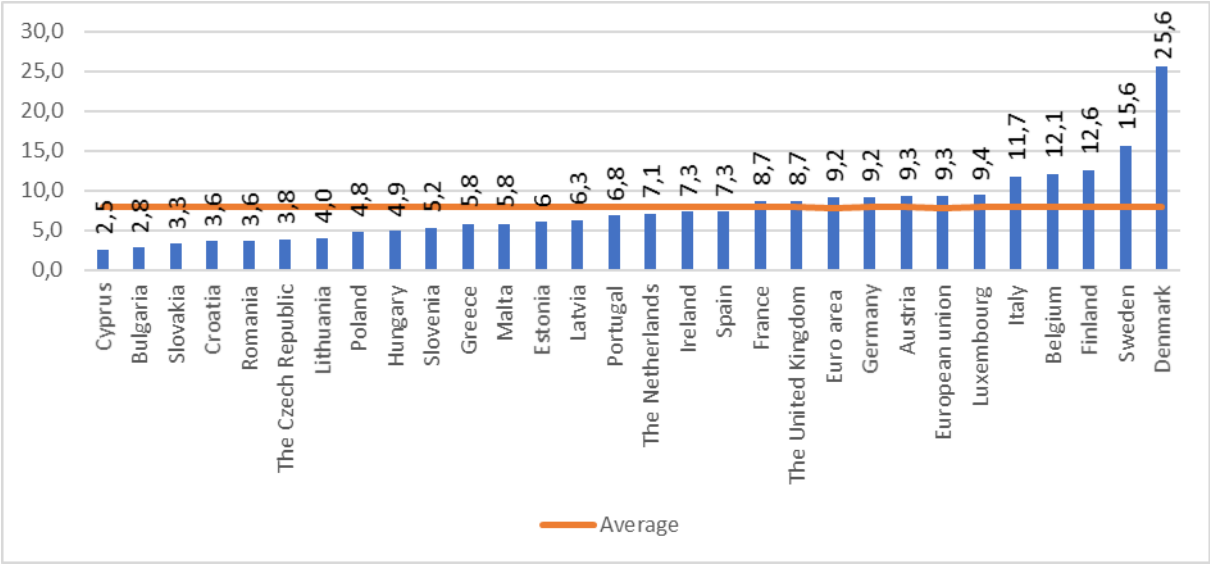

Fig. 1 The share of personal income taxes in the country's gross domestic product for 2016

Source: authors based on European Commission (2018)

Figure 1 shows the share of personal income taxes in the country's gross domestic product for 2016. These shares are ranked from the lowest to the highest. It is clear from the graph that Cyprus (2.5%), Bulgaria (2.8%), Slovakia (3.3%) and Croatia (3.6%) are among the countries with the lowest share of PIT on GDP. The countries with the highest rates of PIT on GDP include Italy (11.7%), Belgium (12.1%), Finland (12.6%), Sweden (15.6%) and Denmark (25.6%). The average share of PIT in the country's GDP for 2016 is 7.8%.

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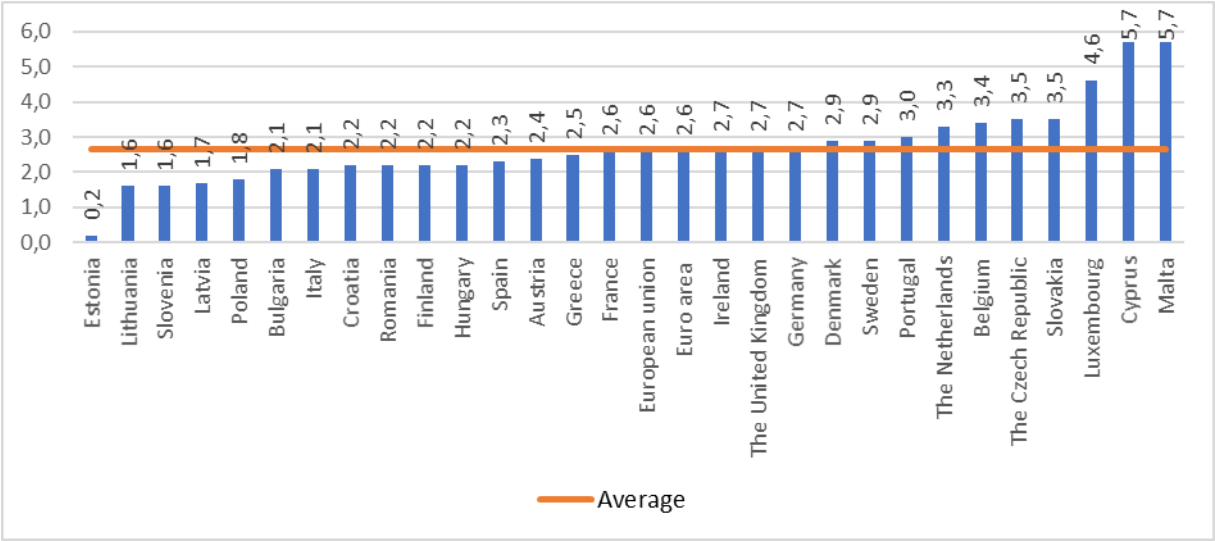

Fig. 2 The share of corporate income taxes in the country's gross domestic product for 2016

Source: authors based on European Commission (2018)

Figure 2 shows the share of corporate income taxes in the country's gross domestic product for 2016. Individual shares are ranked from the lowest to the highest. Estonia (0.2%), Lithuania (1.6%), Slovenia (1.6%) and Latvia (1.7%) are the countries that show the lowest share of CIT in GDP in 2016. On the other hand, Slovakia (3.5%), Luxembourg (4.6%), Cyprus (5.7%) and Malta (5.7%) are the countries that show the highest share of CIT in GDP in 2016. The average share of CIT in the country's GDP for 2016 is 2.6%.

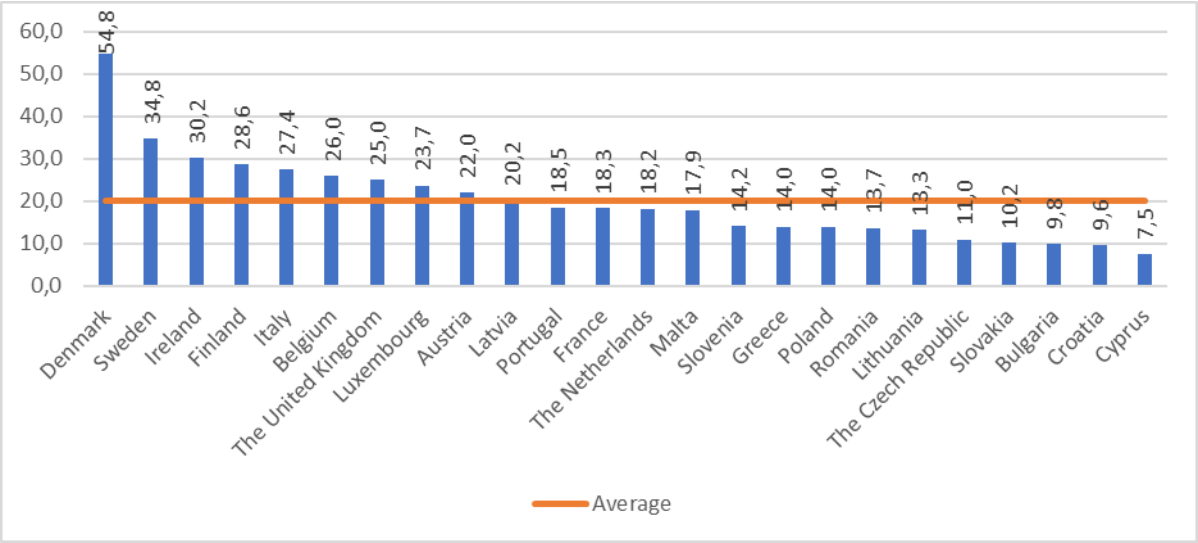

Fig. 3 The share of personal income taxes in the country's total taxes for 2016

Source: authors based on Eurostat (2018)

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Figure 3 shows the share of personal income taxes in the country's total taxes for 2016. Shares are ranked from the highest to the lowest. As can be seen in the graph, among the countries with the highest share of PIT in the country's total taxes belong Denmark (54.8%), Sweden (34.8%), Ireland (30.2%) and Finland (28, 6%). The countries with the lowest share of PIT in the country's total taxes include Slovakia (10.2%), Bulgaria (9.8%), Croatia (9.6%), and Cyprus (7.5%). Data about other countries of the European Union are not available on Eurostat. The average share of personal income taxes in the country's total taxes for 2016 is 20.1%.

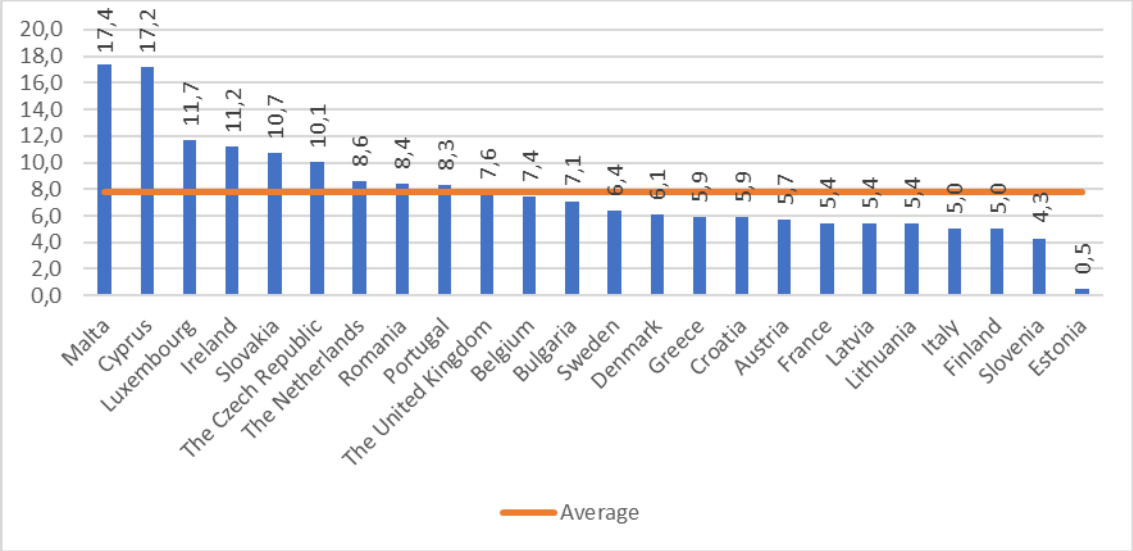

Fig. 4 The share of corporate income taxes in the country's total taxes for 2016

Source: authors based on Eurostat (2018)

Figure 4 shows the share of corporate income taxes in the country's total taxes for 2016. Individual shares are ranked from the highest to the lowest. Malta (17.4%), Cyprus (17.2%), Luxembourg (11.7%) and Ireland (11.2%) are among the countries with the highest share of CIT in the country's total taxes. Lithuania (5.4%), Italy (5.0%), Finland (5.0%), Slovenia (4.3%) and Estonia (0.5%) are the countries with the lowest share of CIT in the country's total taxes. Slovakia is one of the countries with a higher share of CIT in country's total taxes (10.7%). Data about other countries of the European Union were not available on Eurostat. The average share of corporate income taxes in the country's total taxes is 7.8%.

As of 2016, the average personal income tax rate in the EU was 39%, while the average corporate income tax rate was 22,5%. Tax structures tend to be quite different among Member States. The highest rate of Personal Income Tax was reported in Sweden, followed by Portugal and Denmark. At the end of the ranking was Bulgaria with 10% rate. The same applies to the Corporate Tax Rate in Bulgaria. The highest CIT rate was recorded in Malta, France and Belgium in 2016. (Figure 5)

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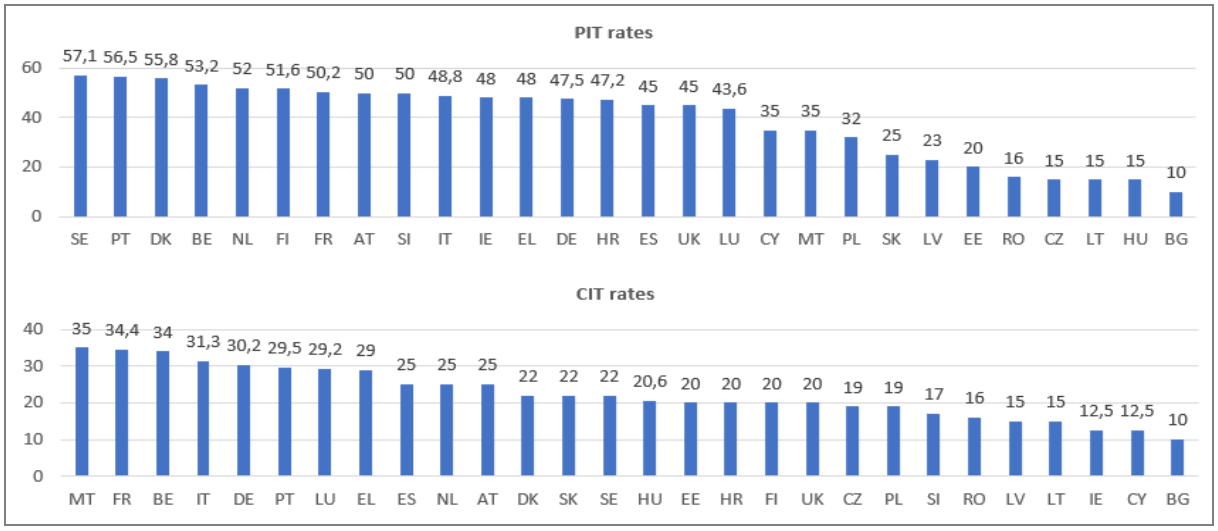

Fig. 5 Top statutory PIT and CIT rates in 2016 (%)

Source: authors, based on Eurostat data

4. Results

The average value of Personal Income Tax was 7,4% GDP in the EU-28 in 2006. In 2016, this average indicator rose by 0,3% to 7,7% GDP. In 2016 (compared with the reference year 2006), the revenues from personal income tax rose in 19 Member Countries. The biggest increase was recorded in Denmark (2,0%), Luxembourg (1,9%) and Portugal (1,7%). On the other hand, Lithuania (-2,8%), Hungary (-1,6%) and Sweden (-1,4%) recorded the most marked decline in comparison to the reference year. The highest collection of Personal Income Tax in 2016 within the EU-28 was in Denmark (26% of GDP), followed by Sweden and Finland. The lowest incomes from PIT was in Cyprus (2,5% of GDP), followed by Bulgaria, Slovakia, Croatia and the Czech Republic. By and large, most of the Member States are above the zero axis. Over the decade, there has been an increase in the choice of Personal Income Tax in the Union. (Figure 6)

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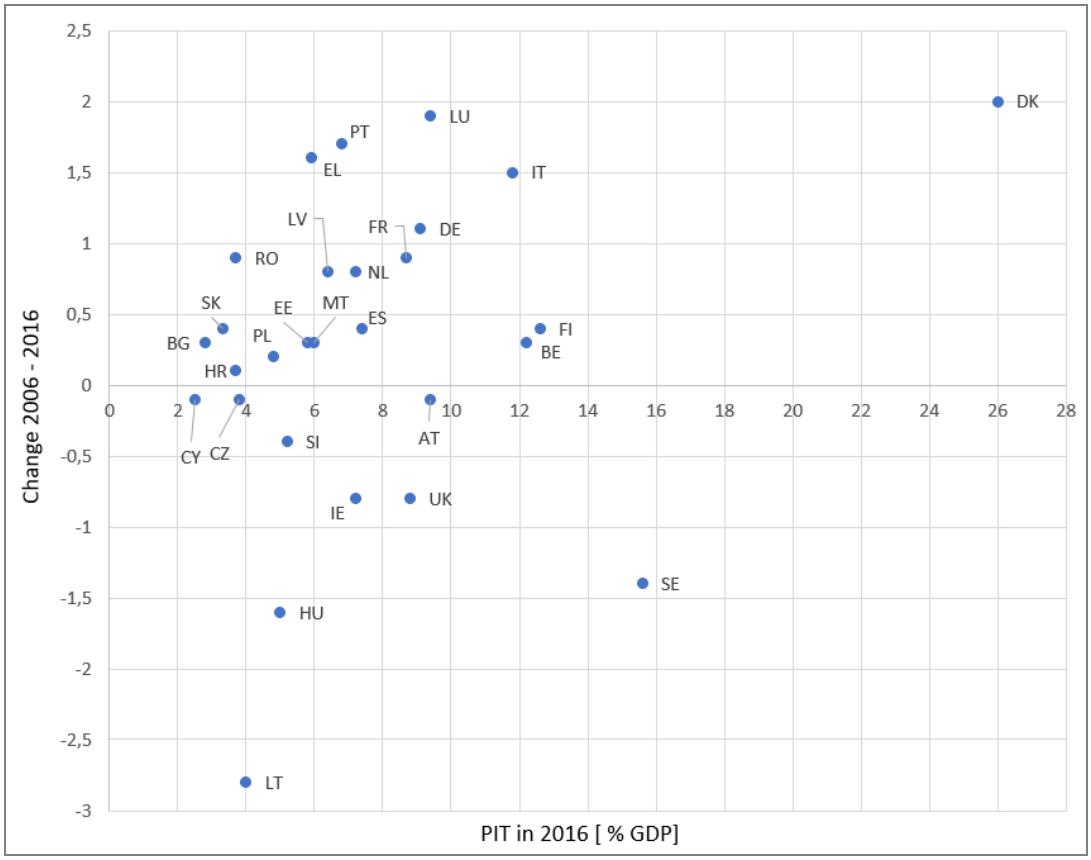

Fig. 6 Personal Income Tax in 2006 and 2016 (% of GDP)

Source: authors, based on Eurostat data

In 2006 the average revenue from Corporate Income Tax was 3,0% GDP in the EU-28. In 2016, this average indicator fell to 2,7%. In 2016 (compared to reference year 2006), CIT collection in six Member States increased, most in Malta (2,6%) and Cyprus (0,9%). On the other hand, Spain recorded the sharpest decline in comparison to the reference year (-1,8%). Highest incomes from Corporate Income Tax in 2016 were in Malta, Cyprus (both 5,8% GDP), and Luxembourg (4,6% GDP). The lowest amount was levied by Estonia (0,2% GDP). Most of Member States are below the zero axis. Over the decade, there has therefore been a drop in Corporate Income Tax in the Union. (Figure 7)

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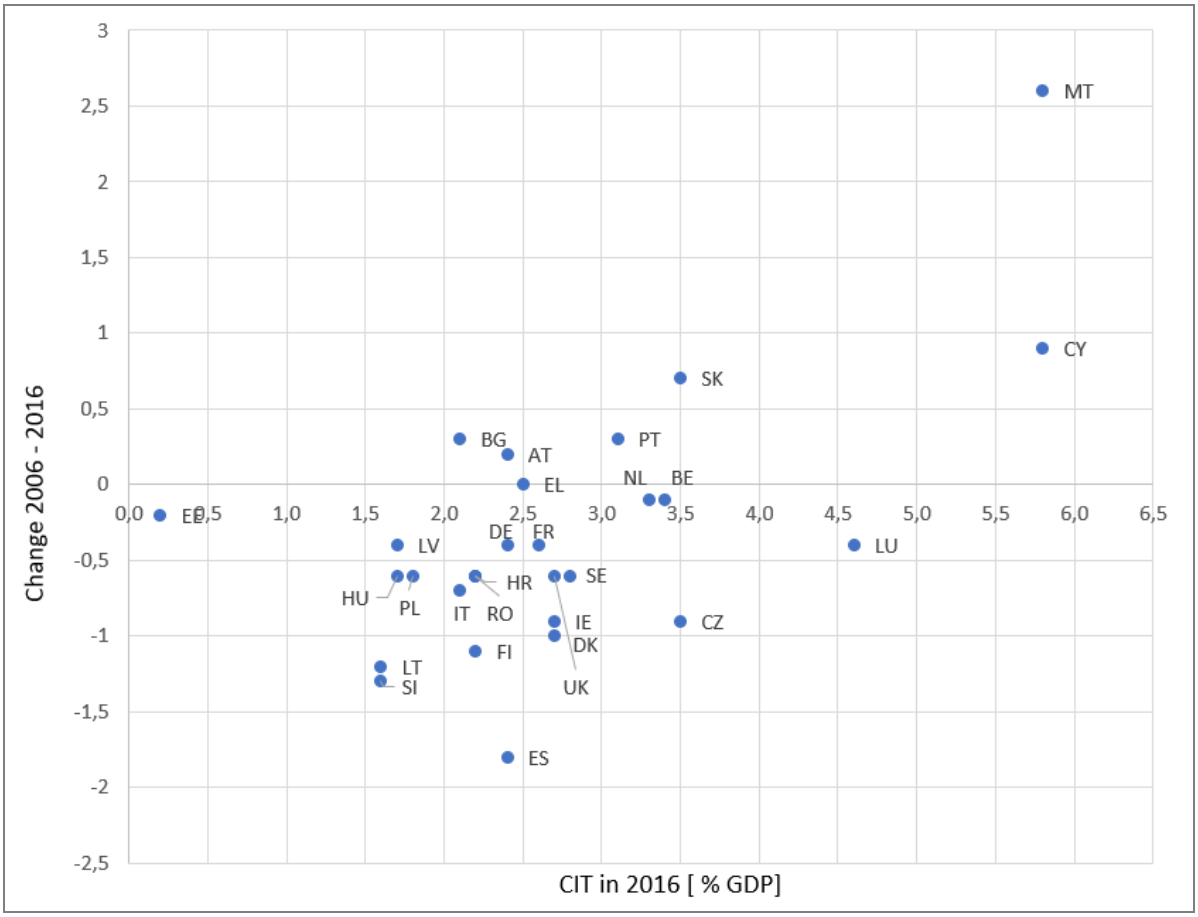

Fig. 7 Corporate Income Tax in 2006 and 2016 (% of GDP)

Source: authors, based on Eurostat data

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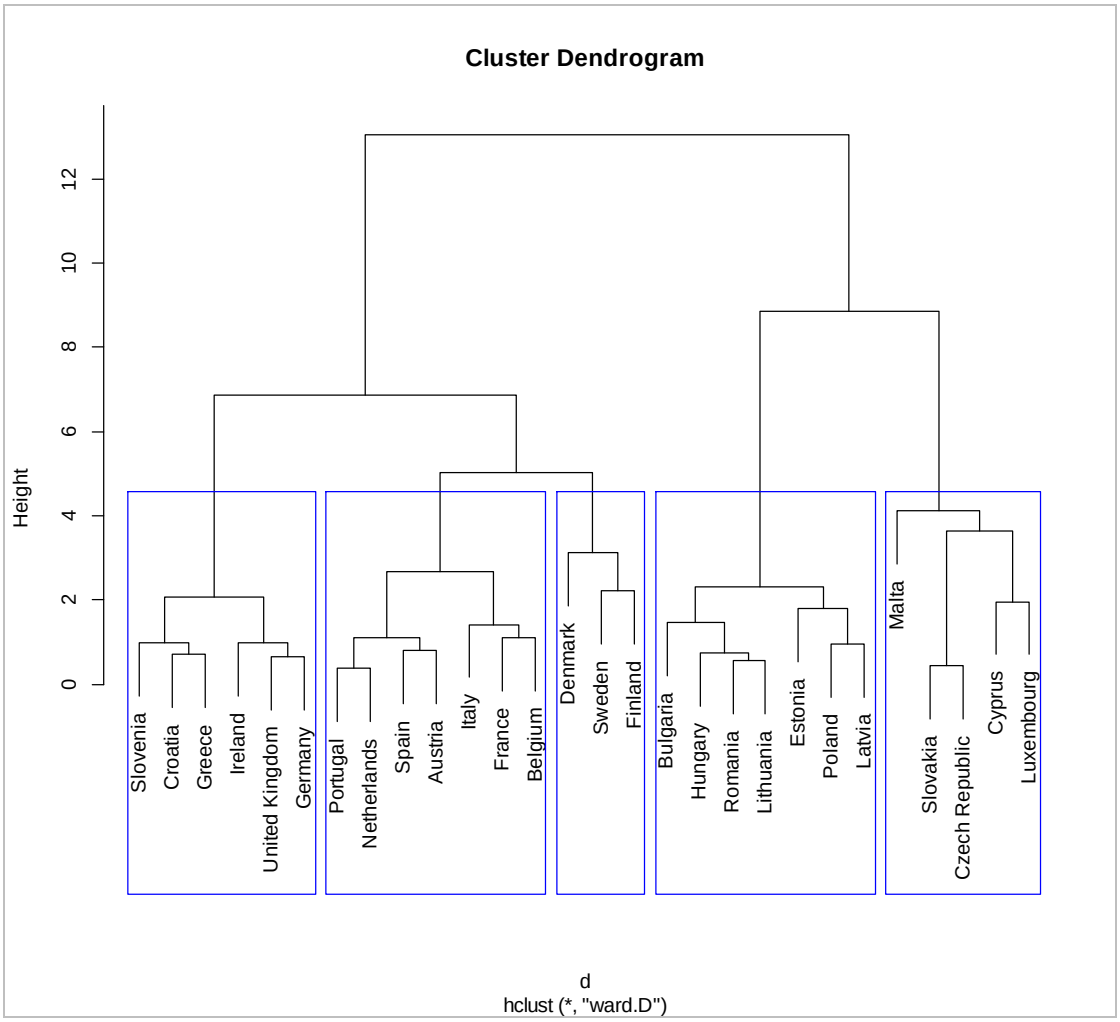

Fig. 8 Cluster dendrogram

Source: authors in R 3.4.1.

Figure 8 shows the distribution of the 28 member states of the European Union into five clusters according to the four variables selected. The first cluster consists of Slovenia, Croatia, Greece, Ireland, the United Kingdom, and Germany. These countries were grouped mainly based on similarity in the amount of the personal income tax rate (40 - 50%). The second cluster consists of Portugal, the Netherlands, Spain, Austria, Italy, France, and Belgium. For these countries, the main factor of similarity is the corporate income tax rate (25-33%). The third cluster is made up of Denmark, Sweden, and Finland. These countries are geographically close to each other and, besides, have a similar share of the corporate income tax on GDP (2.2-2.9%) and the corporate income tax rate (20-25%). The fourth cluster is made up of Bulgaria, Hungary, Romania, Lithuania, Estonia, Poland, and Latvia. Their greatest similarity is reflected in the corporate income tax rate (10 - 20%). The fifth cluster includes Malta, Slovakia, the Czech Republic, Cyprus, and Luxembourg.

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Conclusions

Harmonization of income taxes is a complicated process in many ways. Some of the Member States of the European Union are no more willing to continue harmonization. They wish to retain their autonomy in deciding about taxes. So, this fact is crucial, whereas the tax harmonization requires the unanimous approval of all EU members.

High corporate income tax rate and personal income tax rate are mostly levied in Western Europe (e.g. the Netherlands, Belgium, France, the United Kingdom, Germany) or countries in northern Europe (eg Sweden, Denmark, Finland). This may hinder large companies from doing business and paying taxes in these countries, and they may begin to shift their assets to countries where the tax burden is lower. For that reason, tax competition is unfavorable for these states and they support tax harmonization. On the other hand, countries with a low tax burden support tax competition, because it is an advantage in the competition for foreign investors. These countries include mainly the "younger" EU members like Bulgaria, Cyprus, Lithuania Romania. Slovakia. To prevent tax evasion in large multinationals corporates, the European Commission has decided to develop the concept of a Common Consolidated Tax Base (CCCTB). The European Union seeks to promote this concept in the harmonization of corporate income taxes in order to support the free movement of capital.

The principle CCCTB is to combine the economic results of companies from all Member States, calculated according to a single European model and the subsequent distribution of profits by country, and its taxing based on the local rates. "Common Tax Base" makes business in the single European market easier, companies operating in several member states have less administrative burdens, which entail cost savings.

The European Parliament advocated common corporate taxation. According to most MEPs, harmonization is crucial for greater tax transparency and easier cross-border business. In addition to that obvious benefit of harmonizing common tax bases for multinational enterprises would help to establish an order for deductible items and allow explicit comparison of the tax burden on businesses. However, its opponents argue that it will restrict healthy competition and decrease the economic growth of Europe. Opponents of the concept believe that the CCCTB would increase the tax burden on businesses. Moreover, the benefits apply mainly to large companies. It would preferably cause inconvenience to SMEs.

The largest supporters of the CCCTB concept among the Member States are France and Germany. By contrast, the greatest opponents of the concept are the United Kingdom, Ireland, Estonia and Slovakia. Ireland argues mainly that lower corporate income taxes have caused rapid economic growth in the country. Slovakia also wants to retain its competitive advantage in the form of low corporate income tax rates. This competitive advantage provides Slovakia an inflow of foreign investment and economic growth, which helps reduce disparities between Slovakia and developed countries of the European Union.

The harmonization of income taxes in the European Union progresses slowly, and always brings the same arguments. The different political economic and social developments in the regions of Europe have been reflected in the acceptance of different tax burdens by individuals and businesses. The inhabitants of the post-communist countries were not accustomed to the high tax burden, which is typical especially in the countries of Western and Northern Europe. It is very questionable that attitudes towards harmonization will change soon.

The results of graphical analyses indicate the potential step forward to harmonization. The process could begin with the harmonization within countries that are geographically and politically close together. The geographical closeness of the countries in this case also largely represents economic and historical identity or similarity in recognized social values. Harmonization would bring together countries that have a similar tax burden first and allow them to cooperate more effectively. Countries that are inexorably seeking to harmonize taxes, such as

Germany and France have already thought about this idea. In this way, harmonization could be continued in other interested countries of the European Union.

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DEVELOPMENT OF THE FINANCIAL POLICY OF THE EURASIAN ECONOMIC UNION COUNTRIES: TAX HARMONIZATION

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Abstract. The paper presents an analysis of viewpoints in the debate concerning tax harmonization in integration unions and the results achieved in the Eurasian integration process, focusing on the specifics of taxation in the EAEU member states. The findings have led the author to conclude that there are considerable differences in taxation approaches and the rates of major budget-forming taxes and excises in the EAEU countries and non-tariff barriers still exist in product and services markets, which is an obstacle for mutual trade and access of excisable goods to the markets of union states. Measures to refine taxation systems are identified with a view to expanding budget revenues and ensuring the competitiveness and financial stability of the EAEU member states. Such measures include the establishment of a unified identification system for foreign trade operators (UISFTO), enhancement of electronic services, automation of information exchange between tax and customs authorities and implementation of new tax administration mechanisms in digital trade.

Keywords: indirect taxation; VAT; excises; customs duties; double taxation; personal income taxation; tax administration

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JEL Classifications: F30, F33

1. Introduction

The Eurasian Economic Union (EAEU) was established, in part, as a response to the economic and political influence of the European Union and other countries. Currently, the member states are Armenia, Belarus, Kazakhstan, Kyrgyzstan and Russia. The EAEU's key objectives are to raise the competitiveness and cooperation between the member states and to promote stable development in order to raise the living standards of the member states.

The EAEU provides for free movement of goods, services, capital and labor between the states and envisages coordinated and harmonized common policy in macroeconomics, transport, manufacturing and agriculture, energy, foreign trade and investment, customs, technical regulation, competition and antitrust regulation.

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Apart from the primary goals, such as facilitating conditions for stable development of the economies of the member states with a view to improving living standards for local populations and proceeding toward the establishment a single market in goods, services, capital and labor resources within the EAEU, another major objective of the Union is the development of a common tax area.

The issues of tax standardization and harmonization of tax legislation in the EAEU countries have gained specific relevance. The countries' emerging objectives are the refinement of tax administration mechanisms, elimination of disproportions and establishment of equal economic conditions in personal income taxation.

2. Literature review

One of the key areas of integration taking place in the Eurasian territory is the financial sector. The ultimate goal of integration in the financial sphere is the establishment of a common financial market of the EAEU member states (Kofner, 2018). An important direction in cooperation between the member states in the development of a common financial market is the harmonization of tax legislation (Paying Taxes 2019; 2018).

The economic influence of taxation systems for member countries of integration unions has been approached by researchers of various academic schools. A common view is that the transition to a "fiscal union" for members of integration unions has a stabilizing effect in the case of macroeconomic shocks (Bargain et al., 2013).

Liapis, Rovolis and Galanos (2013) point that tax burden on salary, profit, assets and goods and services has a significant impact on the competitiveness between countries, which, in turn, considerably influences the real economy of common markets.

Integration covers almost all aspects of relations in member states, particularly, politics, economics, social and cultural spheres (Dudin et al., 2019). The term "tax harmonization" is used to refer to this process (Safonova et al., 2016).

Tax harmonization is an important part of the process of financial integration. Fiscal integration is a process whereby a group of countries agrees on a set of measures to achieve a higher level of budget convergence, with the ultimate goal of establishing a fiscal union (Daniele and Geys, 2015).

Tax harmonization is usually deemed as a process of adjustment of tax systems across jurisdictions for the achievement of a common political goal (Bénassy-Quéréa et al., 2014). Tax harmonization involves the elimination of tax distortions affecting the flows of goods and production inputs to ensure efficient distribution of resources within the integrated market (Ponomareva et al., 2019; Wołowiec, 2018).

According to the German economist Sinn (1990), tax harmonization is the process, by which a heterogeneous group of countries, federal states or even local governments agree on setting a minimum and maximum level of their tax rates, including a higher degree of harmonization of tax legislation, in order to attract foreign investors and to encourage local development and investments.

The discussion of tax harmonization has been on for several years and no common ground has been found yet whether the policy should be maintained at the national level or coordinated in a wider international group (Ďurinová, 2006).

The need for tax harmonization in member states of integration unions is emphasized in the works by Baldwin (Baldwin and Wyplosz, 2012), Andriyash (2014) and Lucas (2001).

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Tax harmonization and coordination within integration unions help to stabilize revenues and avoid tax distortions and ensure smooth and uninterrupted operation of the common market with free movement of goods, services and capital (Liapis et al., 2016).

Tax legislation harmonization and the signing of international treaties allow avoiding double taxation (Himçi, 2014).

However, alternative views on the effects of a common fiscal policy on national economies uncovering the drawbacks of tax harmonization are presented in De Grauwe (2003), Rita de la Feria (2009), etc.

Tax harmonization involves three elements: the alignment of tax rates, common tax base determination approach and uniform application of agreed rules (Bräutigam, 2008).

Tax harmonization covers two directions, those of direct and indirect taxation (Beauvallet, 2018). Regarding direct tax harmonization, there are usually considerable differences between the tax systems of member states (Morina and Peci, 2017).

The harmonization of indirect taxes should involve convergence in statutory regulations governing VAT and excises (Teacher and Law, 2013).

Assessments of economic consequences of indirect tax harmonization in integration unions can be found in the works by Posen and van Walbeek (2014), Bouw (2017), Petrosyan (2016), Slintáková and Klazar (2010), Jenkins, Jenkins and Kuo (2006), Mathis (2004), Hodzic and Celebi (2017), Slintáková et al. (2010), etc.

A special focus of the EAEU agenda now is the harmonization of indirect taxes, as they directly influence the pricing in mutual trade (Likhacheva, 2018). Growing mutual trade turnover would increase budget revenues from indirect taxes (Saktaganova et al., 2018).

The provisions of articles 71 and 72 of Section XVII "Taxes and Taxation" of the Treaty on the Eurasian Economic Union set forth the principles of member states cooperation in the field of taxation and indirect tax collection in member states making the basis of the 18th Protocol to the EAEU Treaty (Protocol on the Procedure of Levying Indirect Taxes..., 2014).

The most noticeable achievements of the EAEU in simplifying the payment and calculation procedures of indirect taxes include (Tavadian, 2019):

- The collection of indirect taxes is carried out in accordance with the principle of the country of destination, which provides for the application of a zero rate of VAT on exports with the right to recover input VAT. Imports are subject to VAT, which is levied alongside other customs duties and taxes;
- Indirect taxes on imported goods should not exceed indirect taxes on similar domestic products (the principle of non-discrimination);
- Setting minimum rates in respect of excisable goods;
- Regulation of tax administration principles in indirect taxes.

As to the unification of direct taxation, the progress is currently extremely slow, as it takes the challenging path of compromise since direct taxes are closely tied to the national economy and social development.

An analysis of literature suggests that taxation is one of the areas vividly demonstrating that there is still a long way to go before full economic integration is achieved as it can only be accomplished with full tax harmonization.

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Even with numerous scientific publications concerning taxation, the aspects of tax harmonization in the EAEU integration space have not been adequately studied and require further research.

The aim of this paper is to develop forward-looking directions of cooperation within the EAEU in refining the tax collection system and developing a common tax area of the EAEU.

The harmonization of tax systems of the EAEU states is a principal step in integration, which is aimed at the elimination of administrative barriers in mutual trade and establishment of equal competitive conditions for economic entities in the EAEU area.

3. Methods

The methodological basis of the research is bibliometric analysis of literature, qualitative and quantitative analysis of documents and statistical data, as well as expert assessment of tax harmonization issues.

Several groups of sources were used for this research to ensure reliability and relevance of obtained information:

– Web of Science and Scopus publication databases containing peer-reviewed papers mostly in English from Russian and international scientific journals and allowing access not only to abstracts, but also full texts of papers, reviews, conference reports, etc.;
– Specialized resources for full-text search in research publications in all formats and disciplines (Scirus and Google Scholar, etc.);
– Official sources, including regulations of the EAEU concerning the development of the integration area, including bilateral treaties and memoranda;
– Analytical materials, reports, periodical reviews and studies of the Eurasian Development Bank, Eurasian Economic Commission, Eurasian Partnership;
– National information sources, including tax codes of the member states of the EAEU, and databases of statistical indicators concerning finance and budget revenues.

The empirical part of the study was based on the initial analysis of data characterizing tax system development in the EAEU member states and the results of quantitative studies as part of expert surveys engaging respondents with relevant competence levels and professional background in finance and taxation.

The expert survey was meant to identify the key challenges and administrative barriers and determine the outlook of cooperation in tax policy in the EAEU area.
The survey was primarily conducted in the form of a questionnaire filled in by a group of 10 respondents, including specialists of research organisations, tax practitioners and officials.

The experts were asked to assess a list of barriers for tax harmonization to identify the most urgent and significant points. For that, the ranking method was used; each problem was assigned a score of 1 to 5, where 1 indicated the lowest significance and 5 – the highest significance.

4. Results

Over the relatively short period of existence of the EAEU, remarkable progress has been achieved in Eurasian integration. One of the key aspects in expanding mutual trade, free movement of capital, financial resources, services and labor within the integration union is tax policy.

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In 2015-2017, tax revenues across all member countries of the integration union registered rising trends (Table 1).

Table 1. Tax revenues in fiscal revenues of member countries of the EAEU, billions of national currency.

Country	2015	2016	2017	Change	
				+/-	%
Armenia, billion Armenian drams	1,072.1	1,090.9	1,168.9	96.8	9.0%
Belarus, billion Belarusian rubles	22.3	23.9	25.6	3.3	14.8%
Kazakhstan, billion tenges	5,551.2	6,393.5	7,518.7	1,967.5	35.4%
Kyrgyzstan, billion soms	84.7	93.8	103.4	18.7	22.1%
Russia, billion Russian rubles	15,421.4	15,866.6	17,617.9	2,196.5	14.2%

The major budget-forming tax for the EAEU countries is VAT (Fig. 1).

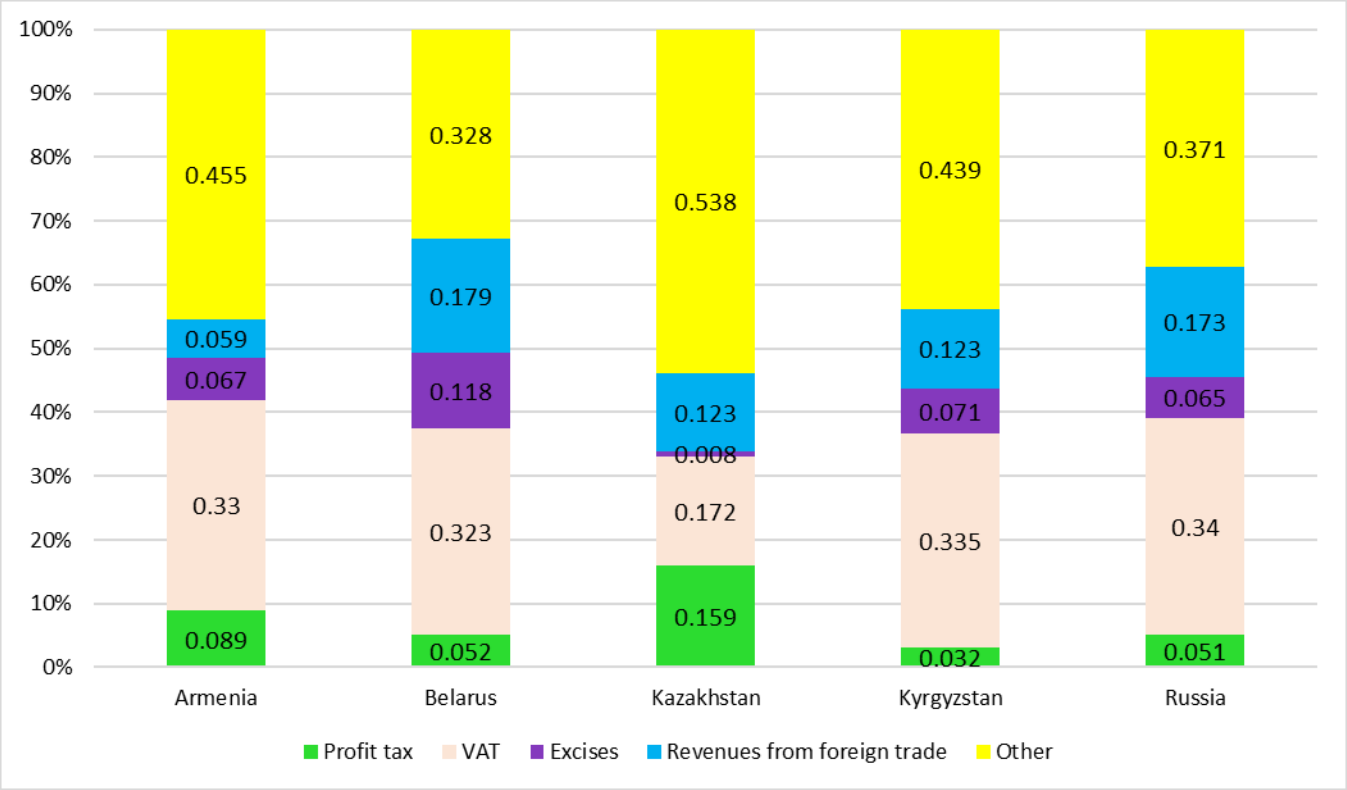

Fig. 1. Tax revenue structure in the EAEU member countries in 2017.
Source: Financial statistics of the Eurasian Economic Union, 2018.

It is worth noting that for now, there are still considerable differences in the VAT rates in the EAEU member countries (Table 2).

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Table 2. Rates of major taxes in the EAEU member countries in 2018.

Country	VAT		Profit tax	Personal income tax	Corporate property tax
	Standard rate	Discounted rate			
Armenia	20%	0%	5%; 10%	10%; 20%	from 0.1% to 0.8%
Belarus	20%	0%; 10%	10%; 12%; 18;	4%; 9%; 12%; 15%	1%
Kazakhstan	12%	0%	10%; 15%; 30%	5%; 10%	0.5%; 1.5%
Kyrgyzstan	12%	0%	0%; 5%; 10%	10%	0.35%; 0.5%; 0.8%

In 2018, the VAT rate in Belarus and Armenia equaled 20%. The lowest rates (12%) were in Kazakhstan and Kyrgyzstan. A discounted rate of 10% is applied in Russia and Belarus (OECD, 2018). Starting January 1, 2019, a law came into effect in Russia, raising the VAT rate to 20% from 18%. Simultaneously, under the act, all applicable discounted rates of the tax set at 10% are still in place.

Personal income taxes in the EAEU states are levied in accordance with article 73 of the Treaty on the EAEU at the rates applicable for residents of the state where such citizen of an EAEU state is employed. Different rates are applied in personal income taxes. The personal income tax rates for residents of the EAEU states range from 4% to 35%. The lowest base rate of the personal income tax is established in Kazakhstan and Kyrgyzstan. The most differentiated personal income tax scale among the EAEU states is used in the Russian Federation (the minimum level is 9%, the maximum level is 35%).

As to excises, similar excisable product categories are established in the EAEU countries. The alignment of excisable product categories to a common framework list was performed as part of the unification and harmonization of taxation of the member states of the EAEU (Iakunina, 2017).

The trends of excise rates in the EAEU countries in 2015-2017 are shown in Table 3.

Table 3. Trends of excise rates in the EAEU member states in 2015-2017.

Country	2015	2016	2017
Russia (cigarettes)	960 rubles per 1,000 pieces + 9%, but not less than 1,250 rubles per 1,000 pieces	1,250 rubles per 1,000 pieces + 8.5%, but not less than 1,040 rubles per 1,000 pieces	1,420 rubles per 1,000 pieces + 9.5%, but not less than 1,600 rubles per 1,000 pieces
Belarus (smoking tobacco, pipe tobacco)	386,300 Belarusian rubles per 1 kilogram	482,700 Belarusian rubles per 1 kilogram	386,300 Belarusian rubles per 1 kilogram
Kazakhstan (filter tip cigarettes)	3,900 tenges per 1,000 pieces	5,000 tenges per 1,000 pieces	6,200 tenges per 1,000 pieces
Armenia (filter tip tobacco cigarettes)	5,000 drams per 1,000 pieces	5,000 drams per 1,000 pieces	5,000 drams per 1,000 pieces
Kyrgyzstan (filter tip cigarettes)	350 soms per 1,000 pieces + 8%, but not less than 450 soms per 1,000 pieces	580 soms per 1,000 pieces	1,000 soms per 1,000 pieces

According to the results of the expert ranking, the top three barriers hindering integration processes in the EAEU area are as follows (Fig. 2):

– wide-ranging tax reliefs at the national level;
– considerable differences in indirect tax rates established at the national level make the most crucial problem;
– inadequacy of interdepartmental cooperation between customs and tax authorities.

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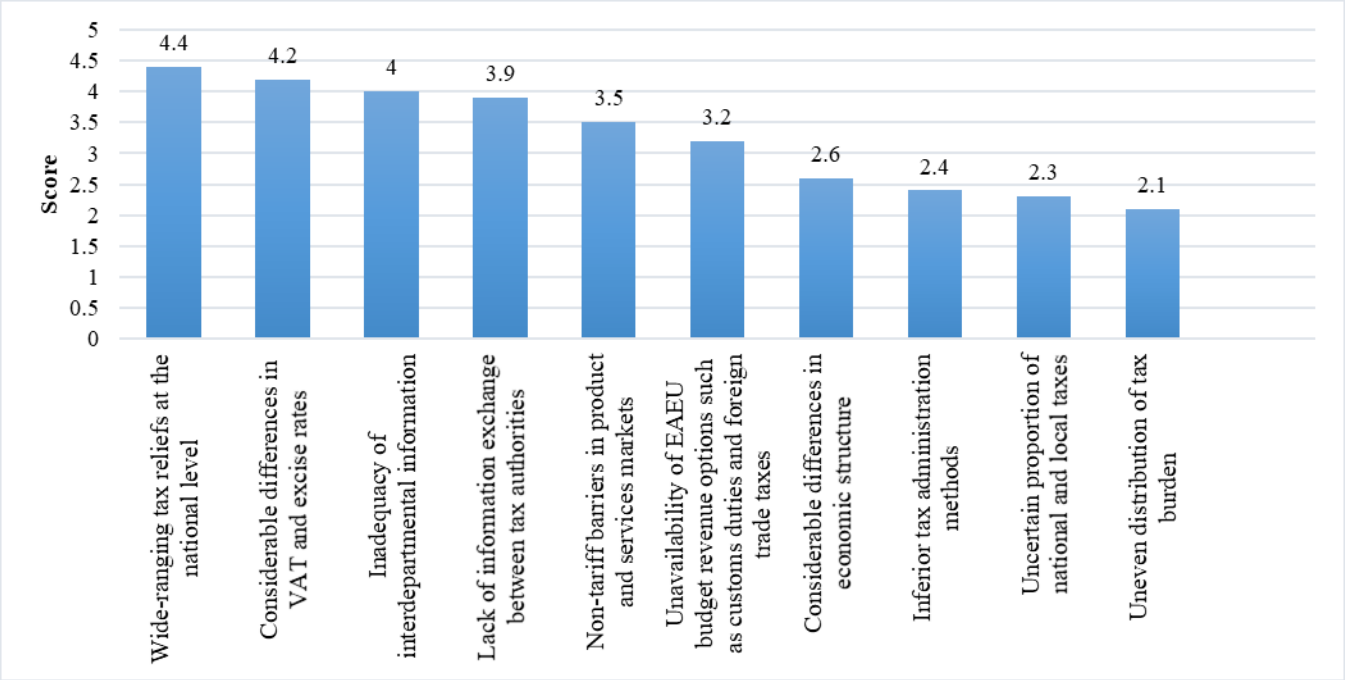

Fig. 2. Expert assessments of tax barriers in the EAEU area.

According to the experts, the most acute problem is that of tax reliefs at the national level. E.g., a discounted VAT rate applies in the Republic of Belarus for several domestically manufactured product types.

Considerable differences in taxation approaches with regard to indirect tax rates in the EAEU countries constitute the second most significant problem and a barrier in mutual market access for excisable products between the member states, which creates the basis for their uncontrolled cross-border flows and expansion of shadow sectors.

Moreover, the experts cite the issues of information exchange between tax authorities in the EAEU, such as remaining non-tariff barriers in product and services markets and unavailability of EAEU budget revenue options such as customs duties and foreign trade taxes (excises, VAT).

However, several challenges are now slowing down the integration process in the union, particularly, considerable differences in taxation approaches in the EAEU countries, remaining non-tariff barriers in product and services markets and unavailability of EAEU budget revenue options, such as customs duties and foreign trade taxes (excises, VAT).

5. Discussion

The EAEU countries' objectives now include the refinement of the indirect taxation collection system and further harmonization of tax legislation, elimination of disproportions and establishment of equal economic conditions in taxation (Dorski et al., 2017; Bulkhairova et al., 2019).

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The experts were asked to propose priority directions in tax harmonization efforts within the integration union of the EAEU. According to the experts, such priorities include:

- Establishment of an identification system for foreign trade operators within the EAEU;
- Enhancement of online services of tax authorities and arrangement of automated information exchange;
- Refinement of tax administration mechanisms in electronic commerce and excisable product market.

The need for an identification system for foreign trade operators reflects the fact that the existing registration systems for individuals and legal entities operated in the EAEU countries are completely different. Thus, a Taxpayer Identification Number is assigned in the Republic of Armenia, a Payer's Identification Number – in the Republic of Belarus, an Individual Identification Number/Business Identification Number – in the Republic of Kazakhstan, a Taxpayer's Identification Number and a Code of Republican Classifier of Enterprises and Organizations – in the Kyrgyz Republic and a Taxpayer Identification Number – in the Russian Federation.

Besides, any single foreign trade operator may be simultaneously registered under different identification numbers, which in some cases renders unique identification of the operator almost impossible.

According to one of the experts, an established identification system for foreign trade operators within the EAEU would be instrumental in "optimizing the volume of processed information and in simplifying electronic information exchange between tax and customs authorities" (Expert B, head of information systems integration department, more than 10 years expertise).

All EAEU members support the UISFTO initiative, though with their own specific concepts and propositions. In particular, the State Customs Committee of Belarus proposes that the system should serve the goals of customs regulation, as well as state tax regulation within the EAEU area (Bakinova et al., 2019).

Another priority for the EAEU is the enhancement of online services of tax authorities and establishment of automated information exchange in the EAEU countries (Frolova et al., 2018). The lack of efficient mechanisms of cooperation and information exchange between tax authorities in the EAEU increases the risk of tax evasion among residents (Novikov et al., 2019). According to OECD estimates, budget revenue losses associated with tax base erosion reach USD 100-240 billion per year, which corresponds to 4-10% of the global corporate income tax.

The lack of efficient mechanisms of cooperation and information exchange between tax authorities in the EAEU poses the risk of intensifying tax competition and tax evasion among residents.

According to A. Levashenko, Head of the Russia-OECD Center, fighting tax evasion requires that the Treaty on the Eurasian Economic Union should include the objective of promoting cooperation in information exchange between tax authorities and an action plan should be developed under the OECD standards to counter tax-related malpractices (Levashenko, n. d.). Such plan should set tasks regarding the development of automated information exchange in a wide scope of tax issues and the accession of countries to the automated information exchange system under multilateral CRS MCAA and CbC MCAA frameworks (Malikova et al., 2019).

The need for enhancement of the mechanisms of tax administration is caused by globalization and informatization of economic processes (Onokoy et al., 2019). The main challenges in taxation in the EAEU countries remain the cross-border online trade and electronic service provision, while the respective tax arrangements are still under development. Particularly, one of the objectives of tax policy in the EAEU is the development of conceptual goals of taxation in electronic commerce (Perepelitsa et al., 2018).

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The experts' key focus, for now, relates to the following two blocks of issues, namely the development of a VAT collection mechanism for electronic services and analysis of taxation methods for cross-border trade in goods.

The mechanism of taxation of electronic services is based on the practice of the European Union and the provisions of Russian and Belarusian laws in the field, as relevant tax regulations are in place in these member states.

The aspects of indirect taxation of electronic commerce on the Internet are not specifically governed in the legislation of the member states and general rules apply to indirect taxation of imports and sales (Dyussembekova et al., 2019). For now, only Kazakhstan has specific regulation mechanisms in place with regard to corporate income tax in electronic commerce. Since 2018, the notions of "online marketplace", "online store" and "e-commerce" have been set forth in the Tax Code of the Republic of Kazakhstan.

The experts note that, in all areas of the digital transformation of the EAEU member states, a key priority is the development of a statutory terminological framework of electronic commerce at the Union level, which would prevent collisions and conflicts in legal regulation. The proposal needs to be discussed regarding the introduction of the term "electronic services" in Treaty on the Eurasian Economic Union and the establishment of a concerted mechanism of VAT levying in electronic service provision, exceptions and the procedure for determining the place of supply of such services.

Thus, the proposed directions of cooperation within the EAEU would promote convergence between the tax systems and the development of a common tax area of the EAEU.

Conclusion

The conducted research confirmed the assumption that tax harmonization should be viewed as a crucial stage of the integration process, intended to bring down barriers and create equal competitive conditions in mutual trade for economic entities in the EAEU member states.

The development of a common financial market is impossible without the refinement of the taxation systems of the EAEU member states. Tax harmonization and convergence efforts are currently underway in the Union.

However, the remaining obstacles, such as considerable differences in taxation approaches, and unavailability of budget revenue options, such as customs duties and foreign trade taxes, have hindered integration processes and the development of mutual trade in the EAEU member states.

Priority directions of taxation system development in the EAEU countries relate to the establishment of an identification system for foreign trade operators, enhancement of online services and automation of information exchange between tax and customs authorities and implementation of new mechanisms of tax administration in digital commerce.

The findings of the conducted research suggest certain challenges are still weighing over the tax harmonization process, which warrants further research regarding the enhancement of tax administration, non-tariff regulation, etc.

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MODELING CLUSTER DEVELOPMENT USING PROGRAMMING METHODS: CASE OF RUSSIAN ARCTIC REGIONS*

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Abstract. The aim of this research is to show how the process of data analysis can be automated through development of an information system. The information system can be used for the identification of economic clusters and analysis of the regional potential for economic growth. The authors used data on the Russian Arctic regions with extreme social, geographical, and economic conditions collected from 2009 to 2016 as an example. The authors have designed a database using MS Access software. The authors used the methodology of the European cluster observatory and the approach suggested by M. Porter to identify economic clusters. This methodology was complemented by introduction parameters, which mirror the strength and employment dynamic of the clusters. Based on the employment data of 83 Russian regions during the period of 2009–2016 the authors have calculated cluster localization parameters for nine Russian regions, which are partly or fully located in the Arctic zone. The authors suggest that the cluster structure in this area is weak and most of the significant clusters are declining. The only significant cluster, which is growing in all regions, is the «Oil and Gas» cluster. In conclusion, the authors state that the obtained results are vital for policy makers and can be used for elaborating the regional economic development strategy in order to support regional diversification and specialization, which are closely related to positive spillovers.

Keywords: Arctic region; economic cluster; cluster identification; MS access; data processing; regional policy making

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JEL Classifications: O1, O3

1. Introduction

Creating conditions for the economic development of regions is one of the most important tasks for regional governments, who nowadays, in large part, are supported by informational systems (Morrissey, 2016; Rytova & Gutman, 2019). During this process, a regional government should take into account social, economic, and

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geographical factors, which can affect the development of each concrete territory (Andreyeva et al., 2018; Dvas et al., 2018; Baltgailis, 2019; Petrenko et al., 2019).

A combination of these factors determines whether a certain region will or will not be capable of developing industries which will be competitive at national and international scales. Consequently, analysts should process multidimensional data which reflect the current situation. Based on such analyses, they should receive specific results, which can be used for determining potential directions for development of the region (Degtereva et al., 2018; Kichigin, 2017; Kozlov et al., 2017; Thill, 2019). Therefore, it is essential to develop informational systems to support and enhance the processes of policy making and, consequently, positively affect regional economic development (Chun et al., 2010; Höchtl et al., 2016; Velasquez & Hester, 2013; Prodani et al., 2019).

A cluster approach to regional economic development put forth by Porter (1998) and developed further by a number of authors (Delgado et al., 2014, 2015; Tvaronavičienė, 2017; Tvaronavičienė & Razminienė, 2017; Razminienė & Tvaronavičienė, 2018; Bublienė et al., 2019), is one of the most innovative and effective tools for policy implementation. The results of applying a cluster approach in American (Gupta, et al., 2006; Guzman & Stern, 2015; Peiró-Signes, et al., 2015; Porter et al., 2011), European (Crawley & Pickernell, 2012; Looijen & Heijman, 2013; Sellar, et al., 2011) and Russian (Islankina & Thurner, 2018; Kutsenko et al., 2017; Rodionova et al., 2017) territories are widely represented in scientific literature. However, these applications are lacking in two main aspects which are essential for using this approach effectively in practice. The first aspect is that most of them are focused on receiving results, rather than making the process reproducible and applicable for other researches and practitioners. The second aspect is that they aim at finding global linkages between some factors and the level of cluster development (Akpinar et al., 2017; MATICIUC, 2015), but do not focus on concrete results for a concrete set of territories with extreme social, economic, and geographical conditions. This gap may lead to the development of a «cure» which is suitable for all territories, but in some extreme cases is ineffective and should be combined with some «additives». Therefore, it is necessary to describe how we can create an information system which will provide an analytical background for the development of the cluster-based policy and give examples of applying these results in territories with extreme social, economic, and geographical conditions.

As an example of such territories, we have chosen Russian regions which are partly or fully located in the Arctic zone (Leksin & Porfiryev, 2017). These are poorly developed territories which have a certain economic potential (Borisov & Pochukaeva, 2016; Komkov, et al., 2017; Korovkin, 2016). Developing these territories is claimed to be one of the top priorities for a balanced development of the Russian Federation (Gutman et al., 2018; Romashkina et al., 2017; Tatarkin et al., 2017). Developing an effective cluster-based policy, which relies on the results of comprehensive and multidimensional analysis, is key for long-term socioeconomic growth of the Russian Arctic regions (Komkov et al., 2017; Rytova et al., 2017).

Therefore, the aim of this research is to show how, through development of an information system, the process of data analysis can be automated, which is necessary for identifying and analyzing economic clusters. In addition, we demonstrate a potential approach to cluster structure analysis of the Russian Arctic regions, which have both extreme social, geographical, and economic conditions and a potential for economic growth, during 2009–2016.

2. Data and methods

2.1. Data and cluster identification methodology

In order to gather the information necessary for calculating the parameters of cluster localization, we obtained detailed data on employment from three main sources: the joint economic and social data archive of the Higher School of Economics (HSE, 2018), the Central Statistical Database of Russia (Federal State Statistics Service, 2019), and United Interdepartmental Information-Statistical Service (MinComSvyaz, 2019). These sources

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provide official data obtained from the Russian Federal State Statistics Service. We used data from united interdepartmental information-statistical service as the main source of data, as it is better structured and contains more information. In some cases, when there were not enough data for some of the regions, we used data from the central statistical database of Russia and the joint economic and social data archive of the Higher School of Economics. The data were organized in the form presented in Table 1. As a result, we received 28044 observations for calculating the localization parameters of 37 clusters for 83 regions of Russia for the period of 2009–2016.

Table 1. Specifying the data used for identifying economic clusters in Russia

Federal District	Region	Year	Cluster	OKVED codes	Number of the employed
List of 8 Federal Districts, which include Russian regions	List of 83 Russian regions	Identifying the time: 2009–2016	List of 37 clusters, identified according to M. Porter's classification for each region	Each of the 37 clusters is composed of several OKVED codes. Therefore, for each cluster, we detail its composition	For each code we filled the number of people employed in the region
Sources: Employment statistics by activity type were obtained from: (HSE, 2018), (Federal State Statistics Service, 2019), (MinComSvyaz, 2019). Authors composed clusters based on employment statistics of separate types of activities, presented in each region.					

We follow the methodology developed by Porter (1998), which is now used by the U.S. Mapping project and the European Cluster Observatory for identifying and monitoring cluster development. In particular, we use three coefficients which show the localization properties of each cluster: localization, focus, and size. This methodology was presented in detail by both developers (Ketels & Protsiv, 2014), their followers (Kopczewska, 2018; Kopczewska et al., 2017) and the authors of this research study (Berawi, 2017; Berawi et. al., 2018; Schepinin et. al., 2018) in earlier works. The European Cluster Observatory defined these three factors as the «Localization coefficient» (1), «Size» (2), and «Focus» (3). The values of the factors, within the threshold values, reflects whether the examined cluster has or has not achieved a sufficient «critical mass» to generate positive external effects and relations. These indicators are calculated using employment statistics and are reflected in the following formulae:

$$LQ = \frac{E_{ig}}{E_g} / \frac{E_i}{E}, \qquad (1)$$

where LQ is the «Localization coefficient»; E_{ig} is the number of people employed in cluster i in region g; E_g is the total number of people employed in region g; E_i is the number of people employed in cluster i; and E is the total number of people employed.

$$Size = \frac{E_{ig}}{E_i}, \qquad (2)$$

where Size is the «Size» of cluster i; E_{ig} is the number of people employed in cluster i in region g; and E_i is the number of people employed in cluster i.

$$Focus = \frac{E_{ig}}{E_g}, \qquad (3)$$

where Focus is the «Focus» of cluster i; E_{ig} is the number of people employed in cluster i in region g; and E_g is the number of people employed in region g.

G. Lindqvist, a Swedish economist from the European Cluster Observatory (Lindqvist, 2009), establishes the following criteria as the threshold values, which mark significant cluster groups in a region:

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1) «Localization coefficient» ≥ 2;
2) the region should be included in top 10% in «Size»;
3) the region should be included in top 10% in «Focus».

In addition, a region cannot receive a star if critical mass of the cluster is less than 1000 employed people.
If a criterion is fulfilled, the cluster earns one «star». Thus, the maximum a cluster can receive is three «stars». The number of «stars» determines the strength of the cluster group

Table 2. Level of region specialization in types of activities performed by cluster i in region g

Level of region specialization	Average number of stars, obtained by cluster i in region g
High	(2.3; 3]
Medium	(1.7; 2.4]
Low	[1; 1.7]
Region has no specialization in this type of activity	[0; 1)

Source: Compiled by aurhors

In order to systemize the results and present them more clearly, we also separate regions by two dimensions: the level of specialization in types of activities, performed by cluster *i* (Table 2) in region *g* and the dynamic state of employment of cluster *i* in region *g* (Table 3). We have built dimension «levels of region specialization» in types of activities performed by cluster *i* in region *g* based on the average number of stars which cluster *i* in region *g* receives for the analyzed period, while the second dimension is based on the employment dynamics, calculated through the growth rate:

$$GR_{t=0} = \left(\frac{x_{igt\geq 1}}{x_{igt=0}} - 1\right) \times 100\%, \qquad (4)$$

$$GR_{t} = \left(\frac{x_{igt+1}}{x_{igt}} - 1\right) \times 100\%, \qquad (5)$$

The growth rate allows estimating the change in clusters' critical mass and reflecting the dynamic aspect of cluster growth, where $x_{igt=0}$ is the number of people employed in cluster *i* in region *g* at the beginning ($t = 0$) of the analyzed period, and x_{igt} is the number of people employed in cluster *i* in region *g* at the time $t \geq 1$ and x_{igt+1} - at the time $t + 1$. $GR_{t=0}$ is the measure for calculating long-term employment dynamics, while GR_t is used for the short-term. In Table 3 we propose a possible classification of dynamic states of the cluster depending on the values of GR_0 and GR_t at the end of the period and their overall dynamics. It complements the existing localization measures, since the main problem of the «Size», «Focus», and «Localization coefficient» is their independence from the time trend. It means that if employment of the cluster, employment of the whole cluster group, and total employment are decreasing, the «Localization coefficient» remains stable, and vice versa, since it cannot catch up with dynamic changes in employment in certain cases

Table 3. Types of dynamic state of employment of cluster *i* in region *g*

Dynamic state	Characteristic	Interval for $GR_{t=0}$ and GR_t, %
Strong growth	Strong positive employment dynamics	$[10; +\infty)$
Moderate growth	Moderate positive employment dynamics	$[5; 10)$
Stable	Stable employment dynamics with slight changes in employment	$(-5; +5)$
Unstable	Employment dynamics with rough positive and/or negative changes at the beginning, in the middle or at the end of the period	$[5; +\infty)$ and/or $(-\infty; -5]$
Moderate decrease	Moderate negative employment dynamics	$(-10; -5]$
Strong decrease	Strong negative employment dynamics	$(-\infty; -10]$

Source: Compiled by aurhors

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2.2. Description of information system used for automated cluster identification

The database «Clusters of Russia's Regions» was developed and registered in 2017 in order to support research of the cluster structure in Russia. During the development process, we wanted to achieve the following objectives:

- structuring and rationalizing big data concerning employment in different clusters in the Russian regions;
- creating a convenient system for data input and editing;
- creating a computing mechanism for estimating the localization coefficients for clusters in a certain year;
- creating a flexible system which can be modified in case some regions have to be added or new clusters have to be defined;
- automating the estimation results and converting them into analytical reports.

A user receives the results of analysis in the form of summary tables, where main results are given for each region and each cluster. The results are calculated in accordance with the methodology discussed in Paragraph 2.1.

Based on the research of the data structure we created four entities: «Federal District», «Region», «Cluster», and «Employment». These entities allow us to minimize input errors and provide integrity of data. The entity «Federal District» has two attributes: an identifier (which is a primary key), and a label. This table is a glossary, which provides secure and convenient input of data in interconnected objects and access to the groups of regions. The entity «Region» belongs only to one Federal District and cannot exist independently. Therefore, apart from its own primary key, it has a secondary key for connection with the entity «Federal District». The entity «Cluster» has two main attributes: a short label and a named key. Additional attributes are used for interface organization, because long labels take too much space and are not suitable for usage in headlines and summary tables. The entity «Employment» contains two external keys for connection with «Region» and «Cluster» and a nested primary key, which protects the table from data duplication since only one cluster i can be created for each region in a certain time period. Therefore, each cluster can be uniquely determined through such attributes as year, region, and cluster. For the sake of convenient data processing, we have also added a counter, which defines the unique nested key. The database evaluates the following attributes: «Localization coefficient», «Size», «Focus», and «Number of stars» (Table 4).

Table 4. Attributes of entity «Employment»

Attribute title	Attribute label
Year	YearEpml
Region	IdRegion
Cluster	IdIndustry
Emp_{ig}	Empig
Size	Esize
Focus	EFocus
LQ	ELQ
Stars	Estars

Source: Compiled by aurhors

In order to organize the data input and provide immediate access to the clusters, a temporary entity, «Computation», with a varying number of attributes, has been introduced. It adapts for each region and cluster in a specific time period.

The physical model is SQL-based and realized in DBMS MS Access 2007 (Figure 1).

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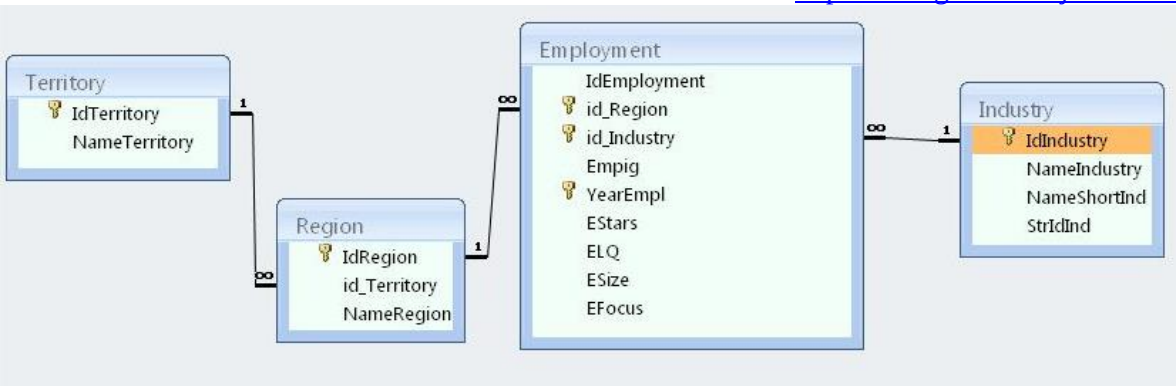
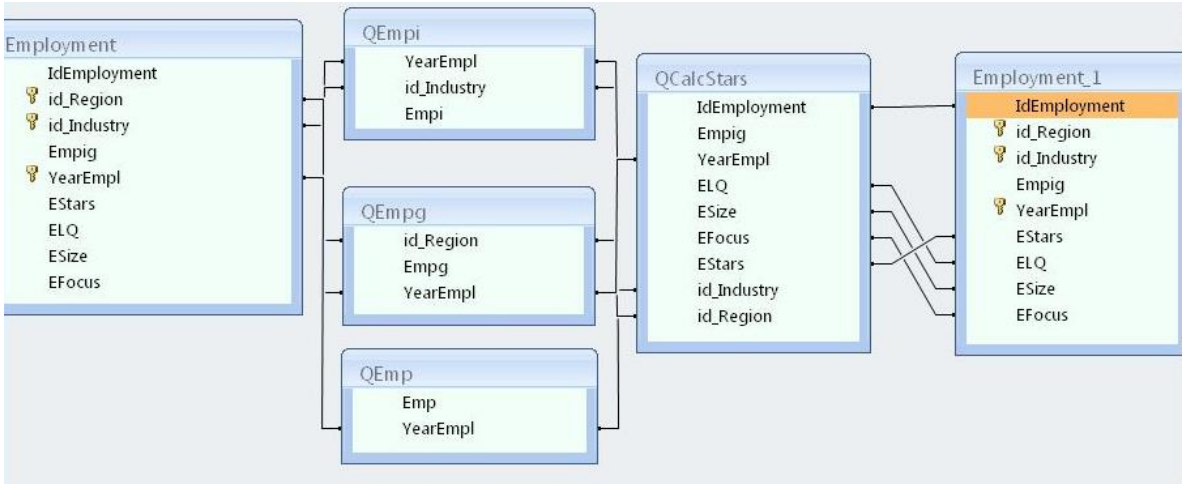


Source: Compiled by Authors
Figure 1. Physical model of «Clusters of Russia's Regions».

The table «Employment» contains data, which is used for calculation and data processing. Other tables provide a safe and convenient form for data input and make the main table free from redundant data. Using equations 1–3 the program calculates total employment by each region, each cluster, and each year. In order to implement calculations, we developed a chain of query operators and the function CalcStars (Figure 2). The program calculates the results and inputs them into the main table. The data from this table has to be analyzed and selected for display. A chain of query operators for displaying the result is presented in Figure 3.



Source: Compiled by Authors
Figure 2. A calculation model of the database

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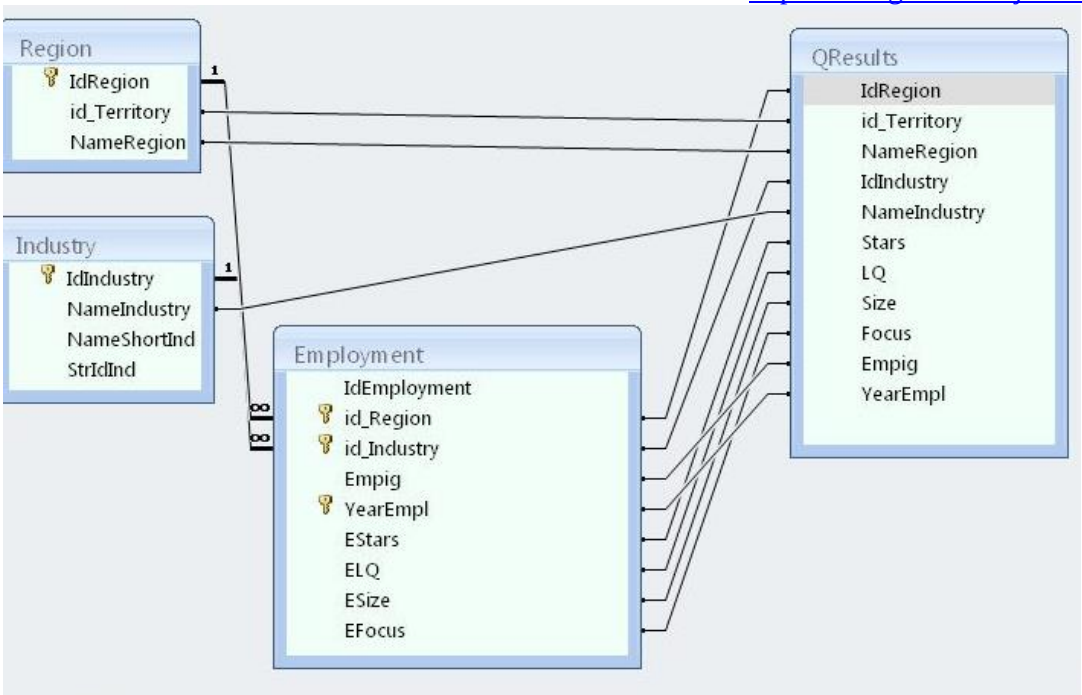

Source: Compiled by Authors
Figure 3. A chain of query operators for displaying the result

3. Results of database application

3.1. General information

In accordance with the methodology for cluster identification discussed in Section 2.1 and the database design presented in section 2.2, we have received analytical results for all 83 Russian regions for the 2009–2016 period.

Here we discuss only the results obtained for the Russian regions, which are partly or fully located in the Arctic zone. These regions are the following:

- Murmansk Oblast;
- Chukotka Autonomous Okrug;
- Komi Republic;
- Arkhangelsk Oblast including Nenets Autonomous Okrug;
- Yamalo-Nenets Autonomous Okrug;
- Sakha Republic;
- Republic of Karelia;
- Krasnoyarsk Krai;
- Khanty-Mansi Autonomous Okrug.

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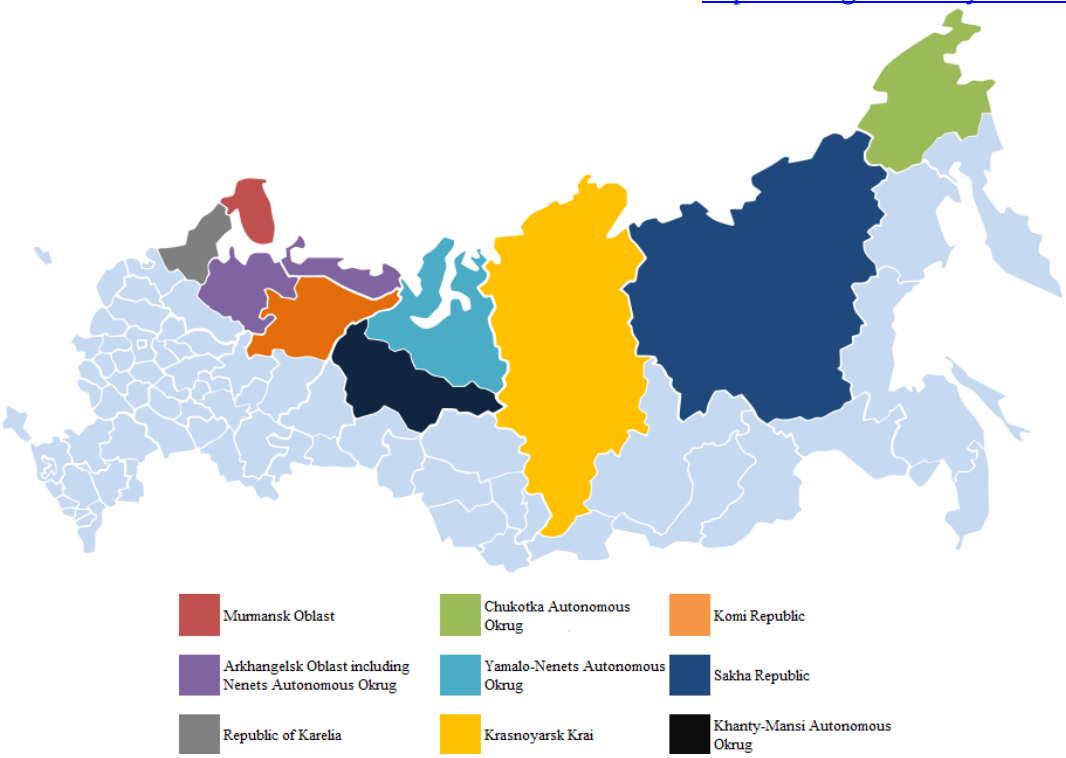

Source: Compiled by Authors

Figure 4. The map of Russian regions, which are fully or partly located in the Arctic zone

The geographical location of the regions we analyze is presented in Figure 4. Next, we present a detailed analysis of cluster specialization of each Arctic region of Russia and, after that, aggregate the results for all arctic regions.

Komi Republic cluster specialization analysis

The overall employment dynamic in Komi Republic was negative. The total number of employed people decreased by 13.97% or by 53,967 people over eight years. Analyzing the employment statistics in Komi Republic during the period of 2009–2016, we have detected five clusters: Transportation and Logistics, Oil and Gas, Paper Products, Business Services, and Construction, with all of them receiving at least one star. It means that the level of localization of these clusters, at least in one year, was relatively high in accordance with the values of the «Localization Coefficient», «Size», and «Focus». The detailed results are presented in Table 5.

Komi Republic had a medium specialization level in Transportation and Logistics and the critical mass of this cluster was unstable during the analyzed period. After a decrease of the clusters' employment by 1.07% in 2010, there was a significant growth of the clusters' critical mass from 36,403 up to the 43,756 people; that is, by 19.7% in 2012. After that, there was a stable decrease in the Transportation and Logistics cluster's critical mass: 19.35% in 2016 compared to 2012. Nevertheless, the overall specialization of the region in Transportation and Logistics activities remained at a medium level, since two localization measures out of three fulfilled the threshold requirements.

Komi Republic had a high specialization level in Oil and Gas and the critical mass of this cluster grew significantly during the analyzed period, despite some falls in 2011 and 2016. The overall increase of the cluster's critical mass was 25.76% over eight years. This resulted in a stronger specialization of the cluster and its stabilization at the high level, since three out of three localization measures fulfilled the threshold requirements.

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Komi Republic had a high specialization level in Paper Products and the critical mass of its cluster substantially decreased during the period of 2009-2016. The overall decrease of the clusters' critical mass was 27.61% over eight years. In addition, the decrease in the critical mass of the Paper Products cluster in Komi Republic was significantly greater than the overall decrease in the critical mass of the Paper Products Cluster, being 27.61% compared to 4.78%. It resulted in Komi Republic losing one star of cluster specialization in 2016, since one of the three localization measures did not fulfill the threshold requirements.

Komi Republic lost specialization in Business Services in 2012, since the cluster's critical mass decreased by 23.02% over eight years, while the cluster's overall critical mass increased by 7.41%. The breakpoint was in 2011–2012, when two localization measures did not fulfill the threshold requirements.

Specialization of Komi Republic in Construction was detected in the period of 2012–2013, when a sudden increase in employment levels brought about a fall in the construction cluster localization. However, it was a short-term increase, which did not allow the regional specialization to strengthen in the long run. Therefore, the long-term decrease of the cluster's critical mass in Komi Republic was 21.80%.

Table 5. Employment-based parameters of significant clusters in Yamalo-Nenets AO

Parameter \ Year	2009	2010	2011	2012	2013	2014	2015	2016
Common employment parameters								
E **(people)**	47427502	46719007	45872388	45898382	45815640	45486400	45106533	44446352
E_g **(people)**	386402	382869	383163	382155	373393	360442	347562	332435
Transportation and Logistics cluster parameters								
E_i **(people)**	3489740	3370683	3371228	3400956	3360962	3377649	3352174	3308218
E_{ig} **(people)**	36797	36403	41187	43756	41241	39560	37282	35289
GR_t (%)		-1.07	13.14	6.24	-5.75	-4.08	-5.76	-5.35
$GR_{t=0}$ (%)		-1.07	11.93	18.91	12.08	7.51	1.32	-4.10
Number of stars	1	1	2	2	2	2	2	2
LQ	1.29	1.32	1.46	1.55	1.51	1.48	1.44	1.43
Size (%)	1.05	1.08	1.22	1.29	1.23	1.17	1.11	1.07
Focus (%)	9.52	9.51	10.75	11.45	11.04	10.98	10.73	10.62
Oil and Gas cluster parameters								
E_i **(people)**	504955	504478	517301	536739	556754	578881	594546	606641
E_{ig} **(people)**	14858	15782	15357	15699	16624	18676	19911	18685
GR_t (%)		6.22	-2.69	2.23	5.89	12.34	6.61	-6.16
$GR_{t=0}$ (%)		6.22	3.36	5.66	11.89	25.70	34.01	25.76
Number of stars	3	3	3	3	3	3	3	3
LQ	3.61	3.82	3.55	3.51	3.66	4.07	4.35	4.12
Size (%)	2.94	3.13	2.97	2.92	2.99	3.23	3.35	3.08
Focus (%)	3.85	4.12	4.01	4.11	4.45	5.18	5.73	5.62
Paper Products cluster parameters								
E_i **(people)**	137015	136152	137499	136273	132216	128119	125839	130471
E_{ig} **(people)**	4810	4709	4444	4195	4181	3769	3611	3482
GR_t (%)		-2.10	-5.63	-5.60	-0.33	-9.85	-4.19	-3.57
$GR_{t=0}$ (%)		-2.10	-7.61	-12.79	-13.08	-21.64	-24.93	-27.61
Number of stars	3	3	2	3	3	3	3	2
LQ	4.31	4.22	3.87	3.70	3.88	3.71	3.72	3.57
Size (%)	3.51	3.46	3.23	3.08	3.16	2.94	2.87	2.67
Focus (%)	1.24	1.23	1.16	1.10	1.12	1.05	1.04	1.05
Business services cluster parameters								
E_i **(people)**	2969478	2921201	2880799	3146204	3237312	3272631	3257275	3189467
E_{ig} **(people)**	32156	32050	31026	29169	27946	26602	26282	24755
GR_t (%)		-0.33	-3.20	-5.99	-4.19	-4.81	-1.20	-5.81
$GR_{t=0}$ (%)		-0.33	-3.51	-9.29	-13.09	-17.27	-18.27	-23.02

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Number of stars	2	2	1	0	0	0	0	0
LQ	1.33	1.34	1.29	1.11	1.06	1.03	1.05	1.04
Size (%)	1.08	1.10	1.08	0.93	0.86	0.81	0.81	0.78
Focus (%)	8.32	8.37	8.10	7.63	7.48	7.38	7.56	7.45
Construction cluster parameters								
E_i **(people)**	3425797	3430749	3163493	3254308	3225983	3123938	2983398	2800194
E_{ig} **(people)**	28568	28673	29713	35404	34969	29572	24566	22340
GR_t (%)		0.37	3.63	19.15	-1.23	-15.43	-16.93	-9.06
$GR_{t=0}$ (%)		0.37	4.01	23.93	22.41	3.51	-14.01	-21.80
Number of stars	0	0	0	1	2	0	0	0
LQ	1.02	1.02	1.12	1.31	1.33	1.19	1.07	1.07
Size (%)	0.83	0.84	0.94	1.09	1.08	0.95	0.82	0.80
Focus (%)	7.39	7.49	7.75	9.26	9.37	8.20	7.07	6.72

Source: Employment statistics were obtained from: (HSE, 2018), (Federal State Statistics Service, 2019), (MinComSvyaz, 2019) Calculations were performed by authors.

Out of the five clusters identified in Komi Republic during 2009–2016, only two clusters had a relatively high critical mass, which was enough for the region to have specialization in these types of activities. One cluster was decreasing—Paper Products—and one was growing—Oil and Gas. In addition, the region had medium specialization in Transportation and Logistics, which had unstable growth rates. The Business Services cluster was decreasing steadily, which resulted in Komi Republic losing specialization in this type of activity, and the Construction Cluster showed unstable employment dynamics.

Yamalo-Nenets AO cluster specialization analysis

The overall employment dynamic in Yamalo-Nenets AO was positive. The total number of people employed increased by 5.65%, or by 18,018 people over eight years. Analyzing Yamalo-Nenets AO employment statistics during the period of 2009–2016, we detected five clusters: Transportation and Logistics, Maritime, Oil and Gas, Business Services, and Construction, which have received at least one star. Detailed results are presented in Table 6

Table 6. Employment-based parameters of significant clusters in Yamalo-Nenets AO

Parameter \ Year	2009	2010	2011	2012	2013	2014	2015	2016
Common employment parameters								
E **(people)**	47427502	46719007	45872388	45898382	45815640	45486400	45106533	44446352
E_g **(people)**	319089	314503	311693	328308	333527	329129	331108	337107
Transportation and Logistics cluster parameters								
E_i **(people)**	39386	35633	36513	40414	41824	37802	34637	34997
E_{ig} **(people)**		-9.53	2.47	10.68	3.49	-9.62	-8.37	1.04
GR_t (%)		-9.53	-7.29	2.61	6.19	-4.02	-12.06	-11.14
$GR_{t=0}$ (%)	2	2	2	2	2	2	2	2
Number of stars	1.68	1.57	1.59	1.66	1.71	1.55	1.41	1.39
LQ	1.13	1.06	1.08	1.19	1.24	1.12	1.03	1.06
Size (%)	12.34	11.33	11.71	12.31	12.54	11.49	10.46	10.38
Focus (%)	39386	35633	36513	40414	41824	37802	34637	34997
Maritime cluster parameters								
E_i **(people)**	148225	152423	136905	129441.6	126963	116436.8	116557	114799
E_{ig} **(people)**	2468	2267	2212	2153	2151	2102	2110	2093
GR_t (%)		-8.14	-2.43	-2.67	-0.09	-2.28	0.38	-0.81
$GR_{t=0}$ (%)		-8.14	-10.37	-12.76	-12.84	-14.83	-14.51	-15.19
Number of stars	1	1	1	1	1	1	1	1
LQ	2.47	2.21	2.38	2.33	2.33	2.49	2.47	2.40
Size (%)	1.67	1.49	1.62	1.66	1.69	1.81	1.81	1.82
Focus (%)	0.77	0.72	0.71	0.66	0.64	0.64	0.64	0.62

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Oil and Gas cluster parameters								
E_i **(people)**	504955	504478	517301	536739	556754	578881	594546	606641
E_{ig} **(people)**	31962	31838	33940	35253	37616	39032	40693	41514
GR_t (%)		-0.39	6.60	3.87	6.70	3.76	4.26	2.02
$GR_{t=0}$ (%)		-0.39	6.19	10.30	17.69	22.12	27.32	29.89
Number of stars	3	3	3	3	3	3	3	3
LQ	9.41	9.38	9.66	9.18	9.28	9.32	9.32	9.02
Size (%)	6.33	6.31	6.56	6.57	6.76	6.74	6.84	6.84
Focus (%)	10.02	10.12	10.89	10.74	11.28	11.86	12.29	12.31
Business Services cluster parameters								
E_i **(people)**	2969478	2921201	2880799	3146204	3237312	3272631	3257275	3189467
E_{ig} **(people)**	20241	23056	24426	27574	28247	28332	29160	31328
GR_t (%)		13.91	5.94	12.89	2.44	0.30	2.92	7.43
$GR_{t=0}$ (%)		13.91	20.68	36.23	39.55	39.97	44.06	54.77
Number of stars	0	0	1	1	1	1	1	1
LQ	1.01	1.17	1.25	1.23	1.20	1.20	1.22	1.30
Size (%)	0.68	0.79	0.85	0.88	0.87	0.87	0.90	0.98
Focus (%)	6.34	7.33	7.84	8.40	8.47	8.61	8.81	9.29
Construction cluster parameters								
E_i **(people)**	3425797	3430749	3163493	3254308	3225983	3123938	2983398	2800194
E_{ig} **(people)**	49716	48086	44634	51707	52911	52487	53417	55937
GR_t (%)		-3.28	-7.18	15.85	2.33	-0.80	1.77	4.72
$GR_{t=0}$ (%)		-3.28	-10.22	4.00	6.43	5.57	7.44	12.51
Number of stars	2	2	2	2	2	2	2	2
LQ	2.16	2.08	2.08	2.22	2.25	2.32	2.44	2.63
Size (%)	1.45	1.40	1.41	1.59	1.64	1.68	1.79	2.00
Focus (%)	15.58	15.29	14.32	15.75	15.86	15.95	16.13	16.59

Source: Employment statistics were obtained from: (HSE, 2018), (Federal State Statistics Service, 2019), (MinComSvyaz, 2019) Calculations were performed by authors.

Yamalo-Nenets AO had a medium specialization level in Transportation and Logistics and the critical mass of this cluster was unstable during the analyzed period. After a 9.53% decrease of the cluster's employment in 2010, there was a significant growth of the cluster's critical mass, from 35,633 up to 41,824 people employed; that is, by 17.3% in 2013 compared to 2010. After that, there was a stable decrease of the Transportation and Logistics cluster's critical mass: 16.32% in 2016 compared to 2013. Nevertheless, the overall specialization of the region in Transportation and Logistics activities remained at a medium level, since two localization measures out of three fulfilled the threshold requirements.

Yamalo-Nenets AO had a low specialization in Maritime. However, the critical mass of this cluster decreased by 15.19% during the analyzed period. The region still has a certain margin of safety in relative terms, since the overall employment in Maritime activities decreased by 22.55% over eight years. However, in terms of absolute values, the region was continuously losing its specialization in this type of activity.

Yamalo-Nenets AO had a high specialization level in Oil and Gas, and the critical mass of this cluster was growing significantly during the analyzed period. The overall increase of the cluster's critical mass was 29.89% over eight years. This resulted in a stronger specialization of the cluster and its stabilization at a high level, since three localization measures out of three fulfilled the threshold requirements.

Yamalo-Nenets AO was strengthening its specialization in Business Services, since the cluster's critical mass in Yamalo-Nenets AO increased by 54.07% over eight years, while the cluster's overall critical mass increased by 7.41%. The breakpoint was in 2011, when one localization measure fulfilled the threshold requirements.

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Yamalo-Nenets AO had a medium specialization level in Construction and the critical mass of this cluster was unstable during the analyzed period. There was a 3.28% decrease in the cluster's employment in 2010, and a 7.18% decrease in 2011. After that, there was a significant growth of the cluster's critical mass, from 44,634 in 2011 up to 55,937 people; that is, by 25.32% in 2016. It resulted in a stronger specialization of the cluster and its stabilization at a high level, since two localization measures out of three fulfilled the threshold requirements.

Yamalo-Nenets AO was strongly specialized in only one cluster, showing a steady growth of the critical mass—the Oil and Gas cluster. In addition, the region had a medium specialization in the Transportation and Logistics and Construction clusters, which had unstable growth rates. The Maritime cluster was decreasing considerably, which resulted in Yamalo-Nenets AO losing specialization in this type of activity. The Business Services cluster demonstrated an intensive growth, which resulted in a stronger specialization of the cluster, since one localization measure out of three fulfilled the threshold requirements.

Republic of Karelia cluster specialization analysis

The overall employment dynamic in the Republic of Karelia was negative. The total number of people employed decreased by 17.42%, or by 40,822 people over eight years. Analyzing employment statistics of the Republic of Karelia during the period of 2009–2016, we detected four clusters: Transportation and Logistics, Maritime, Paper Products, and Furniture, which received at least one star. Detailed results are presented in Table 7.

The Republic of Karelia had a low specialization level in Transportation and Logistics, and the critical mass of this cluster was steadily decreasing during the analyzed period. After an 8.15% decrease of the cluster's employment in 2010–2011, there was a slight growth of the cluster's critical mass from 23,972 up to 24,285 people employed; that is, by 1.31% in 2013 compared to 2012. After that, there was a stable decrease in the Transportation and Logistics cluster's critical mass: 18.04% in 2016 compared to 2012. Therefore, the long-term decrease of the cluster's critical mass in the Republic of Karelia was 23.74% over eight years. It resulted in the Republic of Karelia losing one star of cluster specialization in 2013, since two of the three localization measures did not fulfill the threshold requirements.

The Republic of Karelia had a low specialization in Maritime. However, the critical mass of this cluster was unstable. The region still has a certain margin of safety in relative terms, since the overall employment in Maritime activities decreased by 22.55% over eight years. However, in terms of absolute values, the region demonstrated a cyclic growth and a decrease of the critical mass by 9.01% over eight years. Nevertheless, the region gained one additional star in 2016, which can be attributed to the overall decrease of the Maritime critical mass.

Table 7. Employment based parameters of significant clusters in the Republic of Karelia

Parameter \ Year	2009	2010	2011	2012	2013	2014	2015	2016
General employment parameters								
E **(people)**	47427502	46719007	45872388	45898382	45815640	45486400	45106533	44446352
E_g **(people)**	234310	228336	226165	225442	220074	211446	205299	193488
Transportation and Logistics cluster parameters								
E_i **(people)**	3489740	3370683	3371228	3400956	3360962	3377649	3352174	3308218
E_{ig} **(people)**	26100	24582	23972	24285	23232	21923	21375	19903
GR_t (%)		-5.82	-2.48	1.31	-4.34	-5.63	-2.50	-6.89
$GR_{t=0}$ (%)		-5.82	-8.15	-6.95	-10.99	-16.00	-18.10	-23.74
Number of stars	2	2	2	2	1	1	1	1
LQ	1.51	1.49	1.44	1.45	1.44	1.40	1.40	1.38
Size (%)	0.75	0.73	0.71	0.71	0.69	0.65	0.64	0.60
Focus (%)	11.14	10.77	10.60	10.77	10.56	10.37	10.41	10.29
Maritime cluster parameters								
E_i **(people)**	148225	152423	136905	129442	126963	116437	116557	114799

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E_{ig} **(people)**	1731	1590	1628	1755	1811	1734	1623	1575
GR_t (%)		-8.15	2.39	7.80	3.19	-4.25	-6.40	-2.96
$GR_{t=0}$ (%)		-8.15	-5.95	1.39	4.62	0.17	-6.24	-9.01
Number of stars	1	1	1	1	1	1	1	2
LQ	2.36	2.13	2.41	2.76	2.97	3.20	3.06	3.15
Size (%)	1.17	1.04	1.19	1.36	1.43	1.49	1.39	1.37
Focus (%)	0.74	0.70	0.72	0.78	0.82	0.82	0.79	0.81
Paper Products cluster parameters								
E_i **(people)**	137015	136152	137499	136273	132216	128119	125839	130471
E_{ig} **(people)**	7794	7279	7156	7067	6501	5910	5604	5583
GR_t (%)		-6.61	-1.69	-1.24	-8.01	-9.09	-5.18	-0.37
$GR_{t=0}$ (%)		-6.61	-8.19	-9.33	-16.59	-24.17	-28.10	-28.37
Number of stars	3	3	3	3	3	3	3	3
LQ	11.51	10.94	10.56	10.56	10.24	9.92	9.78	9.83
Size (%)	5.69	5.35	5.20	5.19	4.92	4.61	4.45	4.28
Focus (%)	3.33	3.19	3.16	3.13	2.95	2.80	2.73	2.89
Furniture cluster parameters								
E_i **(people)**	314686	316139	294371	298059	294375	278843	267375	259033
E_{ig} **(people)**	2439	2329	1991	1809	1603	1418	1426	1431
GR_t (%)		-4.51	-14.51	-9.14	-11.39	-11.54	0.56	0.35
$GR_{t=0}$ (%)		-4.51	-18.37	-25.83	-34.28	-41.86	-41.53	-41.33
Number of stars	1	1	1	0	0	0	0	0
LQ	1.57	1.51	1.37	1.24	1.13	1.09	1.17	1.27
Size (%)	0.78	0.74	0.68	0.61	0.54	0.51	0.53	0.55
Focus (%)	1.04	1.02	0.88	0.80	0.73	0.67	0.69	0.74

Source: Employment statistics were obtained from: (HSE, 2018), (Federal State Statistics Service, 2019), (MinComSvyaz, 2019) Calculations were performed by authors.

The Republic of Karelia had a high specialization level in Paper Products and the critical mass of its cluster was strongly decreasing during the period of 2009–2016. The overall decrease of the cluster's critical mass was 28.37% over eight years. In addition, the decrease of the Paper Products cluster's critical mass in the Republic of Karelia was significantly higher than the overall decrease of the Paper Products cluster's critical mass, being 27.61% compared to 4.78%. It led to a decrease in the cluster localization parameters, but it did not result in losing the specialization, since three localization measures out of three fulfilled the threshold requirements.

The Republic of Karelia lost specialization in Furniture Production in 2012, since the cluster's critical mass decreased by 41.33% over eight years, while the cluster's overall critical mass went down by only 17.69%. The breakpoint was in 2011–2012, when LQ did not fulfill the threshold requirements, along with Focus and Size.

Therefore, the Republic of Karelia was highly specialized only in one type of activity—Paper Products. However, the critical mass of this cluster greatly decreased during the analyzed period. In addition, the region had a low specialization in two other types of activities: Transportation and Logistics, which showed a decrease of the critical mass, and Maritime, the critical mass of which was unstable. In one type of activity, the region showed lack of specialization due to the continuously steady decrease in its critical mass.

Krasnoyarsk Krai cluster specialization analysis

The overall employment dynamic in Krasnoyarsk Krai was negative. The total number of employed people decreased by 6.15%, or by 64,833 people over eight years. Analyzing the employment statistics in Krasnoyarsk Krai during the period of 2009–2016, we detected four clusters: Transportation and Logistics, Business Services, and Entertainment and Production Technology, which received at least one star. Detailed results are presented in Table 8.

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Table 8. Employment-based parameters of significant clusters in Krasnoyarsk Krai

Parameter \ Year	2009	2010	2011	2012	2013	2014	2015	2016
General employment parameters								
E **(people)**	47427502	46719007	45872388	45898382	45815640	45486400	45106533	44446352
E_g **(people)**	1054055	1056537	1049084	1056420	1042109	1046767	1021040	989222
Transportation and Logistics cluster parameters								
E_i **(people)**	3489740	3370683	3371228	3400956	3360962	3377649	3352174	3308218
E_{ig} **(people)**	89985	88687	89832	91984	91829	92266	91374	90767
GR_t (%)		-1.44	1.29	2.40	-0.17	0.48	-0.97	-0.66
$GR_{t=0}$ (%)		-1.44	-0.17	2.22	2.05	2.53	1.54	0.87
Number of stars	1	1	1	1	1	1	1	1
LQ	1.16	1.16	1.17	1.18	1.20	1.19	1.20	1.23
Size (%)	2.58	2.63	2.66	2.70	2.73	2.73	2.73	2.74
Focus (%)	8.54	8.39	8.56	8.71	8.81	8.81	8.95	9.18
Business Services cluster parameters								
E_i **(people)**	2969478	2921201	2880799	3146203.9	3237312	3272631.1	3257275.3	3189467
E_{ig} **(people)**	74557	73045	75263	83302	83352	86755	81563	74253
GR_t (%)		-2.03	3.04	10.68	0.06	4.08	-5.98	-8.96
$GR_{t=0}$ (%)		-2.03	0.95	11.73	11.80	16.36	9.40	-0.41
Number of stars	0	0	0	1	0	1	0	0
LQ	1.13	1.11	1.14	1.15	1.13	1.15	1.11	1.05
Size (%)	2.51	2.50	2.61	2.65	2.57	2.65	2.50	2.33
Focus (%)	7.07	6.91	7.17	7.89	8.00	8.29	7.99	7.51
Entertainment cluster parameters								
E_i **(people)**	1134931	1096820	1076443	1087827.8	1067113.6	1027259	1014388	1010873
E_{ig} **(people)**	28162	28338	29061	29185	29604	29723	29290	28870
GR_t (%)		0.62	2.55	0.43	1.44	0.40	-1.46	-1.43
$GR_{t=0}$ (%)		0.62	3.19	3.63	5.12	5.54	4.01	2.51
Number of stars	1	1	1	1	1	1	2	2
LQ	1.12	1.14	1.18	1.17	1.22	1.26	1.28	1.28
Size (%)	2.48	2.58	2.70	2.68	2.77	2.89	2.89	2.86
Focus (%)	2.67	2.68	2.77	2.76	2.84	2.84	2.87	2.92
Production Technology cluster parameters								
E_i **(people)**	630556	608180	619596	614537	602202	587375.7	571254	545333
E_{ig} **(people)**	20539	20599	19981	20140	19771	19170	19031	19658
GR_t (%)		0.29	-3.00	0.80	-1.83	-3.04	-0.73	3.29
$GR_{t=0}$ (%)		0.29	-2.72	-1.94	-3.74	-6.67	-7.34	-4.29
Number of stars	1	2	1	1	1	1	2	2
LQ	1.47	1.50	1.41	1.42	1.44	1.42	1.47	1.62
Size (%)	3.26	3.39	3.22	3.28	3.28	3.26	3.33	3.60
Focus (%)	1.95	1.95	1.90	1.91	1.90	1.83	1.86	1.99

Source: Employment statistics were obtained from: (HSE, 2018), (Federal State Statistics Service, 2019), (MinComSvyaz, 2019) Calculations were performed by authors.

Krasnoyarsk Krai had a low specialization level in Transportation and Logistics. However, the critical mass of this cluster was stable during the analyzed period. In the long-term, the critical mass of the cluster increased by 0.87%; that is, by 782 people employed. In addition, the overall employment in the Transportation and Logistics cluster decreased by 5.2%. In total, it resulted in a slight increase of the relative localization measures of this cluster. However, it was not enough for significant strengthening of the regional specialization in this type of activity.

The specialization of Krasnoyarsk Krai in Business Services was detected in 2012 and 2014, when a sudden increase in employment levels resulted in a growth of the Business Services cluster localization. However, it was

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a short-term increase which did not allow the region to strengthen its specialization over a long-term period. Therefore, the long-term decrease of the cluster's critical mass in Krasnoyarsk Krai was 0.41%.

Krasnoyarsk Krai had low specialization in Entertainment activities, which demonstrated a stable critical mass. In the long term, the critical mass of the Entertainment cluster grew by 2.51%; that is, 708 people. However, during the analyzed period there was a growth stage—from 2009 to 2014, the critical mass increased by 5.54%—and a decrease stage—from 2014 to 2016, it decreased by 2.87%. In addition, the overall employment in the Entertainment cluster decreased by 10.93%; that is, by 124,058 people employed. Due to this situation, the relative specialization of the region in Entertainment increased during 2015–2016 from one to two stars, since two of the three localization measures fulfilled the threshold requirements.

Krasnoyarsk Krai had low specialization in Production Technology, which was demonstrated by the stable state of its critical mass. In the long term, the critical mass of the Production Technology cluster decreased by 4.29%; that is, by 881 people employed. Nevertheless, with the overall employment of the Production Technology cluster decreasing by 13.52% (i.e. by 85,223 people employed), the relative specialization of the region in this type of activity grew in 2015, since two of three localization parameters fulfilled the threshold values.

Therefore, Krasnoyarsk Krai did not have high specialization in any type of activity. However, there are three groups of activities in which this region had low specialization: Transportation and Logistics, Entertainment, and Production Technology. All three clusters demonstrated a stable condition of their critical mass. In Business Services, the region had no specialization, since the critical mass of this cluster was too low.

Arkhangelsk Oblast (including Nenets AO) cluster specialization analysis

The overall employment dynamic in Arkhangelsk Oblast was negative. The total number of people employed decreased by 11.44%, or by 50,660 people over eight years. Analyzing Arkhangelsk Oblast employment statistics during the period of 2009–2016, we detected four clusters: Transportation and Logistics, Maritime, Paper Products, and Furniture, which received at least one star. Detailed results are presented in Table 9.

Arkhangelsk Oblast had a medium specialization level in Transportation and Logistics, and the critical mass of this cluster was unstable during the analyzed period. The long-term decrease of the cluster's critical mass over eight years was 5.94%; that is, 4,392 people employed. However, the overall specialization of the region in this type of activity increased, since the employment of the whole cluster also decreased by 5.2%, or by 181,522 people employed.

Arkhangelsk Oblast had low specialization in Maritime. However, the critical mass of this cluster decreased by 31.68%, or by 1,195 people during the analyzed period. The decline of this cluster was faster at the regional level than at the country level, meaning that the region was losing both its relative and absolute specialization in this type of activity.

Arkhangelsk Oblast had a high specialization level in Paper Products, and the critical mass of its cluster was strongly decreasing during the period of 2009–2016. The overall decrease of the cluster's critical mass was 24.81%; that is, by 2,268 people employed over eight years. In addition, the decrease of the critical mass of the Paper Products cluster in Arkhangelsk Oblast was significantly higher than the overall decrease of the critical mass of the Paper Products cluster, being 24.81% compared to 4.78%. It resulted in Arkhangelsk Oblast losing specialization in this type of activity. However, it still had a certain margin of safety, since all three localization parameters fulfilled the threshold conditions.

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Table 9. Employment-based parameters of significant clusters in Arkhangelsk Oblast (including Nenets AO)

Parameter \ Year	2009	2010	2011	2012	2013	2014	2015	2016
General employment parameters								
E (people)	47427502	46719007	45872388	45898382	45815640	45486400	45106533	44446352
E_g (people)	442903	433931	436355	418786.1	409795	405572.6	399017	392243.2
Transportation and Logistics cluster parameters								
E_i (people)	3489740	3370683	3371228	3400956	3360962	3377649	3352174	3308218
E_{ig} (people)	73878	71412	72084	68609	67490	67275	68010	69486
GR_t (%)		-3.34	0.94	-4.82	-1.63	-0.32	1.09	2.17
$GR_{t=0}$ (%)		-3.34	-2.43	-7.13	-8.65	-8.94	-7.94	-5.94
Number of stars	2	2	2	2	2	2	2	2
LQ	2.27	2.28	2.25	2.21	2.25	2.23	2.29	2.38
Size (%)	2.12	2.12	2.14	2.02	2.01	1.99	2.03	2.10
Focus (%)	16.68	16.46	16.52	16.38	16.47	16.59	17.04	17.72
Maritime cluster parameters								
E_i (people)	148225	152423	136905	129441.6	126963	116436.8	116557	114799
E_{ig} (people)	3772	3802	3949	3701	3192	2568	2554	2577
GR_t (%)		0.80	3.87	-6.28	-13.75	-19.55	-0.55	0.90
$GR_{t=0}$ (%)		0.80	4.69	-1.88	-15.38	-31.92	-32.29	-31.68
Number of stars	1	1	1	2	1	1	1	1
LQ	2.73	2.69	3.03	3.13	2.81	2.47	2.48	2.54
Size (%)	2.54	2.49	2.88	2.86	2.51	2.21	2.19	2.24
Focus (%)	0.85	0.88	0.90	0.88	0.78	0.63	0.64	0.66
Paper Products cluster parameters								
E_i (people)	137015	136152	137499	136273	132216	128119	125839	130471
E_{ig} (people)	9141	8578	8548	8308	7778	7448	7012	6873
GR_t (%)		-6.16	-0.35	-2.81	-6.38	-4.24	-5.85	-1.98
$GR_{t=0}$ (%)		-6.16	-6.49	-9.11	-14.91	-18.52	-23.29	-24.81
Number of stars	3	3	3	3	3	3	3	3
LQ	7.14	6.78	6.54	6.68	6.58	6.52	6.30	5.97
Size (%)	6.67	6.30	6.22	6.10	5.88	5.81	5.57	5.27
Focus (%)	2.06	1.98	1.96	1.98	1.90	1.84	1.76	1.75
Furniture cluster parameters								
E_i (people)	314686	316139	294371	298059	294375	278843	267375	259033
E_{ig} (people)	5145	4776	4429	4122	3566	3450	3492	2935
GR_t (%)		-7.17	-7.27	-6.93	-13.49	-3.25	1.22	-15.95
$GR_{t=0}$ (%)		-7.17	-13.92	-19.88	-30.69	-32.94	-32.13	-42.95
Number of stars	1	1	1	0	0	0	0	0
LQ	1.75	1.63	1.58	1.52	1.35	1.39	1.48	1.28
Size (%)	1.63	1.51	1.50	1.38	1.21	1.24	1.31	1.13
Focus (%)	1.16	1.10	1.01	0.98	0.87	0.85	0.88	0.75

Source: Employment statistics were obtained from: (HSE, 2018), (Federal State Statistics Service, 2019), (MinComSvyaz, 2019) Calculations were performed by authors.

Therefore, Arkhangelsk Oblast, in total, had clusters with decreasing critical mass, which resulted, in some cases, in a rise in relative specializations, but a decrease in absolute values.

Arkhangelsk Oblast lost specialization in Furniture Production in 2012, since the critical mass of the cluster in Arkhangelsk Oblast decreased by 42.95%; that is, by 2,210 people over eight years. Meanwhile, the overall critical mass of the cluster decreased by only 17.69%. The breakpoint was in 2011–2012, when LQ fulfilled neither of the threshold requirements, nor did Focus or Size.

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Khanty-Mansi AO cluster specialization analysis

The overall employment dynamic in Khanty-Mansi AO was negative. The total number of people employed decreased by 2.18%, or by 16,772 people over eight years. Analyzing employment statistics in Khanty-Mansi AO during the period of 2009–2016, we detected three clusters: Transportation and Logistics, Oil and Gas, and Construction, which received at least one star. Detailed results are presented in Table 10.

Khanty-Mansi AO lost specialization in Furniture Production in 2010, since the cluster's critical mass decreased by 13.93%; that is, by 9617 people over eight years. Meanwhile, the cluster's overall critical mass decreased by only 5.2%. Therefore, the region was steadily losing its specialization in this type of activity due to the decrease of the cluster's critical mass.

Table 10. Employment-based parameters of significant clusters in Khanty-Mansi AO

Parameter \ Year	2009	2010	2011	2012	2013	2014	2015	2016
General employment parameters								
E (people)	47427502	46719007	45872388	45898382	45815640	45486400	45106533	44446352
E_g (people)	770656	770048	771193	774807	771928	769370	761089	753884
Transportation and Logistics cluster parameters								
E_i (people)	**3489740**	**3370683**	**3371228**	**3400956**	**3360962**	**3377649**	**3352174**	**3308218**
E_{ig} (people)	69030	68126	65137	64990	64567	61782	59825	59413
GR_t (%)		-1.31	-4.39	-0.23	-0.65	-4.31	-3.17	-0.69
$GR_{t=0}$ (%)		-1.31	-5.64	-5.85	-6.47	-10.50	-13.33	-13.93
Number of stars	0	1	0	0	0	0	0	0
LQ	1.22	1.23	1.15	1.13	1.14	1.08	1.06	1.06
Size (%)	1.98	2.02	1.93	1.91	1.92	1.83	1.78	1.80
Focus (%)	8.96	8.85	8.45	8.39	8.36	8.03	7.86	7.88
Oil and Gas cluster parameters								
E_i (people)	504955	504478	517301	536739	556754	578881	594546	606641
E_{ig} (people)	119572	121334	124170	129379	134175	139619	146402	150665
GR_t (%)		1.47	2.34	4.20	3.71	4.06	4.86	2.91
$GR_{t=0}$ (%)		1.47	3.85	8.20	12.21	16.77	22.44	26.00
Number of stars	3	3	3	3	3	3	3	3
LQ	14.57	14.59	14.28	14.28	14.30	14.26	14.59	14.64
Size (%)	23.68	24.05	24.00	24.10	24.10	24.12	24.62	24.84
Focus (%)	15.52	15.76	16.10	16.70	17.38	18.15	19.24	19.99
Construction cluster parameters								
E_i (people)	3425797	3430749	3163493	3254308	3225983	3123938	2983398	2800194
E_{ig} (people)	93202	93124	87788	87179	80821	77105	72677	68966
GR_t (%)		-0.08	-5.73	-0.69	-7.29	-4.60	-5.74	-5.11
$GR_{t=0}$ (%)		-0.08	-5.81	-6.46	-13.28	-17.27	-22.02	-26.00
Number of stars	2	3	3	2	2	2	2	2
LQ	1.67	1.65	1.65	1.59	1.49	1.46	1.44	1.45
Size (%)	2.72	2.71	2.78	2.68	2.51	2.47	2.44	2.46
Focus (%)	12.09	12.09	11.38	11.25	10.47	10.02	9.55	9.15

Source: Employment statistics were obtained from: (HSE, 2018), (Federal State Statistics Service, 2019), (MinComSvyaz, 2019) Calculations were performed by authors.

Khanty-Mansi AO had a high specialization level in Oil and Gas, and the critical mass of this cluster was growing significantly during the analyzed period. The overall increase of the cluster's critical mass was 26% over eight years. This resulted in the strengthening of the cluster's specialization and its stabilization at a high level, since three localization measures out of three fulfilled the threshold requirements.

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Khanty-Mansi AO had a medium specialization level in Construction and the critical mass of this cluster was greatly decreasing during the analyzed period. The long-term decrease of the cluster's critical mass was 26%, or 24,236 people employed. Nevertheless, the specialization of Khanty-Mansi AO in Construction remains at a high level, despite the fact that it is constantly decreasing.

We identified three clusters in Khanty-Mansi AO: Transportation and Logistics, Oil and Gas, and Construction. Only the Oil and Gas cluster showed strong growth of its critical mass, while the other two clusters were decreasing in terms of the number of people employed.

Murmansk Oblast cluster specialization analysis

The overall employment dynamic in Murmansk Oblast was negative. The total number of people employed decreased by 11.11%, or by 34,409 people employed over eight years. Analyzing employment statistics in Murmansk Oblast during the period of 2009–2016, we detected two clusters: Transportation and Logistics and Maritime, which have received at least one star. Detailed results are presented in Table 11.

Table 11. Employment-based parameters of significant clusters in Murmansk Oblast

Parameter \ Year	2009	2010	2011	2012	2013	2014	2015	2016
General employment parameters								
E **(people)**	47427502	46719007	45872388	45898382	45815640	45486400	45106533	44446352
E_g **(people)**	309727	301079	300264	300209	296615	288905	281950	275318
Transportation and logistics cluster parameters								
E_i **(people)**	3489740	3370683	3371228	3400956	3360962	3377649	3352174	3308218
E_{ig} **(people)**	47243	44929	42501	41274	40302	38585	37209	36936
GR_t (%)		-4.90	-5.40	-2.89	-2.35	-4.26	-3.57	-0.73
$GR_{t=0}$ (%)		-4.90	-10.04	-12.63	-14.69	-18.33	-21.24	-21.82
Number of stars	2	2	2	2	2	2	2	2
LQ	2.07	2.07	1.93	1.86	1.85	1.80	1.78	1.80
Size (%)	1.35	1.33	1.26	1.21	1.20	1.14	1.11	1.12
Focus (%)	15.25	14.92	14.15	13.75	13.59	13.36	13.20	13.42
Maritime cluster parameters								
E_i **(people)**	148225	152423	136905	129441.6	126963	116436.8	116557	114799
E_{ig} **(people)**	8734	8016	7464	7834	7466	7170	6832	6321
GR_t (%)		-8.22	-6.89	4.96	-4.70	-3.96	-4.71	-7.48
$GR_{t=0}$ (%)		-8.22	-14.54	-10.30	-14.52	-17.91	-21.78	-27.63
Number of stars	3	3	3	3	3	3	3	3
LQ	9.02	8.16	8.33	9.25	9.08	9.70	9.38	8.89
Size (%)	5.89	5.26	5.45	6.05	5.88	6.16	5.86	5.51
Focus (%)	2.82	2.66	2.49	2.61	2.52	2.48	2.42	2.30

Source: Employment statistics were obtained from: (HSE, 2018), (Federal State Statistics Service, 2019), (MinComSvyaz, 2019) Calculations were performed by authors.

Murmansk Oblast had a medium specialization level in Transportation and Logistics, and the critical mass of this cluster was steadily decreasing during the analyzed period. The overall decrease of the critical mass of the Transportation and Logistics cluster located in Murmansk Oblast was 21.82%; that is, 10,307 people employed over eight years. Therefore, all three localization parameters of the cluster decreased. Nevertheless, its specialization remains at the level of two stars.

Murmansk Oblast had a high specialization level in Maritime, and the critical mass of its cluster was steadily decreasing during the period of 2009–2016. The overall decrease of the cluster's critical mass was 27.63% over eight years. In addition, the decrease of the Maritime cluster's critical mass in Murmansk Oblast was higher than the overall decrease of the Maritime cluster's critical mass, being 27.63% compared to 22.55%. It resulted in Murmansk Oblast decreasing in overall specialization in this type of activity in the long run.

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Therefore, there are only two significant clusters in the Murmansk region: Transportation and Logistics and Maritime. The critical masses of both clusters were steadily decreasing during the analyzed period. Consequently, the region lost its specialization and should promote new core activities, which can be part of its long-term development.

Sakha Republic cluster specialization analysis

The overall employment dynamic in Sakha Republic was negative. The total number of people employed decreased by 6.22%, or by 22,722 people employed over eight years. Analyzing the employment statistics in Sakha Republic during the period of 2009–2016, we detected two clusters: Entertainment and Oil and Gas, which have received at least one star. Detailed results are presented in Table 12.

Sakha Republic had not had a specialization level in Oil and Gas until 2011. Due to a significant growth of the cluster's critical mass over a long-term period of 3,535 people employed, or 83.65%, one of the localization parameters fulfilled the threshold requirement and the region received one star in this type of activity. Therefore, the region has a potential for strengthening its specialization if the critical mass continues to grow.

Sakha Republic had a low specialization in Entertainment; the critical mass of this cluster was at a stable level. The long-term change of the critical mass was negative. It declined by 3.49%, or 432 people over eight years.

Table 12. Employment-based parameters of significant clusters in Sakha Republic

Year / Parameter	2009	2010	2011	2012	2013	2014	2015	2016
General employment parameters								
E **(people)**	47427502	46719007	45872388	45898382	45815640	45486400	45106533	44446352
E_g **(people)**	365340	353047	355669	354493	351108	348962	344686	342618
Oil and Gas cluster parameters								
E_i **(people)**	504955	504478	517301	536739	556754	578881	594546	606641
E_{ig} **(people)**	4226	3836	6529	7120	7043	7209	7313	7761
GR_t (%)		-9.23	70.20	9.05	-1.08	2.36	1.44	6.13
$GR_{t=0}$ (%)		-9.23	54.50	68.48	66.66	70.59	73.05	83.65
Number of stars	0	0	1	1	1	1	1	1
LQ	1.09	1.01	1.63	1.72	1.65	1.62	1.61	1.66
Size (%)	0.84	0.76	1.26	1.33	1.27	1.25	1.23	1.28
Focus (%)	1.16	1.09	1.84	2.01	2.01	2.07	2.12	2.27
Entertainment cluster parameters								
E_i **(people)**	1134931	1096820	1076443	1087827.8	1067113.6	1027259	1014388	1010873
E_{ig} **(people)**	12374	12200	12150	12571.8	12340.6	12059	11995	11942
GR_t (%)		-1.41	-0.41	3.47	-1.84	-2.28	-0.53	-0.44
$GR_{t=0}$ (%)		-1.41	-1.81	1.60	-0.27	-2.55	-3.06	-3.49
Number of stars	1	1	1	1	1	1	1	1
LQ	1.42	1.47	1.46	1.50	1.51	1.53	1.55	1.53
Size (%)	1.09	1.11	1.13	1.16	1.16	1.17	1.18	1.18
Focus (%)	3.39	3.46	3.42	3.55	3.51	3.46	3.48	3.49

Source: Employment statistics were obtained from: (HSE, 2018), (Federal State Statistics Service, 2019), (MinComSvyaz, 2019) Calculations were performed by authors.

Therefore, Sakha Republic has a potential for strengthening its specialization in Oil and Gas and Entertainment activities.

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Chukotka AO cluster specialization analysis

The overall employment dynamics in Chukotka AO was negative. The total number of people employed decreased by 9.72%, or by 2,946 people employed over eight years. Analyzing the employment statistics in Chukotka AO during the period of 2009–2016, we did not detected any clusters which could receive at least one star. The general results of the employment dynamics are presented in Table 13.

Table 13. Employment-based parameters of significant clusters in Chukotka AO

Parameter \ Year	2009	2010	2011	2012	2013	2014	2015	2016
Genera employment parameters								
E (people)	47427502	46719007	45872388	45898382	45815640	45486400	45106533	44446352
E_a (people)	30300	30055	29914	29494	28983	27902	27758	27354
Employment statistics were obtained from: (HSE, 2018), (Federal State Statistics Service, 2019), (MinComSvyaz, 2019)								

Source: Combined results of the Russian regions cluster parameters analysis

Table 14 gives an analytical interpretation of the computational results presented earlier. The table includes only those clusters which were significant in at least in one Arctic region. Therefore, nine clusters out of 37 are presented. Boxes with the symbol «-» in Table 14 refer to the unidentified (insignificant) clusters. We did not mark them in order to make it clearer for analysis. Other boxes include the characteristic of the cluster in a specific region in accordance with the classification, presented in Section 2.1.

Tables 14 and 15 provide some valuable insights concerning the overall situation in the Russian Arctic regions. The first insight is that the overall state of the most typical significant clusters for these regions is not satisfactory, since there is only one significant cluster which achieved a steady growth. We can see that, in general, employment in such clusters as «Transportation and Logistics», «Maritime», «Paper Products», «Construction», «Entertainment», and «Furniture» was mostly either decreasing or unstable, which means that these clusters were steadily declining in a long term perspective during the analyzed period. On the other hand, the only significant cluster which achieved a steady growth in all regions where it was present was the «Oil and Gas» cluster. The second insight refers to the overall cluster structure of the Russian Arctic region. A majority of clusters in Russian Arctic regions are not significant, meaning that there are relatively too few employees. Therefore, the localization of these clusters is slightly above average, which is not enough for generating positive spillovers or organizing export activities. These two insights can potentially become a basis for elaborating a policy which will slow down the decrease of the discussed clusters and, consequently, support diversification and specialization of the economy, since it is associated with positive spillover effects.

Table 14. State of development of identified clusters in Russian arctic regions for 2009–2016

Region Cluster	Komi Republic	Yamalo-Nenets AO	Republic of Karelia	Krasnoyarsk Krai	Arkhangelsk Oblast including Nenets AO	Khanty-Mansi AO	Murmansk Oblast	Sakha Republic	Chukotka AO
Transportation and Logistics	Medium spec. Unstable	Medium spec. Unstable	Low spec. Strong decrease	Low spec. Stable	Medium spec. Unstable	No spec. Strong decrease	Medium spec. Strong decrease	-	-
Maritime		Low spec. Strong decrease	Low spec. Unstable	-	Low spec. Strong decrease	-	High spec. Strong decrease	-	-

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Oil and Gas	High spec Strong growth	High spec. Strong growth	-	-	-	High spec. Strong growth	-	No spec. Strong growth	-
Paper products	High spec. Strong decrease	-	High spec. Strong decrease	-	High spec. Strong decrease	-	-	-	-
Business services	No spec. Strong decrease	No spec. Strong growth	-	No spec. Unstable	-	-	-	-	-
Construction	No spec. Unstable	Medium spec. Unstable	-	-	-	Medium spec. Strong decrease	-	-	-
Entertainment		-	-	Low spec. Stable	-	-	-	Low spec. Stable	-
Furniture		-	No spec. Strong decrease	-	No spec. Strong decrease	-	-	-	-
Information Technologies		-	-	-	-	-	-	-	-
Tourism		-	-	-	-	-	-	-	-
Production Technology		-	-	Low spec. Stable	-	-	-	-	-

Source: The table is constructed based on the results presented in section 2 methodology implementation. Detailed results are presented in Section 3. Abbreviation «Spec.» refers to the term «Specialization. Symbol «-» refers to the situation, when a cluster's critical mass is too low, i.e. it is now identified in the region. The first line each box presents the evaluation result of region specialization in types of activities performed by a cluster i in the region g. (see Table 2 for more details).The second line refers to the type of dynamic state of employment of cluster i in region g. (see Table 3 for more details).

Table 15. Cross-matrix of the state of development of the clusters in Russian Regions for 2009–2016

Level of region specialization / **Dynamic state of employment**	**High specialization**	**Medium specialization**	**Low specialization**	**No specialization**
Strong employment growth	Oil and Gas (3)	-	-	Oil and Gas (1) Business Services (1)
Moderate employment growth	-	-	-	-
Stable employment level	-	-	Transportation and Logistics (1) Entertainment (2) Production technology (1)	-
Unstable employment growth	-	Transportation and Logistics (3) Construction (1)	Maritime (1)	Business Services (1) Construction (1)
Moderate decrease in employment	-	-	-	-
Strong decrease in employment	Paper products (3) Maritime (1)	Transportation and Logistics (1) Construction (1)	Transportation and Logistics (1) Maritime (2)	Transportation and Logistics (1) Business Services (1) Furniture (2)
Numbers in brackets reflect the number of regions where the cluster is present.				

Source: Compiled by Authors

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Discussion and conclusion

This research study provides several results, which contribute both to practical and theoretical fields.

First, we present the architecture of the database for automated identification of clusters in the Russian regions. This architecture can be used for creating any other database to calculate cluster localization parameters in any other country or region.

Secondly, we, in brief, present methodology for cluster identification and discuss how clusters can be identified from the perspective of the European Cluster Observatory. We complement this methodology through presenting two additional dimensions, which can be used for better interpretation and systematization of results. The dimension «Level of region specialization» depends on the average number of stars obtained by a certain cluster in a certain region. The dimension «Dynamic state of employment» represents the pattern of employment change during the analyzed period.

Thirdly, we present the main results for cluster identification using the example of the Russian Arctic regions. It is stated that most of the significant clusters are decreasing, while the only cluster which achieved steady growth in terms of localization parameters was «Oil and Gas». The obtained results allowed us to conclude that the cluster structure of the Russian Arctic regions is poor in the sense that there are few significant clusters and that most of them are weak and decreasing. This result can be used as a basis for elaborating regional economic policy to support regional diversification and specialization.

There are also several opportunities for further research. Firstly, the presented database can be modified in order to provide results, which are more valuable. Currently it calculates only four parameters, which reflect localization parameters and regional specialization. It can be expanded in order to calculate more metrics, which are based not only on employment data, but also on salary and sales data of the clusters. In addition, functions can be included to compose indexes based on several parameters. In addition, it could be interesting to tackle the technical issues connected with data input. At the moment, before data are input to the database, a big job has to be done, which is connected to acquiring and formatting data. If it were possible to connect the database directly to the State Statistical Service systems, the time spent waiting to receive a result would significantly decrease.

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Author Contributions

Conceptualization, A.S., T.K., M.A.B.; Methodology, T.K.; Validation, A.S. and T.K.; Formal Analysis, A.S.; Investigation, A.S. and T.K.; Data Curation, A.S.; Writing-Original Draft Preparation, A.S., T.K., M.A.B.; Writing-Review & Editing, T.K., M.A.B.; Visualization, A.S.; Supervision, T.K.; Project Administration, T.K.; Funding Acquisition, T.K.

Conflicts of Interest

The authors declare no conflict of interest.

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TOWARDS SUSTAINABLE DEVELOPMENT VIA INTEGRATION OF ECONOMIC SECTORS: A CASE STUDY

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Abstract. The aim of the study is to develop the mechanism of integration in the agro-industrial complex (AIC) of Kazakhstan as a basis for ensuring the efficiency of agricultural production in the country. In methodological terms, using classical approaches to the definition of economic integration, the authors interpret this phenomenon as a process of mutual adaptation of economic entities. This methodological position allowed, taking into account the specifics of agricultural production and regional features, to prove the impact of integration mechanisms on the efficiency of Kazakh AIC. Accordingly, the concept of increasing the efficiency of agricultural production in the republic creating agro-industrial integrated formations (AIIF) is proposed. The result of the study should consider the algorithm of AIIF creation and the economic mechanism of its functioning, ensuring the interest of counterparties in increasing the efficiency of joint activities.

Keywords: agro-industrial complex; Kazakhstan; economic integration; agro-industrial integrated formation; economic mechanism; efficiency of agricultural production

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JEL Classification: Q01, Q13, Q18

1. Introduction

Modern theory and practice of integrated relations development should be based on an objective assessment of the essence of ongoing processes and their inherent economic categories in the light of the doctrine on material production taking into account natural, economic, social and other conditions.

Issues of integration processes' influence on the economic development of AIC are in the focus of attention of economists, politicians, and practitioners. The complexity of assessing the integration effect in AIC is determined by the fact that the main and obligatory link in the integrated structure is agriculture, which is quite specific in its technological, technical, organizational, social and natural conditions. One of the main requirements that should

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meet the cooperation of the integrated formation participants is to achieve results from joint activities exceeding the previous ones obtained before participating in the integration. But these results need to be assessed not only from an economic point of view (although the economic result in the conditions of market relations is decisive), but also taking into account leveling of social differentiation and provision of food security. These aspects in assessing the role of agro-industrial integration in ensuring the efficiency of AIC, in our opinion, are the key ones.

Modern agrarian economy is characterized by reduction of the resource base, high demands of consumers to the quality of agricultural products, increased competition both in regional and world food markets. Economic integration as a process of mutual adaptation of economic entities of the agro-food market allows due to the general synergetic effect when using the joint agrarian potential of counterparties, to ensure the dynamic development of the country's agricultural sector and to achieve a high level of agro-industrial production efficiency. The object area of research was the agro-industrial complex of Kazakhstan. The subject of research is economic relations related to ensuring the efficiency of agricultural production in the region based on the integration mechanisms usage.

1. Theoretical basis

Theory and practice of integration processes development in the economy, substantiation of efficient forms and models of integrated structures in evolutionary terms enjoy quite extensive methodological base. First of all, the neoclassical theory should be highlighted, there the problems of vertical integration and justification of expediency of a single enterprise in the conditions of technological interdependence of final product manufacturing processes were studied (Bain, 1968; Clarke, 1985). Neoclassics noted the reduction of marginal costs of integrated enterprises as a source of their competitive advantage to produce more products at lower prices (Greenhut & Ohta, 1979).

The neoclassical analysis also pays considerable attention to the study of the vertical integration impact on the creation of entry barriers for new actors in certain markets. It is shown that if one of the firms before vertical integration had a monopoly on any rare resource, then, integrating forward, they will complicate the entry of new firms to the stage of final product manufacturing. Scherer and Ross (1997) also noted that vertical integration increased barriers to the emergence of new firms because of the increased need for financial resources. Additional barriers also arise from vertical mergers, which may create negative conditions for non-integrated firms such as price discrimination, poor services, supplies rejection.

Evolutionary theory largely expanded the possibilities of modeling the economic systems development from existing equilibrium positions to new quasi-equilibrium states, it also expanded the horizon of research in the evolution of organizational forms and institutional changes. The formal framework of nonequilibrium and irreversible evolutionary processes is the theory of nonlinear systems self-organization. Economic systems are an example of self-organizing systems whose important feature is the effect of competition. In fact, any orderly structure is a consequence of competition. As a result of the final selection, it appears as the dominant technology in the new technical-economic paradigm. A group of economic agents united by a particular technology has a single genotype. Around each technology a specific institutional infrastructure is formed, the institutions of which "coevolve" with technology. In this framework, studies by L. Prahalad and G. Hamel (2001) should be considered as they defined the possibilities of forming the root competencies of corporations as integrated structures.

The neo-institutional approach to the study of integration processes in the economy focuses on identifying incentives for integration and their impact on the efficiency of the integrated link (Williamson, 1990). The integrated corporate structure is considered not as a separate company but more as a system of economic entities interaction. The main problem of studying the firm is the explanation of the phenomenon of an integrated structure emergence, its development and, ultimately, disappearance.

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The theory of transaction costs is a classic approach to the study of integration and as a tool of disclosure of the decisive factors of an economic organization efficiency, it uses the comparative contracting. Coase (2001) in his article "The Nature of the Firm" (Coase, 2001, p. 53) explores the reasons for the production integration. Firm's size boundaries in the market exchange conditions are determined by minimization of transaction costs in comparison with average market costs. “The firm will seek to expand until the costs of arranging additional transactions within the firm are equal to those of performing the same transactions by means of exchange in the open market or the costs of setting up another firm.”

Williamson (1994) developed the idea of R. Coase on the reduction of transaction costs within an economic entity and justified as the most important integration parameter in comparative assessment the degree of specific assets, to which he attributed the specificity of location, physical assets, human capital, and targeted assets. Later on, these types of specific assets were extended to include investment in the creation of a brand and the temporal specificity that arises in the technological interconnectedness of the parties, when the timely mobilization of human resources is vital (Williamson, 1996). Provided that the interacting parties are promising and profitable, taking into account a significant degree of the assets specificity, their contractual relationship may be transformed into a relationship of mutual participation in the capital that is integration becomes more preferable.

North (1997) introduced an "extended" concept of transaction costs which included not only the costs of production and handling, but also the costs of using appropriate coordination mechanisms, determined to a large extent by the institutions together with the technologies applied. Which economic institutions are established and in place — rules and frameworks for business structuring — ultimately define the nature of the links and relationships between economic units.

The property rights theory expands the possibilities of integration processes analysis. The main theses of the property rights theory are based on the following fundamental principles:

- Ownership rights determine what costs and rewards agents can expect for their actions;
- Restructuring of property rights leads to shifts in the system of economic incentives;
- Reaction to these changes will be the changed behavior of economic agents.

Thus, it can be argued - from the point of ownership theory - that the structure of ownership rights affects the allocation and use of resources. While in the traditional sense ownership is regarded as an absolute right to resources, the property rights theory affirms the opposite - it is wrong to equate property with material objects, it represents "bundles" of rights to the relation of actions with these objects: use them, assign income thereof, change their form and location.

In the theory of economic organizations, the firm is considered through the prism of the transaction approach, as a network of contracts, a system of processing and transmission of information, a structure to ensure economic power and control over property objects. Research has focused on the search for efficient forms of inter-firm relations that take the intermediate position between a purely market relationship and an inter-firm organization. Defining the essence of the transactional approach to the problem of vertical integration, it is noted that integration should be selective, because a high degree of integration is not always the best solution (Williamson, 1996).

The range of issues in agency agreement theory considered in relation to integration is known as the "agent-principal problem" (The problem can be called "outsider-insider problem" or "engager-executor problem"). The basic model of this theory, which formalizes the concept of corporate governance, was developed by Jensen and Meckling (1976). Separation of property from control in large integrated structures creates a conflict of interest between owners and managers. Therefore, the growth of the organization forces the principal to move to the complex power relations scheme delegating part of the authority to control agents to his representatives.

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Therefore, as the firm grows, its efficiency may decrease - "diminishing marginal management efficiency" (Coase, 2007).

Exploring modern approaches to the study of economic integration, it should be noted that its methodological base constitutes the synergistic theory of mergers and its alternatives: agency theory of free monetary flows and theory of pride (Tsvetkov, 2011). The latter, although they focus on such an essential factor of any corporation functioning as a factor of interests differentiation of different groups involved in the integrated formation management, but they do not explain the reasons for the formation of corporate structures other than simple mergers of companies. Therefore, a corporation as a form of integrated structure is defined as an alternative to merger. The formation of corporations is due to the compromise of insiders and outsiders interests in the management of companies that find themselves depending on the central element and seek to take advantage of all the benefits of integration while maintaining a certain degree of autonomy.

Large integrated structures as a strategic resource actively use economic power. Therefore, the theory of economic power, taking into account the volitional component in the actions of economic entities, is considered as basic in the analysis of integration processes (Movsesyan, 1998; Galbraith, 1983). Within the framework of the integrated formation, the relationship of power consists of four components: the organizational power of each counterparty's management; the power of the central element over other constituent parts of the integrated structure; market power and power in social and economic systems of the most integrated formation. Therefore, in such a specific power space, the central element of the integrated formation controls the main aspects of the functioning not only of counterparties, but also of all economic agents related to its activities.

An important role in the study of integrated structures from the point of view of their interaction with the external environment is played by developments in the field of industry and branch economy organization theory (Scherer & Ross, 1997). The role of integrated structures in the country's economy as complex phenomena, according to the authors, is implemented by them insofar as they include banks, industrial companies, etc. At the same time, some authors associate the integration development with the desire of the world economy to "increase the level of systematic" (Kazakov, 2000). In the most recent years plethora of studies on clusters (e.g. Monni et al., 2017; Tvaronavičienė, 2017; Razminienė, Tvaronavičienė, 2018; Petrenko et al., 2019; Tvaronavičienė, Razminienė, 2017; Amraoui et al., Bublienė et al., 2019; Razminienė, Tvaronavičienė, 2017; Sarma et al., 2019) stemmed from classic foundations presented above.

2. Methodology of management of integration processes in agro-industrial production

The concept of integration from a methodological point of view is rather complex and multidimensional in nature. It can be interpreted from the perspective of three main approaches reflecting different components of the essential characteristics of this phenomenon.

1. Process approach - integration as a process.

Integration is the process of connecting parts into a single unit. This component determines the volume and intensity of relationships between the elements in the whole.

2. Structural-functional approach - integration as a state, as a result. This component characterizes the way of joining parts into a single unit, determines the features of building holistic integrated structures.

3. Content approach - integration as a mechanism. This component determines the nature of the interaction of the parts in the whole and ensures the development of the system as a whole.

On the basis of philosophical understanding of the integration process essence without denying or criticizing any of presented definitions since in each particular case, taking into account the development conditions, there is

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certain logic and importance of the noted specific aspects of this phenomenon, the following definition can be given to reflect the objectivity of the ongoing social and economic processes at the current stage.

Economic integration is a process of individual economic entities mutual adaptation, leading to the formation of orderly relations system between them. The orderly relations system between economic entities is characterized by the presence of more or less long-lasting ties, strictly regulating the actions of participants in the implementation of common tasks and contributing to the institutionalization of their activities (Anokhina, 1998).

In practical terms, the concept of integration reveals complex real processes of social production and the corresponding relations and connections. With regard to integration in view of the whole system development, the "connection" can be qualified: by its content, which is the subject of connection; by its main forms; by its type and strength of the processes taking place; by its nature, direction of action and counteraction; by the degree of the organizational systems integrity, etc.

It is possible to assess the state and to outline trends in the development of economic integration, to distinguish subjective factors from objective factors on the basis of identification and study of its regularities. At the present stage of economic integration development, it is possible to speak about the following key patterns of its development.

1. Nature of the integration subjects determines the nature of the integrated relations between them.
2. Influence of formation conditions of integrated relations on their character.
3. Relationship between the form and content of integrated connections.
4. Restriction of integrated interaction forms with unlimited subjects of integration.
5. Properties of the integrated structure differ and qualitatively exceed the sum of the properties of its elements, subjects of integration.
6. The integration development regularity.

1). The process of integrated structures development, characterizing their life cycle, is natural.

2). It is natural to ascend from the simplest forms of interaction to more complex (the pattern of the interaction form evolutionary development).

Research in the field of agro-industrial integration has a sufficiently broad theoretical and empirical basis. In the current context of globalization, studies of integration problems are becoming relevant both at the regional and at the international level. The development of integration processes in agro-industrial production within the framework of the EEU market was investigated by Rau (2017), Marwa et al. (2017). Assessment of integration processes in the Eurasian Economic Union (EAEU) was conducted by Siptits, Romanenko, Evdokimova (2018).

Integrated formations with all variety of forms, their possible intertwining, and convergence from the point of view of organizational design can be classified into eight different types (Table 1).

When creating an integrated formation, there is usually an integration effect that makes the integration of different units into a common system mutually beneficial and cost-effective. The integration effect can be defined as the sum of all the benefits of an integrated entity for each participant, including marketing, technology, information, economic and financial components — benefits that would not be possible to derive from the fragmented functioning of the participants.

There is no single methodology for measuring this indicator, as determining the feasibility of creating an integrated formation is a rather complex task. Existing conceptual approaches to the integration effect determining are characterized by the following features.

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1. Transactional cost approach. It focuses on the possibilities of different forms of the economy by bringing order to the market behavior of individual firms through the conclusion of long-term contracts governing joint activities.

2. Competitive advantage approach. It has been very popular since the 1980s. According to this approach, integration solutions should be aimed at achieving long-term competitive advantages of the company.

3. An approach focusing on the potential of mutually beneficial long-term business relations. In this case, the signs of efficient integration can be the following: development of the mutual connections and relations system within the group, intensive exchange of financial, personnel, information resources, the sustainability of the financial position of the company.

4. The approach based on the theory of financial management. The focus is on synergies, the availability of operational savings through the elimination of management functions duplication and centralization, and the other benefits of the production expansion, diversification and the exchange of financial resources.

5. The approach related to the specifics of the interaction between shareholders and managers. The main goal is to align the actions of the corporate managers and owners.

6. Approach with emphasis on the "main banks phenomenon". The integration effect appears due to close connections with banking structures, which allows participating enterprises to better navigate the financial market, more accurately predict financial flows and optimize financial and economic policy.

Each of these approaches takes into account mainly only one of the sides of integration, focuses on individual processes. However, integration processes are very multifaceted and manifest in different ways, which should be taken into account when assessing the integration impact. It is possible to formalize the process of determining the integration effect using the following formula (Kirilenko, 2001):

$$Se = Ee + Es + Eo - En, \qquad (1)$$

where: Se - synergic effect;
Ee - effect of economic properties;
Es - effect of social properties;
Eo - effect of other properties;
En - effect of negative properties.

If the formula gives a positive result, this means that the integrated formation has happened; if the result is negative, the situation is doomed to challenges, or even to complete failure. The closer the sum of the total effect to the annual revenue of the integrated structure, the more stable it is, more efficient.

3. Results

The problems of increasing the efficiency of agro-industrial production in Kazakhstan based on the development of integration processes are revealed in the works of such republics as Bajdurin (2010), Tireuov (2011), Zhunusov and Bel'gibaeva (2012), Joldasbayeva and Yesilbayeva (2017), Joldasbayeva and Esaidar (2018), Daribayeva and Anokhina (2019).

The need to ensure the food security of the country, to meet the food needs of the population and to address social problems puts the task of increasing Kazakh AIC efficiency in the priority list. Without highly efficient and competitive agro-industrial production it is impossible to solve many primary and strategic tasks for the development of the socially oriented economy of the country and to form a civilized agri-food market. In the republic on January 01, 2018, the number of agricultural formations amounted to more than 200 thousand units, of which 94.0% or 187.9 thousand were small peasant (farm) households. In the structure of the gross agricultural output of the country, these farms occupy 27.1% (Table 2).

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Table 1. Classification and characteristics of integrated formations in AIC

Classification features	Organizational forms of integrated formations								
	Strategic alliances	Consortia	Clusters	Associations and unions	Consumer cooperatives	Financial participation	Holdings	FIG	Full merger
Principles of joining	Associative					Agglomerative			
Characteristics of economic activities	Non-commercial	Commercial	Depends on participants' choice	Non-commercial		Commercial			
Legal entity status	Preserved								Lost
Degree of rigidity of internal connections	Non-rigid connections			Medium-rigid connections					Rigid
The right of participants to join other groups	Have the right to participate in other groups						For financial institutions without the right to participate in other groups		Without the right to join other organizations
Management subjects	Centralized management bodies (possible)			Meeting of cooperative members		Participating companies	Centralized management		Basic subject of integration
Management tools	None			Membership in the cooperative		Stock of shares			Administrative
Completeness of life cycle stages	Production, scientific and production, agro-industrial, commercial and industrial								
Degree of diversification of production	Product diversification is possible			Products are related to sales and technology		Possible wide diversification of production			Technologically connected production
The time frame of the formation existence	Limited by the implementation of joint works		Unlimited						
Possibility of implementing a single investment policy	Not possible		Possible	Not possible			Possible		
Sectoral level of integration	Intereconomic, intra-industry, intersectoral								
Sectoral level of integration	District, regional, interregional, national, transnational								

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Table 2. Structure of gross agricultural output of Kazakhstan (2013-2017 average)

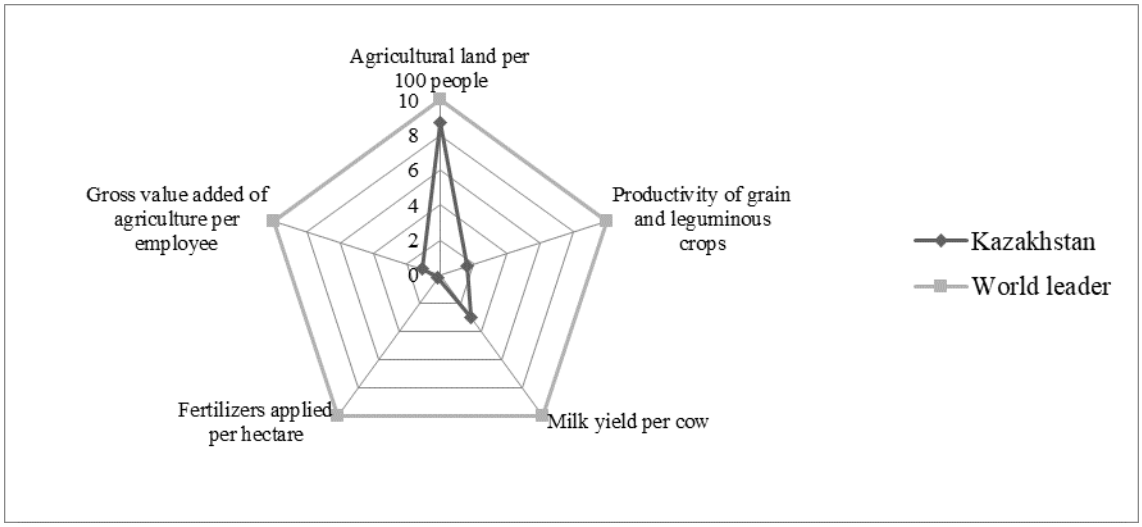
Indicators	Cost of gross agricultural output, billion tenge	Structure of gross output in terms of categories of farms, %
Gross output of agricultural, forestry and fishery products (services) - total	3447.7	100
of which:		
agricultural enterprises	751.4	21.8
individual entrepreneurs and peasant or farm households	932.7	27.1
population households	1763.6	51.1

Source: Ministry of National Economy of the Republic of Kazakhstan. Committee on Statistics, n. d.

The study of the problem of Kazakh AIC efficiency ensuring (Fig. 1) allowed to substantiate the integration processes development in the form of agro-industrial integrated formations (AIIF) as one of its solution directions.

Agro-industrial integrated formation (AIIF) is a long-term agreement on cooperation of independent economic entities in the sphere of agro-industrial production related to the general process of added value formation and establishing relationships that provide a synergistic effect in the form of added value for agricultural products consumers. AIIF model (Fig. 2) is built taking into account the following provisions:

- the main idea of forming integrated structures in the AIC is based on the technology of business process management to form a value chain for the consumer of agricultural products taking into account maximizing the regional potential of agro-industrial production;



Source: FAOSTAT, n. d.; The World Bank, n. d.

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Figure 1. Evaluation of Kazakh AIC efficiency in comparison with the world leaders of the agro-food market

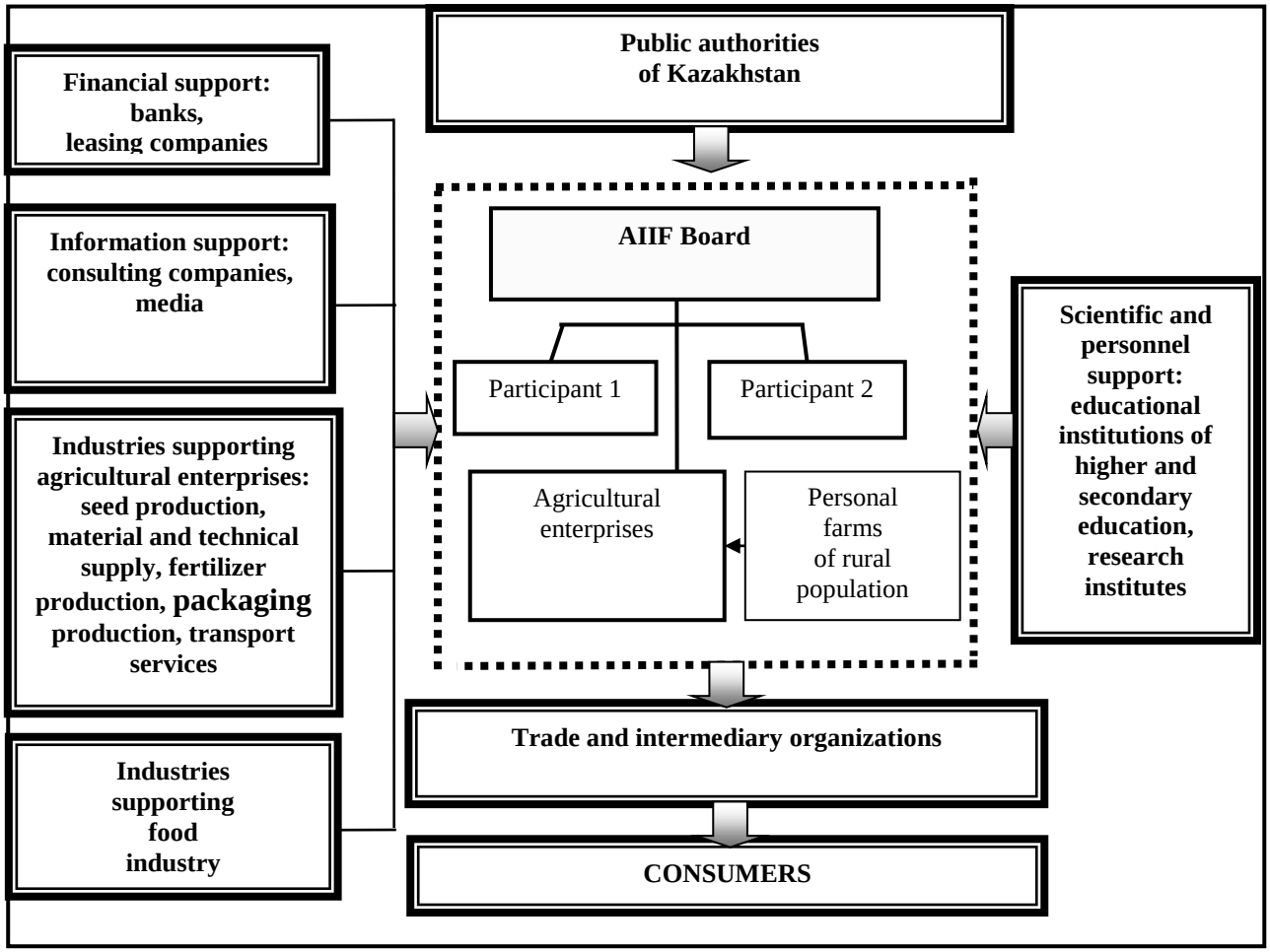

Figure 2. Model of agro-industrial integrated formation in Kazakhstan

- AIIF activity should be focused on the agro-industrial products manufacturing, ensuring the balance of food in the region due to its demand both within the region and beyond its limits. Thus, the main purpose of the integrated formation is implemented as a tool to increase the efficiency of production in the country, taking into account the factor of social responsibility of market participants;
- core (key sector) of agro-industrial integrated formation is formed at least by two firms able as a result of interaction through synergistic effect to produce competitive products. Most often, they are processing enterprises, the joint activity of which represents the final stage of the business process to create value for the consumer;
- AIIF includes agricultural enterprises (raw materials sector) whose activities at the initial stage of the business process through the production of competitive agricultural raw materials determines the well-being of the whole integrated formation;

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- AIIF structure has a flexible character allowing depending on its objectives to change the composition of participants of feeding and supporting blocks, keeping intact the core and raw materials sector integrated formations;

- AIIF stability and efficiency of its activity is determined by the possibility of maximizing the synergistic effect from mutually supplementing internal capabilities of the integrated formation participants and the state of the business climate as a set of external factors forming its functioning conditions, among which, due to the specifics of agricultural production, the dominant role is played by the public authority bodies in the region. These provisions allowed to substantiate the concept of increasing the efficiency of Kazakh AIC on the basis of agro-industrial integrated formations creation (Fig. 3).

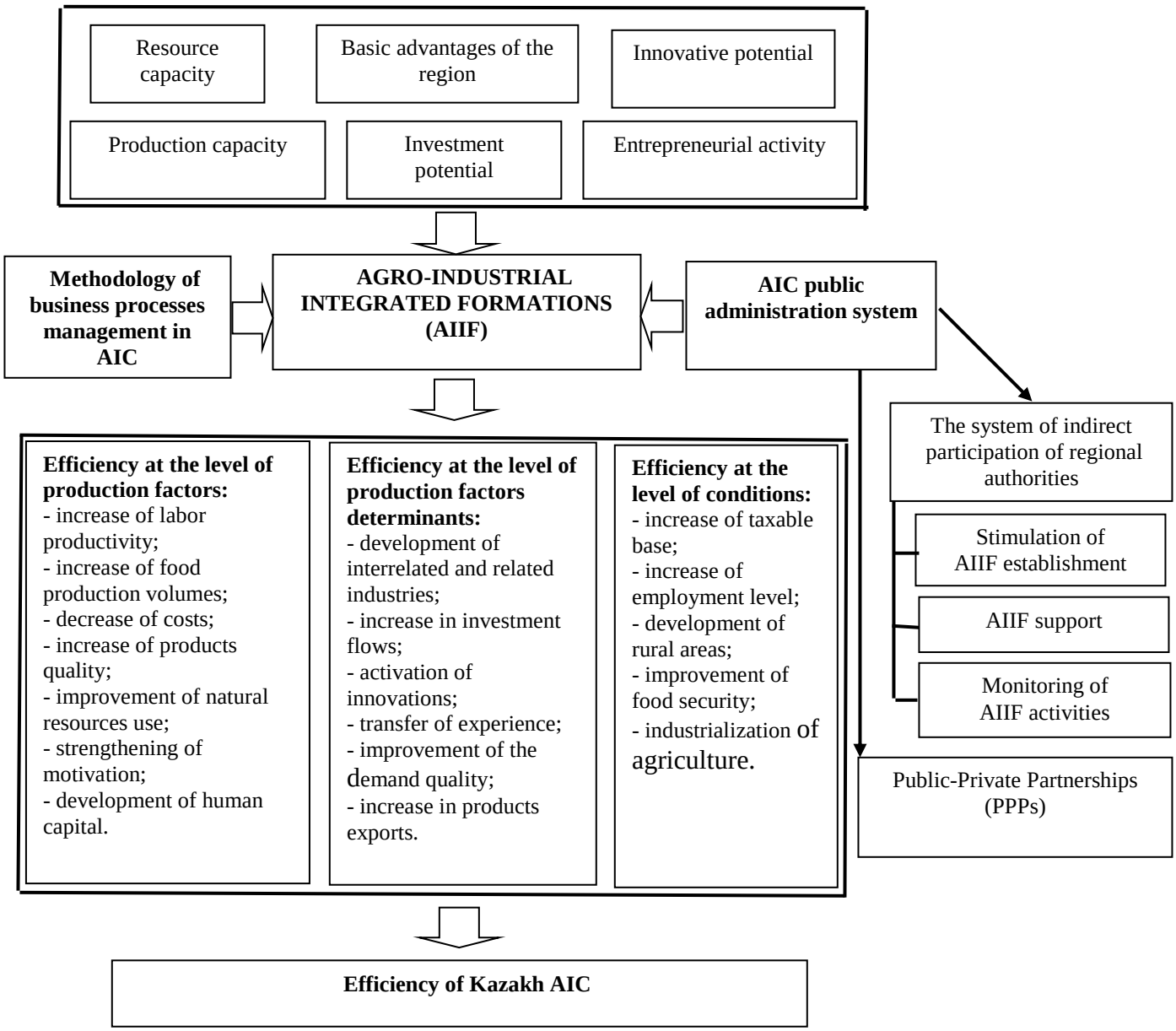

Figure 3. Concept of increasing the efficiency of Kazakh AIC on the basis of agribusiness integrated formations creation

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The low level of sectoral attractiveness of agricultural production necessitates the formation of motivating conditions for the participants of the key sector of AIIF, which should be determined by the public authorities depending on their participation nature in the establishment and functioning of integrated structures. Two options for such participation are proposed.

The first option is based on the system of integration processes public regulation in the region and includes three areas of action for public authorities: to encourage, support and monitor the establishment of AIIF.
The second option is a Public-Private Partnership (PPP) as an institutional and organizational alliance between government and agribusiness, based on a joint project financing.

When creating AIIF in the region, it is necessary to take into account the agro-industrial potential of the integrated structure territories, which assumes the following actions (Fig. 4).

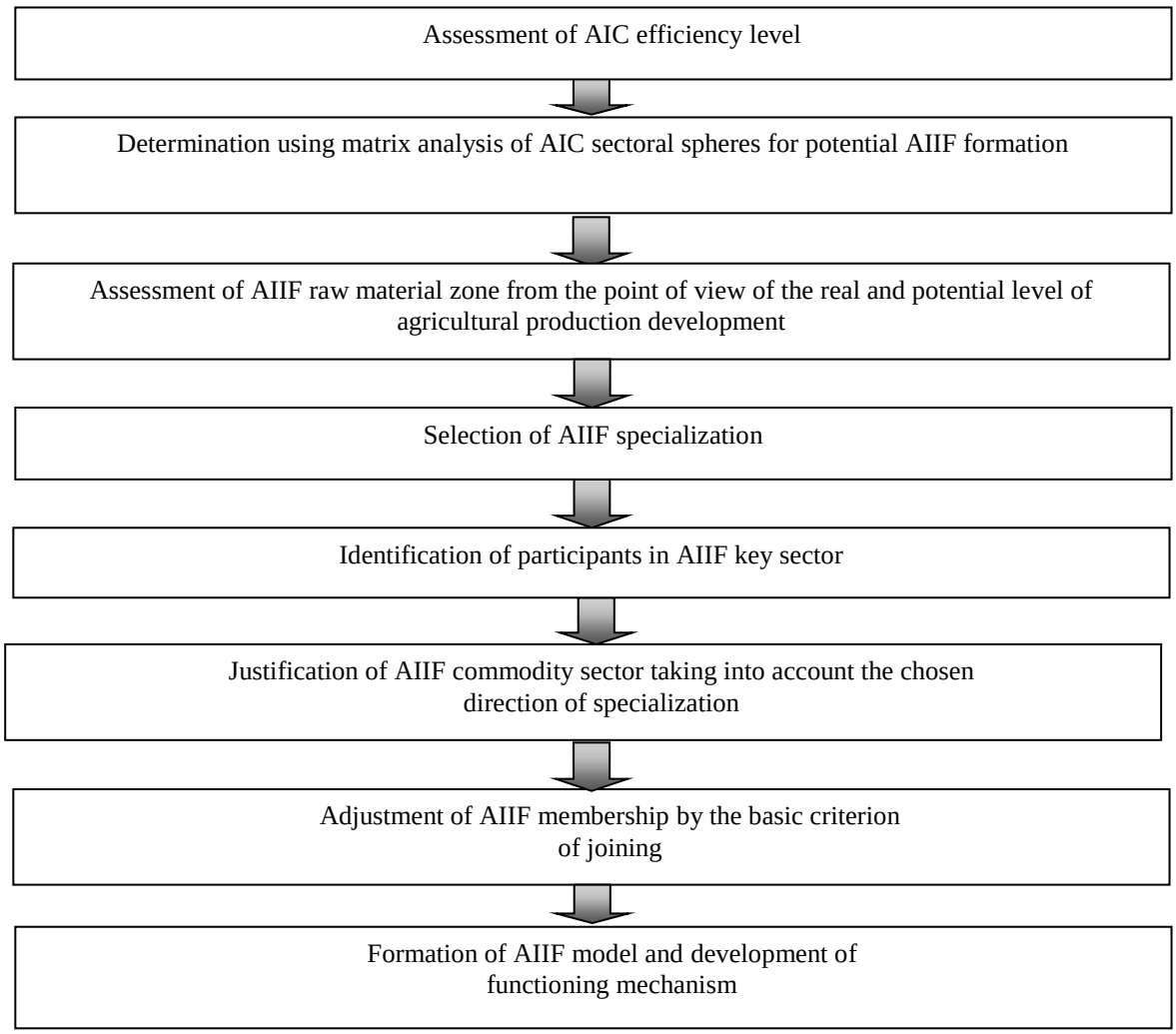

Figure 4. Algorithm of AIIF creation in Kazakh AIC

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The fundamental moment determining the economic relations between AIIF participants is the relationship regarding the distribution of joint activities final result. When constructing the optimal mechanism of profit distribution, it is necessary to take into account that the needs of the counterparty should be met within the profit actually earned by this economic entity in as part of the integrated formation. The optimal distribution of profits between the enterprises that are part of the AIIF is the distribution of the total profit in order to determine the value of the objective profit that the enterprise earns, being an integral part of the integrated formation. Therefore, the share of profit obtained as a result of the optimal distribution must reflect the real performance of the enterprise within the association and be an objective value, appropriate to market conditions. Therefore, in order to distribute profits, it is necessary to compare the total amount of the stated expenses for all enterprises. Within the framework of the proposed AIIF model, it is possible to distribute the received profit from the sale of finished products or services on the basis of standard cost (Fig. 5).

The question of replenishment of funds of the single development fund is quite complex, but in general it is reduced to the following sources:

- entrance fees from participants;
- deductions from the profits of each of the partners in the association;
- dividends on securities of enterprises that are not partners in the association;
- incomes from the sale / rental of property purchased with the funds of the development fund;
- borrowed funds, subsidies, subventions from the government;
- payments from insurance companies;
- interest on sight deposits and deposits of funds to various banks.

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Actual output of commercial products: $R_B = CR_B - MP$
CR_B - cash revenue in the base period, MP - mandatory payments to budget and extrabudgetary funds

↓

Actual cost of production: $C_A = Cp + Cr$
Cp — the cost of production, Cr — the cost of products realization

↓

Standard cost of production: Cs = Cp — IR — L — TI
IR — irrational costs, L — losses, TI — technology implementation costs

↓

The unit weight of the cost in commodity products (UA - actual unit weight): $U_A = C_A / R_B$ and $U_S = Cs/$
–

↓

The actual output of merchandise products in the reporting period (TR - total revenue)
$T_R = CR_R$ — MP
CR_R – cash revenue in the reporting period
MP — mandatory payments to the budget and extrabudgetary funds

↓

Standard cost of commodity products: $CP_S = T_R * U_S$

↓

The share of the standard cost of the participant in the cost of commodity products of the enterprise: $U_{CS} = C_S / CS_E$
CS_E – the standard cost of commercial products of the enterprise as a whole

↓

Of the total amount of distributed profit, the share of the participant (PP - participants' profit): $P_P = Dp * U_{CS}$
Dp — the total amount of distributed profit

Figure 5. The scheme of profit distribution in AIIF on the basis of standard cost of products

It is advisable to make deductions to a single development fund from proceeds from sales of all products. It is possible to use two options of deductions: the first involves the payment of a fixed contribution, the amount of which is determined by the AIIF Board and depends on the financial position of the participant and its participation in the activities of the integrated formation. The second option is to establish a standard of contributions to a single fund:

$$C_{DF} = 1/ S_C \qquad (1)$$

C_{DF} – the rate of contributions from profits to a single development fund,
S_C — the share of enterprise costs in the total structure of costs for the production of final products.
All AIIF participants may be entitled to receive payments from the fund under the following conditions:

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- free of charge;
- on a return basis (in the form of interest-free loan or with a certain interest).

All decisions on the allocation of payments from the fund are made by the AIIF Board.

Thus, the presented conceptual provisions on the creation and functioning of AIIF are aimed primarily at:

- rational use of resources in the country - land, material, human, etc.;
- increase of the interest of economic entities in the development of agro-industrial production of the country;
- increase of AIC efficiency.

4. Discussion

The developed methodological foundations of economic integration taking into account the specifics of agricultural production were used for solving the problems of increasing the efficiency of agro-industrial production in Kazakhstan. The authors substantiate the possibility of applying any form of integration depending on the specific conditions, which is confirmed by the "niche theory", assuming the presence of many forms and the use of any of them where it will be more efficient than any other.

Peculiarities of the agribusiness create specific differences in technology, scale, location, and organization of agricultural production, which have fundamental differences from identical processes in other sectors of AIC, which is the reason for finding the most optimal form of intersectoral relations in each particular case.

An important determining point in the development of integration processes in the agro-industrial sphere is that at the macro level agricultural production does not fit into the modern model of the market economy. The essence of this problem is the following:

1. Growth in demand when incomes for non-agricultural products are increasing compared to the demand for agricultural products.
2. The downward trend in agricultural prices relative to other prices.
3. Low labor mobility for agricultural workers.

Together, these factors cause the peculiarity of the integration processes development in agro-industrial production, manifested in the need to adapt agriculture to market economy conditions. Therefore, it is possible to argue the positive impact of economic integration mechanisms in agricultural production on the efficiency at various organizational levels. It should be noted, however, that many of the disadvantages of agro-industrial integration should be seen as development diseases, which should be overcome as competition becomes more competitive and new forms of cooperation focused on innovation and progressivity appear.

However, the methodological discussion here is related to the question of assessing the effect of economic integration. At the moment, there is no comprehensive approach to assessing the integration effect taking into account all its aspects. Using known approaches, it is impossible to uniquely assess the efficiency of integration processes, accurately determine the value of the effect, let alone the management of these processes. In addition, it is often very difficult to understand whether there is any sense in creating an integrated company in general or departments are better to function independently. All these characteristics testify to the particular relevance of the problem.

Conclusion

The results of the study confirm the scientific hypothesis about the impact of economic integration on the efficiency of agro-industrial production. Using the example of agro-industrial complex of Kazakhstan we have proved the expediency of integration mechanisms usage in the management of agrarian production efficiency in the country. Thus, we can confirm that the goal of the study was achieved.

The presented scientific materials allowed to develop the concept of agro-industrial integration in terms of clarification of the economic integration essence, formulation of integration processes regularities and evaluation of efficiency thereof.

The developed conceptual model of increasing the efficiency of Kazakh AIC based on the formation of agro-industrial integrated formations demonstrates the advantages of the proposed recommendations, because it allows in a systematic format to manage the industrial complex at the level of factors, determinants, and conditions of agricultural production.

The model, algorithm of creation and mechanism of AIIF functioning, taking into account the specifics of agricultural production of Kazakhstan, proposed by the authors, are focused on the maximum use of agricultural potential country and increase of AIC efficiency in the long term.

Further research in the field of economic integration methodology and integration mechanisms improvement in the agrarian sphere requires the development of a pilot AIIF project with the aim of pilot testing of proposed approaches efficiency.

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INNOVATIVE-ENTREPRENEURIAL UNIVERSITIES IN THE POSTMODERN WORLD CONCERT: POSSIBILITIES OF IMPLEMENTATION

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Abstract In the article, they analyze the concepts of innovation and entrepreneurship in the transformation of universities into entrepreneurial institutions, understanding university institutions as organizations that, in a macro concept of their management is represented in its most general expression; that is the production and application of knowledge. In this sense, the characteristic features of commercial, academic activities in innovative and entrepreneurial universities are analyzed, and the optimal organizational and economic mechanisms for the development of this model are studied, in order to use even more positive experience in systems of higher education in countries with less innovative-entrepreneurial development.

Keywords: Higher education; entrepreneurial university; innovation activity; transformation.

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JEL Classification: Q01, Q13, Q18

1. Introduction

First, the innovative nature of universities must be understood from the perspective of their central scientific function in the generation of knowledge and in its subsequent applications or praxis that gives entrepreneurship an operational character.

The praxis of innovation

From a diachronic perspective, it is assumed that the continued advance of science and technology has occurred from the significant innovations of humanity oriented to the detection and resolution of problems, transforming society and our patterns of life, as well as improving the quality of life, the sustainability of resources and the welfare of the people. However, science has been debated between two alternative policies. On the one hand, to

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continue being the primary market tool which reigns in the world economy and on the other, to produce knowledge and technologies that promote the welfare of the people.

It is also relevant to highlight that both institutional, technological, and human capacities must be used efficiently and strategically, which constitute a form of skills that proactively solve problems to improve processes and generate new products and services, definitely relying on innovation to encourage new creation and thus establish a strategic direction for entrepreneurship.

Based on the previous evidence, it can be inferred that the societies that have these capacities have a national innovation system, a situation that also requires the establishment of a reliable educational system that privileges basic scientific training and that reaches all sectors of the society. Such a system is indispensable for countries to enjoy a society that is not only modern but more just, which provides a new technological base for the new generations. Recognize entrepreneurship as a mechanism for the spill of knowledge, recovering the connection between new knowledge, innovation, and economic growth (Sánchez et al.; 2015). (Nuñez and Ravina: 2017; Ramirez et al.: 2019).

Corresponding to these approaches, Jaimes (1998), he points out that it is undeniable that technological, scientific development cannot be achieved without building a minimum of scientific culture. This achievement is understood by developed countries that support the incorporation of scientific education from the first educational level as vital.

With research and development skills, the stronger these skills are, and the greater access to complementary assets by the competition, the higher the chances of imitating a given innovation. In this regard, Porter (2006) states that the remarkable innovation production capacity of Israeli companies is not only due to more efficient technology management, but also the favorable environment in Israel for innovation, including strong links between industry and University, and a large group of scientists and engineers with excellent training.

Countries with less industrial development have lagged behind other regions of the world in innovation and entrepreneurship, among other reasons; They fail to insert themselves competitively in other markets, they do not have the required technology or the necessary investment in research and development of new products.

These considerations lead to infer that innovation must be managed efficiently by organizing both technical and economic human resources to increase the creation of new knowledge, generating ideas that allow obtaining new management methods, production processes aimed at achieving competitiveness of the organization.

In order to achieve advances in innovation, it is necessary to realize more resources in research and development; but above all, the application of resources in the potential of competitiveness must be sought by establishing strong links between the company, the University and the public administration, that creativity is what can allow innovative projects or entrepreneurial applications to be carried out.

Problems related to financing and maintaining the competitiveness of modern higher education have deepened throughout the world as a result of economic crises and a gradual reduction of social programs, including budgetary financing of educational institutions. This problem is especially urgent for Kazakhstan, Russia, other post-Soviet states and in Latin America, due to difficulties of transformation in the course of political, public, and economic changes. The situation is not unique and must be considered in the global context of the transformations in the institutional base of higher education.

The experience accumulated while studying the economics of universities in economically developed countries shows that the educational, research, production, and technological components are essential, but they are not the only source of their income (Table 1).

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Table 1. Breakdown of global leading universities' income, 2012, % (Policano & Fethke, 2012)

University	Income from educational services	Income from investment/ endowment fund	Grants and contracts	Income from goods sold and services provided	Other income
Harvard	19	35.2	21	-	24.8
Yale	9	35	25	20	11
Stanford	12.1	21.9	31	13.7	11.3
Massachusetts Institute of Technology	10	24	49	-	17
Princeton	19	46	18	-	17
University of Texas	10	7	19	-	64
University of St. Thomas	59	19	1	-	21
Kansas State University	24	1	22	-	53
University of Alberta	27.8	2.5	7.4	43.9	18.4

Source: compiled by authors

However, recognized research universities in the USA, the United Kingdom, Western Europe, and other countries obtain additional funds by providing services to external clients, including by leasing their high-tech infrastructure, providing research advice, and conducting evaluations of professional experts with the help of leading scientists. Donations from charities, graduates, and study fees (especially from international students) are also an essential source of income for universities and accumulate in donation funds.

In the EE. UU., The United Kingdom and other economically developed countries, universities, together with training and research, carry out entrepreneurial activities (Policano and Fethke, 2012; Zoltan, 2006) and various innovation activities in higher education and for educational and scientific support of society (Alvarez and Busenitz, 2001; Lambooy, 1997; Onakoya and Abosede, 2013; Girdzijauskaite et al., 2019). Russia's experience related to the development of entrepreneurial universities is also enjoyable. (Table 2) (Mesto rozhdenia tekhnologicheskih innovatsii, n.d.).

Table 2. Top 10 university startups in terms of investment drawn into a specific startup company (mesto rozhdenia tekhnologicheskih innovatsii, n.d.)

Startup company	University	Investment injected into the startup company (USD million)
Telegram Messenger	Saint Petersburg State University	1,700.00
Slack	Siberian State Industrial University	1,216.95
DST Global	Lomonosov Moscow State University	688.00
Revolut	Moscow Institute of Physics and Technology. Russian School of Economics	336.44
Evernote	Lomonosov Moscow State University	290.00
Mirantis	Gubkin Russian State University of Oil and Gas	220.00
Brain Corporation	Lomonosov Moscow State University	125.00
WorkFusion	Moscow Institute of Physics and Technology	121.30
KupiVIP	Financial University under the Russian Government	119.6
Turbonomic	MIREA – Russian University of Technology, Bauman Moscow State Technical University, Moscow Institute of Electronics	117.5

Source: compiled by authors

A substantial result of the combination of entrepreneurship, university studies, and production is the establishment of successful university companies (Toivonen and Vasiliev, 2010) that efficiently implement the idea of cooperation between universities, manufacturers, and the State (Braunerhjelm, 2008).

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Under the conditions of a global educational environment, the functions of modern universities are transformed and diversified as they begin to play the role of active participants in economic relations, gradually expanding their entrepreneurial functions. The essential prerequisites for the development of entrepreneurial aspects in university activities are the limited state funding of the higher education system, the need to diversify the sources of funding and the current relevance of linking academic education, science and the business sector (Lipina et al., 2017; Karmanov et al., 2016).

Universities should solidify and diversify their activities to not only to perform efficiently but also to gain leadership in a global educational environment. The entrepreneurial and international aspects, therefore, penetrate all the critical areas of activities in modern universities (Table 3).

Table 3. Transformation of universities' functions

Traditional functions	Entrepreneurial activity	International activity
Educational, teaching activities	Diversification of services (programs of various duration, levels, learning technologies); a wider scope of core and related paid services	Active attraction of school leavers and consumers in external markets
Research and development	A wider scope of R&D; commercialization of research results; a broader array of related intellectual services (consulting); the establishment of scientific parks, technology parks, technology cities, business incubators attached to universities	Academic mobility; participation in international scientific projects; publication of results in international journals; participation in consortiums of universities when executing international scientific educational projects
Marketing activities	Aggressive advertising campaigns at national and international levels; search of potential donators; activities focused on graduates as potential donators; participation in universities' national and global ratings	
Financial and economic activities	Search and diversification of additional funding sources; the formation of an endowment fund; broader financial autonomy	Search for foreign investors and partners; a wider scope of exports related to educational and other services

Source: Compiled by the authors based on (Policano & Fethke, 2012, Zoltan, 2006, Alvarez & Busenitz, 2001; Lambooy, 1997; Onakoya & Abosede, 2013; Toivonen & Vasiliev, 2010; Braunerhjelm, 2008).

Previous processes aimed at diversifying university functions laid the foundations for the emergence of entrepreneurial universities, which are characterized by widely diversified traditional and modern functions.

However, Kazakhstan, as noted by the president of the Management University of Almaty (ALMA University), Asylbek Kozhakhmetov, has taken a model, according to which the conditions for the economy of innovation are formed by the government and companies without the participation of universities, although the successful experience of other countries shows that conditions must be formed jointly by the State, companies, and universities (Predprinimatelstvo i innovatsii, nd). Sustainable development of innovation should not be expected if there is no interaction with universities.

In Latin America, the contribution of public universities in the economic development of Latin America with the coordinated support of the State and the private sector has been studied. Since 1980 to the XXI century, several mechanisms have experienced a more considerable boom to transfer knowledge to society, such as; creation and promotion of innovative, productive ventures, business incubators, spin-offs, Science and Technology Parks, and the effective triple helix entrepreneurship linkage.

2. Methods

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In the course of the investigation, we use two perspectives of interpretation for the results; a critical, descriptive review of the factors (categories) of analysis; and the expert survey method, with 25 experts involved, 15 of them are employees of universities, which are members of the Association of Entrepreneurial Universities of Kazakhstan (Universities of Turan and Turan-Astana), and five work for the organization without KPMATS profit (the Chapter of the Triple Helix Association of Kazakhstan). This group of experts is directly related to the introduction of the Triple Helix concept and the principles of entrepreneurship in the Kazakh educational space.

Several questions were asked to experts about the factors for the operation of a business university and the areas in which it can operate.

3. Results

Based on the survey results, entrepreneurial universities are characterized by the following key factors.

Table 4. Factors for the operation of an entrepreneurial university

#	Factors	Topicality for Kazakhstan (% mentioned)	Rank
1	Senior university executives have an entrepreneurial vision	92%	1
2	Integrated (corporate) entrepreneurial culture	84%	2
3	Presence of a group of key entrepreneurs	76%	3
4	Presence of employees in charge of implementation who are highly-professional	72%	4
5	Support from the environment (civil society)	64%	5
6	Use of innovative methods of education, with students and post-graduates (doctoral students) to be involved in research	56%	6

Source: Compiled by the authors based on the conducted survey.

Experts believe that the generation of entrepreneurial ideas based on the creative use of current experience and the development of innovation projects is a separate and critical area of activities for a modern business university. According to a KPMATS employee (33 years old), "as people with entrepreneurial character traits, entrepreneurial inclinations, and business thinking, they do not represent more than 4-6% of the total population, and in the education system, their percentage compared to the main academic, The research and auxiliary staff may be a little higher (due to greater literacy and inclination to the areas of research in science, technology, and education), it is enough for a business university to have a small group of such entrepreneurs (up to 10% of total employees) ".

A primary condition necessary for success, as most respondents think, is the presence within the University of a director (rector, vice-rector) with an entrepreneurial vision and preferably with entrepreneurial skills. The other critical condition is the exchange of entrepreneurial ideas by all (or the overwhelming majority) of university staff members when employees really support the University's entrepreneurial policy and programs, work hard and feel responsible for the results. Successful entrepreneurial activities can only be carried out if participants in the creative process (a wide range of areas in which university employees participate) have an entrepreneurial culture.

The next condition is the presence of a group of critical entrepreneurs who generate business ideas and participate in the development of entrepreneurial projects, have unlimited freedom in the creative search, and enjoy the support of academic staff. The group of entrepreneurs of a university (business division), as the experts and employees of the University believe, can consist of people from presidents, laboratories, other divisions that can take their entrepreneurial search actions directly at their desks, on the premises especially designed or in the capacity of an "entrepreneurial section" attached to the founding council (board of directors), the university administration and the academic council of the University, with new ideas and entrepreneurial projects that will be published compulsorily, discussed and accepted by the entire University.

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Experts point out that fruitful cooperation between universities and the industrial sector is essential if the State supports the relatively rapid launch of the creative activities of universities in mass production. The solution of this problem will allow to expand the technological research and intellectual potential of a region (country) and produce a positive impact on the economic development of the State.

Undoubtedly, a decisive factor for success or failure on the road to transforming universities into entrepreneurial institutions, as experts think, is the impact of the environment in which a university operates (attendance, neutral position (or indifference) or counteract). According to the associate professor of the University of Turan (37 years old), "it is essential for civil society to have the entrepreneurial mindset: support (at least moral) from the State and ordinary people of business lifestyle and entrepreneurial spirit as a necessary factor of economic growth. " To this end, the University organizes the summer school Turan Emprendimiento, with measures taken to promote and form the positive image of the creative class of entrepreneurs.

Experts believe that the last important factor is the application of innovative training methods, advanced educational and professional programs, various courses and disciplines, interdisciplinary and multidisciplinary approaches to training, state-of-the-art equipment, the latest devices, and technologies, aimed at involving to students and postgraduates (doctoral students) in research as much as possible.

Consequently, the results of the survey show that the real innovation policy helps to transform universities into entrepreneurial institutions. Innovation relationships arise among the academic staff of a university in the course of entrepreneurial changes. The nature of these relationships can contribute to or oppose the introduction of entrepreneurial ideas into a university.

4. Discussion

According to G. Itzkovitz, founder of the Triple Helix concept that visited Kazakhstan in 2015, for the successful interaction of the State, companies, and universities, Kazakhstan has everything it needs: natural resources, possibilities to develop new industries, solid educational base, and stable political environment. Indeed, many efforts and time will be required, and it may be so that, on this issue, it will be essential to cooperate with other countries, which pursue this approach and apply various combinations, for example, with Russia (Univestitety sozdaut novye industrii i razvivaut biznes, n.d).

In this sense, there is a quite exciting and useful experience obtained by the Tomsk State University of Electronic Administration and Radio (TUSUR) (Nauka i innovatsii, nd) and Turan University (Almaty) (Islamgulova, et al., 2016) with relation to the development of innovation and commercialization of research results.
This results relate to the formation of an entrepreneurial culture in a university from the first years of study, with the introduction of a unique educational technology (group project training), whose essence is to build an educational process, from the second or 3rd year of study, based on real scientific projects executed by students' creative teams (5-7 people). This organization of studies gives talented students the possibility of self-realization in the student business and technology incubators of the University (the Druzhba student business incubator and the Technology Business Incubator). Turan University launched a similar business incubator in October 2016 (Islamgulova, et al., 2016).

Tomsk University builds mutual relationships with knowledge-intensive companies based on a scientific innovation training center (TSIC), which constitutes an association of companies established by university graduates and a belt of its innovation circle. Currently, TSIC includes more than 150 companies that produce approximately 80% of the knowledge-intensive articles in the region (Nauka i innovatsii, n.d.). The practical training center Turan Alatau, a joint project of the Alatau Technology Park, Eltex Alatau and the Turan

University, carries out activities within an exclusive economic zone (the Innovation Technology Park) (Islamgulova, et al., 2016).

As part of TSIC, the University of Tomsk cooperates with companies in various ways (commercialization of R&D of the University, opening of chairs and joint laboratories, external internships in companies and conferences given by corporate employees, financing of associated companies). As of today, five of the University's eight research institutes have been established through the support of TSIC, and from 2010 to 2018, the University executed nine significant projects in cooperation with industrial partners (in seven of which the University He was a principal contractor, with a budget of more than 3.5 billion rubles) (Nauka i innovatsii, sf).

International cooperation is not minor. Turan University joined the Helix Triple Association in March 2017 and became the headquarters of its representative office (Chapter of the Helix Kazakhstan Triple Association). In 2018, the University participated in HEInnovate, an EU project (with the support of the OECD Secretariat) that was developed as a tool for self-evaluation of higher education institutions that wish to explore their entrepreneurial and innovation potential (Islamgulova, et al., 2016).

Conclusion

We analyze the transformational changes in traditional (research) universities towards their transformation into entrepreneurial institutions; We determine the main factors for carrying out the successful academic entrepreneurial activities of a university.

The materialization of more considerable resources in research and development is required, but above all, the application of resources in the potential of competitiveness must be sought by establishing strong links between the company, the University, and the public administration, that creativity is what can allow carry out innovative projects. Implement a scientific culture that must prevail in the education system in order to achieve a more equitable society. From this perspective, innovation and entrepreneurship must be directly related to the general technological policy and the approaches and models of economic, social, and cultural development that must be managed by the actors that make up the system.

The experience of positive activities carried out by foreign universities, including Russian entrepreneurial universities, their stable economic status, the permanent strengthening of their positions in the world markets for educational and scientific services, high competitiveness and the achievement of substantial results in education, science and technology certify that entrepreneurial activities can also provide universities with not only economic success, but also scientific-technical development in the future. The funds derived from the commercialization of results can be reinvested in the improvement and expansion of all University activity areas. The transformation of universities and their business activities require close cooperation with the industrial sector and government and the creation of the entrepreneurial mindset necessary in society and their active support.

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INFLUENCE OF ORGANISATIONAL CULTURE ON PRO-ACTIVENESS, INNOVATIVENESS AND RISK TAKING BEHAVIOUR OF SMES

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Abstract. The business performance of small and medium enterprises (SMEs) is influenced by their entrepreneurial orientation (EO). EO involves different dimensions like proactive behaviour, innovation, and risk-taking behaviour. It is to be noted that organisational culture (OC) plays a prominent role in achieving improved business performance. This is because SMEs that emphasise on their internal and external business environment are likely to sustain their survival in the highly competitive environment. The impact of organisational culture on innovation, proactive, and risk-taking behaviour of SMEs in UK was assessed. A quantitative method was employed to gather and analyse the primary data obtained through survey questionnaire. The analysis revealed that organisational cultures like group, rational, and developmental culture impact the proactiveness, innovativeness, as well as risk-taking behaviour of SMEs. Also, a significant correlation was observed between group, developmental, and rational culture on innovativeness of SMEs. Thus, it is inferred that organisational culture tends to have influence on SMEs' proactiveness, innovativeness, and risk-taking behaviours

Keywords: Organisational Culture; Innovativeness; Risk Taking; SMEs

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JEL Classifications: Q01, Q13, Q18

1. Introduction

Organisational effectiveness of SMEs is perceived to be largely dependent on their entrepreneurial orientation (EO). Firms that have a high degree of EO, are likely to perform better both financially and non-financially (Brettel, Chomik, and Flatten, 2014). SMEs are in majority all over the world and according to an estimate, almost 90% of the organisations are small and medium-sized (Gasiorowski-Denis, 2015). Whereas in UK, almost 99% of the private firms are SMEs that significantly contribute to country's economy (FSB, 2019). Of significance, role of SMEs is of pivotal importance as they substantially contribute to the economy of the country, in addition, 70% of the employment is generated by SMEs (Suárez, 2016). In UK, 59 percent of jobs are created by SMEs (Sadighi, 2017). However, it is also observed that SMEs are faced with challenges to sustain their survival in a highly competitive business environment (Ahmed and Abuelmaatti, 2013). Thus, to survive and

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realise the desired business performance, SMEs need to design and execute effective strategies. Since the construct of EO has originated from literature of strategic management, SMEs should integrate innovativeness in OC, proactiveness, and risk-taking in business operations to improve performance (Kreiser, Marino, Kuratko, and Weaver, 2013). Moreover, these entrepreneurial activities are created within the firms that in turn influence the features, processes, decisions, actions, and overall organisational performance.

Nevertheless, the establishment of these dimensions is driven by organisational culture that ultimately impacts the entrepreneurial posture of SMEs. Particularly, organisational culture reflects the management practices that are adopted by the firms. Though organisational culture serves as the precursor for proactiveness, innovativeness, and risk-taking behaviour in SMEs, there remains a scarcity of literature pertaining to the relationship between organisational culture and these key dimensions of EO (Brettel et al., 2014; Engelen et al. 2013). Since the SMEs are resource constraints, innovation, proactive, and risk-taking behaviour are significant for their survival. More precisely, management of SMEs is required to prefer innovation in products, services, processes to enhance market value. Similarly, for aggressive competition, SMEs should be proactive in anticipating market changes. Besides, the inclination towards business-related risks should be improved in the organisational culture of SMEs for leveraging from dynamic external business environment. All of these dimensions depend on the organisational culture of SMEs.

The present research is aimed at investigating the influence of OC on three key entrepreneurial dimensions (EO) with reference to SMEs. In consideration of this purpose, the objective of the current study is to find out the influence of organisational culture on proactiveness, innovativeness, and risk-taking behaviour of SMEs. Furthermore, the relationship between OC and proactiveness, innovativeness, and risk-taking behaviour will be explored to analyse these EO dimensions on the performance of SMEs. Shihab, Wismiarsi, and Sine (2011) also acclaimed that the organisational culture is responsible for improving the organisational performance by developing competencies to achieve a cutting edge. Also, being a determinant of EO, organisational culture involves all the aspects of business practices, processes, and decision-making that are necessary for enhancing the SME's growth. Consequently, the importance of organisational culture cannot be disregarded in the business performance, more specifically in the SME's.

1. Literature review

Organisational Culture (OC)

OC is distinguished as the way firms and their employee's function. It encapsulates the set of specific values, norms, protocols, and behaviours that serves guidelines for organisations. The entire workforce along with the management mutually adheres to the specific culture prevalent in their respective organisations (Sadighi, 2017). Furthermore, senior management is responsible for establishing, maintaining, promoting, and changing the organisational culture with response to the dynamic business environment (Alvesson, 2012). OC is also referred to as the structure for both interpersonal relationships of people working in the organisation and the relationship of firm with its external environment (Katrin, 2011). Besides, effective OC involves its work environment, organisational goals, and practices, management styles, career opportunities, employee benefits and rights, etc. (Tohidi and Jabbari, 2012). Moreover, culture of organisations is influenced by multifarious factors such as interaction between organisations and their employees and external environment. In addition, organisational processes like R&D (research and development), HR functions, and other management processes also influence the organisational culture.

Moreover, the competing values model (CVM) better explains the types of organisational culture by forming the four quadrants and each side reflects specific kinds of organisational factors. Precisely, there are four types of OC that include group and hierarchical culture that emphasises the internal factors, developmental and rational culture

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focuses on external factors (Brettel et al., 2014). Presumably, firms can represent more than one type of culture at one time. Of note, behaviour of employees is largely influenced by organisational culture. In this consideration, study of Nacinovic et al. (2010) has revealed that innovation is only fostered in the firm when HR practices support it. In particular, human resource management (HRM) is essential in fostering a culture of innovation. With regard to this, HRM needs to provide adequate training to its employees with the purpose to enhance their skills, knowledge, and competencies. Similarly, the acknowledgment of employees' contribution through performance-based rewards system, team development through effective leadership can improve the innovation culture in the organisation. Sadighi (2017) also proclaims that strong corporate culture is likely to remain motivated and highly satisfied employees who put their utmost efforts into fulfilling their roles that ultimately contribute to improved organisational performance. Also, the high-performing employees possess increased agility and flexibility and therefore, can be altered in accordance with the fluctuating needs of market.

Organisational culture also influences the performance of SMEs. The study of Desson and Clouthier (2010) has expounded multifarious benefits of effective culture as it facilitates firms in making right decision to tackle the confronted internal and external organisational issues. Similarly, it ensures that employee behaviour and their interaction with other employees is appropriate. Organisational culture also exhibits the manner in which allocated tasks should be accomplished, in addition, it improves the attitudes of external stakeholders towards the organisation (Sadighi, 2017). Also, OC that involves shared assumptions is learned by the entire workforce so as to solve the problems pertaining to internal integration as well as to adapt with external business environment (Tidor, Gelmereanua, Barua, and Mora, 2012). Also, management literature has suggested that organisational culture is of paramount importance in realising desired organisational outcomes like increased competitive advantage, improved financial performance and organisational effectiveness (Shehu and Mahmood, 2014). Thus, for SMEs, effective organisational culture tends to have significant influence on their performance to progress.

Pro-activeness in Organisation

Fundamentally, pro-activeness is concerned with the ability of a firm to anticipate the changes in the market dynamics with the purpose to grab market opportunities. Underpinning the perspective of SMEs, entrepreneurs suggest that this dimension of pro-activeness is crucial to sustaining the firm's survival in the highly competitive environment, more specifically, by anticipating the fluctuations in customer trends (Fadda, 2018). This dimension requires the SMEs to keep an eye on the moves of existing competitors and seek out new strategies, instead of restricting to their current defending strategies. In anticipating and seizing the market opportunities, role of SMEs aspects like business practices, management style, decision making is of undeniable prominence. Eggers, Kraus, Hughes, Laraway, and Snycerski (2013) claim that proactive behaviour of SMEs reflects their ability to anticipate the needs of market as well as competitors. Wanjau, Mung'atu, Gichira, and Wambugu (2015) argued that this is because it requires the SMEs to prepare for future success by bringing improvements in the existing products and services.

Proactiveness which is a forward-looking vision is escorted by new-venturing business activities of SMEs. Also, this dimension entails the exploitation of opportunities emerging from the changing market trends (Bakar and Zainol, 2015). Basically, proactive firms strive to gratify the needs of underserved markets to achieve a competitive advantage in their respective markets. Shihab, Wismiarsi, and Sine (2011) deliberated that the concept of competitive aggressiveness is akin to the proactive behaviour of firms as they compete with their rivals intensely and directly. It is also proclaimed that achievement-oriented culture is critical for SMEs to reap benefits of pro-activeness (Le Roux and Bengesi, 2014). Besides, it is acclaimed that firms that emphasises the proactivity in its organisational culture are capable of ensuring the high-performance of employees (Abdullah, Musa, and Azis, 2017). This is because it facilitates the employees to make most of their skills in performing their tasks.

A plethora of studies have also revealed that SMEs' performance is largely influenced by their organisational culture. The study of Kraus et al. (2012), in this regard, collected data from 164 Dutch SMEs and demonstrated

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that pro-activeness positively contributes to improving the performance of SMEs, specifically, in times of economic crisis. Similarly, Matchaba-Hove and Vambe (2014) investigated the impact of pro-active behaviour of SMEs operating in South Africa. The inferences drawn by their study claimed that there exists a positive influence of proactiveness on the successfulness of small businesses. In support of this stance, studies of Boohene et al. (2012) and Anlesinya, Eshun, and Bonuedi (2015) have also suggested that proactiveness in organisational culture of SMEs substantially contributes to enhancing firms' profitability. Thus, it can be implied that organisational culture of SMEs that prefer proactiveness is capable of exploiting the available resources to leverage from the market opportunities.

Innovativeness in the Organisation

The notion of 'innovation' is of paramount importance for SMEs. Generally speaking, innovation is professed to be a phenomenon that encapsulates the diffusion, production, and translation of knowledge into improved and new products and services. The process of innovation also involves the development of new techniques of production and processes (Bigliardi, 2013). The innovativeness of a firm reflects on their propensity to support experimentation, new ideas, novelty, and creativity in processes to develop new and improved products and services. Chang and Hughes (2012) also argue that organisations expand on their current knowledge and skills to further improve and expand their existing products and services. Bakar and Zainol (2015) proclaimed that innovation is the essential component of organisational strategy as it serves as the means to leverage from the new opportunities in market. It is also asserted that innovation requires the firms to develop new organisational practises and culture that enables them to efficiently adapt to the fluctuating market situations. This implies that organisational culture that is supportive of innovation improves the financial performance of SMEs. Contrastingly, the organisational culture that strictly adheres to the rigid and conventional business practices that have no room for innovation, the survival of firm becomes difficult.

As mentioned earlier, innovation allows SMEs to gain competitive advantage as it involves the exploitation of firm's existing resources by enabling the firm to become first-mover and leader in the marketplace. Eggers et al. (2013) further mentioned that, in order for SMEs to optimise their chances for relishing first-mover benefits, SMEs are required to combine the innovativeness and proactiveness. This combination of EO dimensions facilitates firms in coming up with novel and innovative solutions that are supposed to be breakthrough in the market (Wang, Hermens, Huang and Chelliah, 2015). However, it is to be noted that innovativeness cannot be achieved in organisational practices unless organisational culture supports the preconditions of innovativeness. Maher (2014) argued that managerial practices need to decide which culture should be enacted in the organisation that fosters innovation. Also, Szczepańska-Woszczyna (2014) have underlined the prerequisites of innovativeness were highlighted that include organisational resources that have direct impact on the innovation like human capital, their competencies, education level, skills and knowledge of employees, research and development staff, along with the managerial and leadership skills that guarantee the innovation process in the long run.

Additionally, innovativeness that supports the creative and new ideas can be observed within organisations whose organisational culture encourages the employee participant in organisational decision making. In particular, firms that allow employees to express their opinions irrespective of their level in the firm, in addition, support new creative ideas can ensure the innovativeness in the organisation (Szczepańska-Woszczyna, 2014). Similarly, organisational culture that allows workforce to question the decisions and ideas of top-management can leverage from the benefits of innovativeness. The study of Nieto, Santamaria, and Fernandez (2015) also highlighted that entrepreneurial proactiveness is closely linked with the innovativeness in SMEs. This is because SMEs that adopt pro-active behaviour and seek out market opportunities, bring amendments and innovations in their organisational practices accordingly with the intention to meet the emerging market and customer needs.

Nevertheless, it is important for an organisation to develop innovative culture and for this purpose compensation and rewards, employee engagement, effective communication and collaboration and sharing of new and

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innovative ideas should be supported among employees at all levels. By developing and working on these aspects, the organisation can increase innovativeness in their work, and boost productivity and efficiency.

Organisational Culture and Risk-Taking Behaviour of SMEs

The third dimension of entrepreneurial orientation is risk-taking which is distinguished as the tendency of firm's management to take business-related risks in uncertain business environment. Entrepreneurs and SMEs usually categorise the situations in business as highly or less risky (Kreiser, 2013). Moreover, it is widely accepted that small enterprises are more likely to take risks in uncertain environments with the intention to seize opportunity in respective markets. However, it is to be noted that risk-taking behaviour involves the huge resource commitment that is grounded in the entrepreneur's expectation to gain increased returns and other associated benefits (Shihab, Wismiarsi, and Sine, 2011). Moreover, entrepreneurs take calculated business-related risks whenever it comes to making investments in new ventures or tap uncertain market (Le Roux and Bengesi, 2014). In this process of assessing risk so as to make informed decisions, SMEs need to gather the relevant information. The findings of Tang and Murphy (2012) have suggested that SMEs do not usually invest in new ventures due to perceived high-risks. However, those who invest willingly, intend to generate huge profits and enhance the growth of their firms.

Of note, increased competitiveness reflects the attitude of SMEs towards risk-taking in order to deal with their competitors. Fadda (2018) stated that for this purpose, SMEs monitor and counter the strategies of rivals continually. In addition, SMEs even imitate other organisations to achieve a competitive advantage and improve organisational performance. This implies that risk-taking behaviour is positively associated with the SMEs' performance. In accordance with the findings of Anlesinya, Eshun, and Bonuedi (2015), it was claimed that a significant correlation exists between profitability of SMEs and risk-taking behaviour. This accentuates the fact that owners of SMEs adopt the risk-taking behaviour in organisational culture and thereby, allocate the firm's resources as well as heavily borrow to make most of the available market opportunities. This huge investment is grounded in the supposition that it will help SMEs in generating high profits. In support of this, studies of Karaoglu et al. (2013) and Muthee-Mwangi and Ngugi (2014) can be cited that affirms that entrepreneurial risk-taking behaviour is likely to increase firm's profitability. Irrespective of the fact, Kaya and Agca (2009) and Boohene et al. (2012) also claimed that no positive relationship exists between profitability of SMEs and risk-taking behaviour.

It is to be noted that organisational culture has substantial impact on the risk-taking behaviour of SMEs. Brettel, Chomik, and Flatten (2014) has highlighted the role of developmental culture in ensuring the risk-taking behaviour within SMEs. This type of organisational culture focuses on the change in organisation. Organisations that put emphasis on external factors are likely to anticipate future needs, challenges, and changes in market. Based on this external orientation, firms are capable of making informed decisions and leverage from their risk-taking behaviour (Kreiser et al., 2010). This is due to the fact that management, as well as employees of SMEs wherein developmental culture, is prevalent, is likely to accept uncertainty in business environment and adopt risk-taking behaviour. In addition, group culture in organisation put emphasis on the development of human relations at workplace by fostering participation and trust. This type of culture in organisation guarantees intensive interpersonal collaboration that elevates confidence of employees and in turn, enhances the risk-taking behaviour.

The proposed hypotheses for the current research study are as follows:

H1: Group culture has a positive significant influence on the pro-activeness of SMEs
H2: Group culture has a significant influence on the innovativeness of SMEs
H3: Group culture is significantly related to the risk-taking behaviour of SMEs

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H4: Developmental culture positively contributes to improving the SMEs proactiveness
H5: Developmental culture is significantly linked with the innovativeness of SMEs
H6: Developmental culture has a positive association with risk-taking behaviour of SMEs

H7: Rational culture is significantly associated with the proactiveness of SMEs
H8: Rational culture positively influences on the innovativeness of SMEs
H9: Rational culture has significantly association with the risk-taking behaviour of SMEs

2. Methodology

Research Approach and Design

The present research has examined the influence of organisational culture on the innovation, pro-activeness, as well as risk-taking behaviour. In this consideration, the positivist research philosophy was undertaken. A number of researchers have acclaimed that positivist philosophy facilitates researcher in adopting the suitable research design to accomplish the research aims and objectives (Saunders, Lewis, and Thornhill, 2016; Blaxter, Hughes, and Tight, 2010; Antwi and Hamza, 2015). Thus, by adopting the positivist philosophy, present study collected data to investigate the causal relationship between the proposed variables of the study. In more precise words, underpinning positivist research philosophy, quantitative approach was used to answer the research problem (Collins, 2010). The rationale for adopting quantitative method was to seek the cause and effect relationship between variables of the study.

After the adoption of a suitable research plan that is appropriate for research objectives, descriptive, correlational design was used to demonstrate the statistical relationship between variables. The use of descriptive correlational design is justified as the research intends to seek out whether there is dependency between proposed situational aspects (Shah and Al-Bargi, 2013; Appuhami and Bhuyan, 2015). In the current study, descriptive correlational design was undertaken due to the fact that independent variable (organisational culture) is responsible for influencing the dependent variables (proactiveness, innovativeness, and risk-taking behaviour of SMEs).

Sampling and Data Collection

Appropriate source for data collection that addresses the objectives of the present research was selected by researcher. As the study has collected data from the total 196 employees of the SMEs in UK. Primary data was collected using the survey questionnaire. To carry out the survey, a questionnaire was sent to the employees of the SMEs through email. The information and email IDs of those employees were gathered through the internet. Google form was used for conducting the survey, as it is helpful in terms of validity and reliability of the research.The choice for gathering primary data is justified as it offers the original and up-to-date information about the research problem from the targeted population. In addition, researcher can exercise full control over the primary data to measure what is needed to be measured (Emilien, Weitkunat, and Lüdicke, 2017). After the collection of data from respondents employed in SMEs, the gathered data was analysed using different statistical tools of correlation and regression. Also, for the data analysis, numerical data analytical techniques inclusive of descriptive statistics, correlation, and regression were used. In the present study, existing relationship between organisational culture and innovativeness, pro-active, and risk-taking behaviour of SMEs was examined using the correlational analysis. Furthermore, the impact of three key aspects of organisational culture (developmental, rational, and group culture) on dependent variables of proactiveness, innovativeness, and risk-taking behaviour was investigated using regression analysis.

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Ethical Consideration

Research ethics represents the integrity, truthfulness of the researcher while conducting study, in addition, to protect the individuals and their rights who can be impacted by study (Cooper and Schindler, 2014). The ethical principles are concerned with the methodological standards that researcher adopts to collect data. As the nature of present research is primary, ethical issues can occur while executing surveys (Halej, 2017). Thus, researcher ensured voluntary participation through informed consent of employees working in SMEs of UK. Under the UK general data protection regulation (GDPR), participants were informed regarding the use of their data. Respondents were also affirmed that their identities and responses will be kept confidential and anonymous. This allowed the researcher to obtain genuine information about organisational culture.

3. Results and discussion

Respondents' Characteristics

The descriptive statistics of the participants (employees) selected from the SMEs in the UK encapsulates the variables that were utilised. With respect to the gender, males were in majority employed in SMEs (i.e. 62.2%) as compared to females (i.e. 35.7%) who responded to the survey questionnaire. However, only 2% of the participants preferred not to answer the questions

SMEs in the UK employed a higher proportion of younger workers as majority (34.2%) of the respondents belonged to age range (36-40). However, a smaller proportion (i.e. 16.8%) and (i.e. 2.6%) falls into age range (46-50) and (50+) respectively. This indicates the age-diverse employees in UK SMEs. Descriptive statistics is provided in Table 1, Table 2 Table 3 and Table 4, Table 5 and Table 6.

Table 1. Descriptive Statistics

	Mean	Std. Deviation
Group Culture		
The organization I work for, emphasizes group culture and encourages employees to work together	4.2143	1.00512
The organization I work for is characterized by flexible environment.	4.0969	0.85682
The management encourages employees to work in cross-functional teams and brainstorm together.	4.0663	0.88907
Our superiors encourage us to exchange our knowledge and develop new ideas.	3.9592	0.96522
Valid N (listwise)		

Table 2. Descriptive Statistics

	Mean	Std. Deviation
Development Culture		
The organization I work for, emphasize "change and improvement"	4.0051	0.96342
The organization I work for offers a dynamic culture where employees are encouraged try out new ways and ideas	3.8673	0.90738
The management at my workplace encourages the employees to think out of the box.	4.0561	1.12406
The management encourages the employees to take charge of planning.	4.3571	0.91427
In my organization, employees are trained to deal with ambiguity and uncertainty.	4.1436	0.61753
Valid N (listwise)		

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Table 3. Descriptive Statistics

	Mean	Std. Deviation
Rational Culture		
The environment of my workplace is characterized by a high degree of competitiveness	4.4949	0.74763
The organization I work for has goal-oriented culture that emphasize timely accomplishment of goals and objectives.	4.5510	0.72497
The organization I work for, emphasize on the "speed to market" behaviour.	4.5408	0.73266
Management encourages employees to work for organizational stability.	4.4847	0.76779
The organization I work for, emphasizes productivity and efficiency.	4.4796	0.78092
Valid N (listwise)		

The aforementioned tables entail the descriptive statistics of organisational culture of UK SMEs. These include group, developmental, and rational culture. All of these types of OC were demonstrated in terms of their mean and standard deviations. Table 1, high mean value (4.2) suggests that SME employees agree that group culture is preferred in their firm. Likewise, majority of the employees agreed that their firms focus on the change and improvement (4.00). Also, employees' needs of training to tackle the uncertain situations is acknowledged (mean value=4.14). Besides, respondents also highly agreed that their firms have adopted the 'speed to market' behaviour and stress on goal-oriented culture as the mean value is close to 5 on these statements (i.e. 4.54 and 4.55 respectively).

Table 4. Descriptive Statistics

	Mean	**Std. Deviation**
Firm's proactiveness		
Employees have a "goal-oriented" attitude.	4.0357	1.06879
Employees are driven by goal achievement	3.6173	1.05806
Employees make efforts to be the first to propose new ideas for the product or service	3.8010	1.09366
Employees have a "future-oriented" attitude.	3.5918	1.00089
Employees make efforts to anticipate future threats and opportunities	3.5816	1.07583
Employees demonstrate a high commitment to finding ways to proactively discover and exploit the available market opportunities	4.4949	0.74763
Valid N (listwise)		

Table 5. Descriptive Statistics

	Mean	**Std. Deviation**
Firm's Innovativeness		
Employees at my workplace think in novel ways	4.1020	1.05237
Employees are driven by creativity and innovation	3.8827	1.09615
Employees are committed to bringing innovation in the products and the services.	3.8878	1.01661
Employees experiment with new ways of seeking novel solutions.	3.9592	1.06138
My organization has successfully introduced a good number of innovative products or services in the past.	4.4949	0.74763
Valid N (listwise)		

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Table 6. Descriptive Statistics

	Mean	Std. Deviation
Firm's Risk-Taking Behaviour		
The managers and employees focus on continuous evolvement and change.	4.0102	0.85329
Employees are willing to take risks and invest their efforts in exploring new ways.	4.0408	0.99143
Employees have a high tolerance for uncertainty.	4.1786	0.98384
In the past, our management has taken risky decisions and worked on high-risk projects.	3.9184	0.91342
In an uncertain situation, employees patiently look for opportunities that can be exploited for the advantage of the organization.	3.8776	1.07908
Valid N (listwise)		

Furthermore, descriptive analysis EO dimensions including proactiveness, innovativeness, and risk-taking behaviour. The variable of proactiveness demonstrated that employees are highly committed to discovering and reaping benefits from market opportunities as the mean value was (4.49). Since rational culture is success-oriented and therefore, stresses the pro-activeness of employees (Acar and Acar, 2014). Also, the respondents emphasised that their respective SMEs greatly focus on innovating their obsolete products and services. This depicts the inclination of SMEs towards innovativeness with mean value (4.49). Besides, respondents were willing to invest their efforts in finding new ways of working (4.04) and possess increased tolerance towards uncertain business situations (4.17). This shows that SMEs that adopt the developmental culture, their employees are highly tolerant of uncertainty.

Correlation

A correlation was examined between the proposed study variables using Pearson coefficient correlation. This assisted in investigating the relationship of group, developmental, and rational culture on innovativeness, proactiveness, as well as on risk-taking behaviour of SMEs operating in UK (see Table 7).

Table 7. Correlations

		Group Culture	Developmental Culture	Rational Culture	Firm's proactiveness	Firm's Innovativeness	Firm's Risk-Taking Behaviour
Group Culture	Pearson Correlation	1	0.086	0.106	.499**	.592**	.497**
	Sig. (2-tailed)		0.231	0.138	0.000	0.000	0.000
	N	196	196	196	196	196	196
Developmental Culture	Pearson Correlation	0.086	1	.142*	0.076	.318**	0.121
	Sig. (2-tailed)	0.231		0.047	0.290	0.000	0.091
	N	196	196	196	196	196	196
Rational Culture	Pearson Correlation	0.106	.142*	1	.211**	.211**	0.128
	Sig. (2-tailed)	0.138	0.047		0.003	0.003	0.075
	N	196	196	196	196	196	196
Firm's proactiveness	Pearson Correlation	.499**	0.076	.211**	1	.514**	.347**
	Sig. (2-tailed)	0.000	0.290	0.003		0.000	0.000
	N	196	196	196	196	196	196
Firm's Innovativeness	Pearson Correlation	.592**	.318**	.211**	.514**	1	.451**
	Sig. (2-tailed)	0.000	0.000	0.003	0.000		0.000
	N	196	196	196	196	196	196
Firm's Risk-Taking Behavior	Pearson Correlation	.497**	0.121	0.128	.347**	.451**	1
	Sig. (2-tailed)	0.000	0.091	0.075	0.000	0.000	
	N	196	196	196	196	196	196

**. At the 0.01 level (2-tailed), Correlation is significant
*. At the 0.05 level (2-tailed), Correlation is significant
*. At the 0.1 level (2-tailed), Correlation is significant

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Table 7 indicates the significant relationship between group culture and proactiveness of SMEs as the correlation value was found to be (0.499) at 0.01 level. Also, a significant and strong positive correlation (0.592) was observed between group culture and the innovativeness of firms. Findings demonstrated that there exists a moderate and positive relationship between group culture and risk-taking behaviour of SMEs (0.497). The study of Brettel et al. (2014) has also affirmed the positive impact of group culture in enhancing the proactiveness of SMEs. This is because group culture put great emphasis on the human relations and employee morale that improves the concern and affiliation of employees with organisation. This consequently improves employee participation and enhances the sharing of creative and innovative ideas (del Rosario, Patricia, and René, 2017). However, the relationship between rational culture and proactiveness is weak with the correlation value (0.211) at level 0.01.

Furthermore, the correlation value of (0.211) indicates the weak and positive correlation between rational culture and firms' innovativeness. Besides, even rational culture was found to be weak with the risk-taking behaviour of SMEs (0.128 at level 0.1). Furthermore, Anderson, Schüldt, and Åstrand (2018) argue that rational culture is perceived to be result-oriented, firms stay focused on external factors to sustain their competitiveness by leveraging from proactive behaviour. Additionally, developmental culture was observed to have a significant association with the innovativeness of firms (correlation value= 0.318). Linnenluecke and Griffiths (2010) proclaimed that since the developmental culture is guided by open system values that foster innovation in SMEs and thereby, improving market growth. Whereas developmental culture tends to have weak correlation (0.12 at 0.1 level) with risk-taking behaviour of SMEs. Also, SMEs that prefer developmental culture prefer creativity and flexibility to adapt to market changes (Tong and Arvey, 2015). Furthermore, since SMEs need to sustain their survival, such firms tend to invest in risky ventures and thereby, risk-taking behaviour is common in SMEs.

Regression

Table 8. Regression Results

	Model 1	Model 2	Model 3
R Square	0.27	0.44	0.26
F	24.21	49.40	49.40
Sig.	*.000b*	.000b	.000b
Group Culture			
B	0.51	0.60	0.47
Sig.	*0.00*	0.00	0.00
Developmental Culture			
B	0.01	0.31	0.08
Sig.	*0.85*	0.00	0.27
Rational Culture			
B	0.22	0.16	0.08
Sig.	*0.01*	0.04	0.30

Table 8 demonstrates the entire regression model predicting that independent variable organisation culture and its types group, rational and developmental culture has significant and positive influence on the dependent variables including proactiveness (model 1), innovativeness (model 2), and risk-taking behaviour (model 3) of SMEs in the UK at level 0.01 and 0.1. Furthermore, a strong and significant impact of group culture was found on the dependent variables of model 1, 2, and 3. However, developmental culture had significant influence on innovativeness of SMEs irrespective of the proactiveness and risk-taking behaviour of SMEs. Besides, rational culture was found to be significantly correlated with proactiveness. On the whole, F-test predicts that overall

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model is significant at 0.01 level confirming the combined impact of independent variable (organisational culture) on dependent variables (innovation, proactive and risk-taking behaviour of SMEs).

Conclusion

In summary, the core purpose of the current research was to investigate the impact of organisational culture on the EO dimensions like proactiveness, innovativeness, and risk-taking aspects of SMEs. It is to be noted that organisational culture is identified as the managerial predecessor of SMEs. To achieve the research aim, this study examined the influence of different types of organisational culture on the three key EO dimensions. It was found that different types of OC influence EO dimensions differently. The vital finding of the study is that organizational cultures have substantial influence in improving the proactiveness, innovativeness, and risk-taking behaviour. Also, the external and internal orientation are both essential for SMEs to leverage from the anticipated market opportunities while focusing on the internal human capital and other resources of organisation. Contrastingly, the mere focus on external factors can be fatal for SMEs and their survival. Similarly, this stance is also valid for firms that solely emphasise on their internal environment and avoid uncertainty and risk-related behaviours. This is due to the fact that intensive focus on internal factors might hinder the firm's ability to evaluate the changing market situations and external market risks.

On the basis of the significant influence of OC on SMEs, a quantitative approach was adopted to examine the statistical relationship between organisational culture and proactiveness, risk-taking, and innovativeness of SMEs in the UK. Primary data was gathered through survey method from the employees working in SMEs. For the data analysis, techniques of data analysis including descriptive statistics, correlation, as well as regression were employed. Findings revealed that independent (OC) and dependent variables (proactiveness, innovativeness, and risk-taking behaviour of SMEs) are positively correlated. Regression analysis revealed that group culture has significant impact on the EO dimensions of SMEs. Thus, highlighting the implication of the study, it can be said that group culture promotes trust and collaboration among employees, managers of SMEs can ease the knowledge exchange within firm to foster innovativeness. Also, rational culture was found to enhance the risk-taking behaviour of SMEs as employees are goal-oriented and are not hesitant towards uncertain business situations. Such employees are motivated and strive to rationalise the association between innovativeness and risk-taking ventures by integrating their mutual efforts.

Furthermore, group culture ensures the increased loyal and high level of trust among employees. This mutual trust consequently boosts the collaboration among workers and enhance the exchange of knowledge that improves the firm's performance. Of significance, in firms wherein employees have elevated levels of collaboration, their confidence in risk-taking behaviour is high. Albeit this research has contributed to highlighting valuable insights about organisational culture, certain limitations exist that should be considered in future research. For instance, this study has merely studied SMEs operating in UK. However, to examine the global trends with respect to organisational culture, data should be collected from SMEs of other countries. Furthermore, the researcher has merely included the three types of organisational culture, in prospect research, impact of other types should be included as independent variables. Also, quantitative method of research was selected, it is suggested to integrate the qualitative method to gain detailed insights of SME managers regarding their managerial practices in sustaining the organisational culture.

Area of Improvement

The present research although has successfully accomplished its objectives, nevertheless certain areas need to be emphasised more for further improvement such as how organisational culture can be improved, the strategies

needed for improving organisational culture and the impact of organisational culture on employee performance and satisfaction. By emphasising on these aspects in further research will help determine a comprehensive overview regarding the impact of organisational culture on different areas related to SMEs.

Besides, the research needs to emphasize core competencies in the process of organisational work to have more efficiency and effectiveness. In this regard, problem-solving, interpersonal relationship, marketing strategy, and effective financial management are some of the few competencies which need to be considered by the SMEs.

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THE IMPACT OF CAREER PLANNING AND CAREER SATISFACTION ON EMPLOYEES' TURNOVER INTENTION*

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Abstract. This study aims to examine the impact of career planning and career satisfaction on employees' turnover intention and the mediating role of career satisfaction from the perspective of banks employees' in the Jordanian capital Amman. The survey questionnaire was gathered from 412 employees located in 25 banks in the Jordanian capital Amman. The study used the software SmartPLS (version 3.2.8) to test the study hypotheses. The findings indicate that career planning and career satisfaction negatively impact employees' turnover intention, and career satisfaction partially mediated the relationship between career planning and employees' turnover intention. Additionally, this study aims to evaluate previous items that were developed by Gould (1979) to measure career planning, using focus group interview for six managers of the human resource department in the Jordanian banks' sector. According to the results of the interview, some items were reformulated and three new items were created. Future studies may include expansion of this model by adding variables related to organizational behaviours such as individual career management or career adaptation.

Keywords: career planning; career satisfaction; employees' turnover intention; focus group interview

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1. Introduction

Under the great changes of the banking environment, the human factor is the most important factor in bringing about change and continuity, which is per se a competitive advantage through the ability of this factor to create creativity and innovation (Hafeez & Akbar, 2015). The most important issue that falls under the responsibility of the HRM department is how employees will be maintained from leaving their jobs (Abuzaid, 2018). The Jordanian banking sector seeks to employees' retention as a main strategy, because of significant importance for employees in achieving the strategies of these banks (Rowland, Hall, & Altarawneh, 2017). The retention plans are care of human and intellectual wealth, through taking actions by the organization to create the right conditions for its talented employees, to prevent them from the move to other local or international companies; this concept aims to guarantee the stability and productivity among the workforce in order to contribute to reducing the employee turnover rate (Al-Lozi, Almomani, & Al-Hawary, 2018). Aburumman, Salleh, Omar, and Abadi (2020) indicated that banks in Jordan face problems regarding employees leaving the work, and the percentage of employees leaving work is increasing each year.

The high level of employees' turnover intention is commonly recognized as a negative phenomenon in the workplace that should be avoided from the HRM perspective (Kim & Hyun, 2017). Although there has been no universally accepted framework why employees choose to leave in organizations (Schyns, Torka, & Gössling, 2007), many studies have identified the factors which impact employees' turnover intention according to the nature of orientation these studies. This study aims to search for factors that lead to a decrease the employees' turnover intention by depending on the model of Peterson (2004). The model of Peterson focuses on the internal factors over which the organization and the human resource department have large control it's, in influencing the employees' intention to leave or remain at work. Thus, this study contributes to the development of a model of Peterson (2004) by suggestion career planning and career satisfaction as internal factors. These factors are managed by the organization and the human resource department has large control of these factors.

In the literature of careers, career planning aims to identify needs, aspirations, opportunities for individuals' careers and the implementation of developing human resource programs to support that career (Zar, 2017). Career planning aims also to recognize requirements, ambitions, individuals' goals and the application of evolving human resource plans to sustain that career (Antoniu, 2010). Organizations can strengthen career planning for employees, which not only provides them with a growing and most potential progress opportunities and build a successful career, but it also can stimulate their enthusiasm to restore morale and reduce turnover intention (Lin, 2017). Moreover, to help employees strengthen their plans and goals with meet the reality of enterprise development, and the demand for talents in order to the long-term development of enterprises and provide strong support and protection for employees (Shi, Pan, Wang, & Deng, 2017).

Career satisfaction refers to intrinsic and extrinsic values for career which including factors such as salaries, wages, opportunities of growth and development available to an employee (Kong, Cheung, & Song, 2012). Career satisfaction considered as a degree of subjective career success (Kang, Gatling, & Kim, 2015). Subjective career success is a sensation of self-fulfillment, achievement, and satisfaction that an individual can have with his or her career (Judge, Higgins, Thoresen, & Barrick, 1999). Meanwhile, subjective career success is a self-evaluation of career progress by an individual such as career satisfaction (Spurk, Hirschi, & Dries, 2019). Career satisfaction, career enjoyment, and career fulfillment are deemed important criteria for subjective career success (McDonald & Hite, 2008). Moreover, many previous studies have used career satisfaction as a measure of subjective career success (Zacher, 2014; Spurk, Kauffeld, Barthauer, & Heinemann, 2015; Spurk, Hirschi, & Dries, 2019). Therefore, career satisfaction and subjective career success are factors reflect the same meaning in terms of use regarding the theoretical aspect by academics.

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On the other hand, although a lot of literature has discussed the issues related to the career planning of employees, there are some issues that have not been considered such as measuring career planning. Most of the previous studies used a measurement that was developed by Gould (1979) for career planning (e.g. Renn, Steinbauer, Taylor, & Detwiler, 2014; Hirschi, Herrmann, & Keller, 2015; Spurk et al., 2015; Taber & Blankemeyer, 2015; Neureiter & Traut-Mattausch, 2017; Ko & Kim, 2018; Jawahar & Shabeer, 2019). The instrument consisted of six items, which scale aims to determine individuals' career aims and focusing on career development in the future. The measurement of Gould (1979) is the only measure available in the literature to measure career planning. Therefore, there is a need to evaluate and develop this measure, since this measurement is very old and has been used for more than 40 years in empirical studies. Therefore, the current study used focus group interview to explore the opinions of participants (managers of the human resource department in the Jordanian banking sector) according to their experiences and perspectives about the evaluation of previous items that were developed by Gould (1979) and to generate new survey items to measure career planning if necessary.

2. Literature Review

2.1 Career Planning and Employees Turnover Intention

Career planning and career development opportunities which offer by organizations can meet the demands and goals of employees related to the career (Cao, Chen, & Song, 2013). Moreover, organizations can strengthen career planning for employees, which not only provides them with a growing and most potential progress opportunities and build a successful career, but it also can stimulate their enthusiasm to restore morale and reduce turnover intention (Lin, 2017). Career planning is deemed to be a significant human resource strategy to maintain employees, and effective career planning is the main factor in controlling the problem of employees' turnover intention (Jiang & Klein, 2002). Johari, Yahya, and Ahmad (2012) found that a multifaceted approach to career planning for an Individuals may be important in the decrease of the employees' turnover intention. Therefore, with the career planning activities, employees' goals and strategies are easily achieved, which leads to a decrease in the intention to leave the career (Gumussoy, 2016). Recent studies have revealed that career planning is negatively related to employees' turnover intention (Queiri & Dwaikat, 2016; Karatepe & Olugbade, 2017; Chen, Li, Li, Lyu, & Zhang, 2018). The following hypothesis is drawn from the above discussion:
H1. There is a negative relationship between career planning and employees' turnover intention.

2.2 Career Planning and Career Satisfaction

The career planning activities give a share to increase the level of career satisfaction for employees, because it helps the employees to identify positions and follow them in line with their goals and plans, where that employees enter the organization with career planning related to them, and they hope that these plans will meet their needs (Joo & Ready, 2012; Ahmed, 2017). The employees seek to arrange and organize their careers in ways that positively help them to develop and progress in their careers, which leads to increase their level of career satisfaction (Hicks-Clarke & Iles, 2000). Lee (2000) indicate that career planning is an important HRM initiative, which has the potential to increase career satisfaction for employees, where career planning activities help to increase career satisfaction, because it helps them to identify the new positions and follow them in line with their goals and plans. Recent studies have revealed that career planning has a positive effect on career satisfaction (Spurk et al., 2015; Guerrero, Jeanblanc, & Veilleux, 2016; Fasbender, Wöhrmann, Wang, & Klehe, 2019). The following hypothesis is drawn from the above discussion:
H2: There is a positive relationship between career planning and career satisfaction.

2.3 Career Satisfaction and Employees Turnover Intention

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The relationship between career satisfaction and employees' turnover intention is a source of interest to both organizations and researchers in this area (Zhu, Cai, Buchtel, & Guan, 2019). The literature showed that the increase in the turnover intention is not only due to the search for new jobs, but also due to the low level of career satisfaction, where that decrease of career satisfaction leads to encouraging employees to search for new jobs that have a high level of career satisfaction (Holtom, Mitchell, Lee, & Eberly, 2008). Pathardikar, Sahu, and Jaiswal (2016) indicated that achieve career satisfaction for individuals appears to reduce the intention to leave. Moreover, Zopiatis, Theocharous, and Constanti (2018) suggested that career satisfaction is a significant predictor of employee turnover intention, whereas a plethora of other empirical investigations have suggested that career satisfaction is likely to impact an individual's commitment to their organization. Therefore, career satisfaction does not affect employees' decision to leave but also lead to breeding very harmful results for organizations. Recent studies have revealed that career satisfaction is negatively related to employees' turnover intention (Chan & Mai, 2015; Chan, Mai, Kuok, & Kong, 2016; Guan, Jiang, Wang, Mo, & Zhu, 2017; Aburumman et al., 2020). The following hypothesis is drawn from the above discussion:
H3: There is a negative relationship between career satisfaction and employees' turnover intention.

2.4 Career Planning, Career Satisfaction and Employees Turnover Intention

A literature review reveals that there is no direct relationship between career planning and employees' turnover intention and this relationship may be mediated by another variable (Kidd & Green, 2006; Asamoah & Eugene, 2016; Kim, Kang, Lee, & McLean, 2016). Career satisfaction can be used as a mediator in the mentioned relationship, career satisfaction has been used in many studies as a mediator variable (Busis et al., 2017; Zopiatis et al., 2018; Aburumman et al., 2020). According to social exchange theory (Blau, 1964), this study suggests that career satisfaction for employees should mediate the expected negative relationship between career planning and employees' turnover intention. In other words, establishing better career planning relationships may be an integral part of career satisfaction within the organization, thus leading to low employees' turnover intention. The following hypothesis is drawn from the above discussion:
H4: Career satisfaction mediates the relationship between career planning and employees' turnover intention.

Fig. 1 illustrates the theoretical framework of the study. The career planning is an independent variable, employees' turnover intention is the dependent variable and career satisfaction is mediation variable.

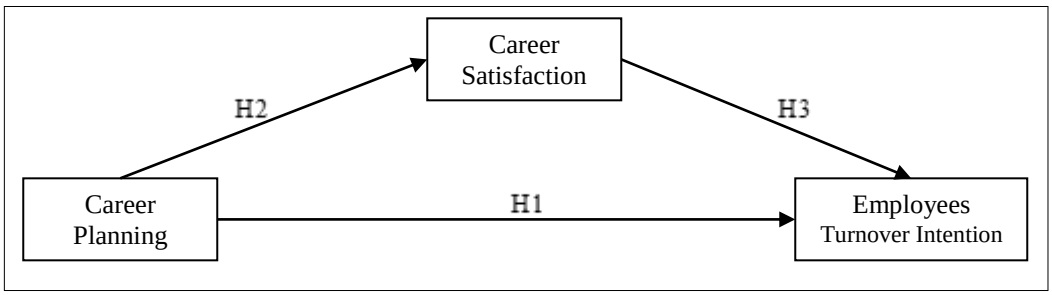

Fig. 1. Theoretical Framework of the Study

3. Research Design and Sample Procedure

There are two phases of the current research design, as follows:

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3.1 Phase One

Phase one included the focus group interview in survey research to explore the opinions of managers of the human resource department in the Jordanian banking sector, according to their experiences and perspectives about the evaluation of previous items that were developed by Gould (1979) to measure career planning. The manager of the human resource department for each bank (25 banks) was asked about his\her willingness to participate in the focus group interview. Nine managers indicated their willingness to participate in the focus group interview. However, only six respondents were interviewed, because Creswell (2012) recommended that focus group interview should include four to six respondents. Based on the above, the structured focus group interview was conducted with managers of the human resource department for the Jordanian banks' sector. Before the interview, the date and place for the interview were determined, where the interview was outside the official working hours of these managers; six respondents were interviewed in a meeting room in one of the restaurants in the Jordanian capital of Amman. The focus group interview instrument contains questions equipped with open-ended discussion for clarifying numerous issues. The focus group interview took an hour and 37 minutes. As for the recording, permission was obtained from respondents to record the focus group interview by using the tape recorder and field notes as a tool for recording.

3.2 Phase Two

Phase two included the survey questionnaire (cross-sectional study). The survey included all employees in all banks (Commercial, Foreign and Islamic) in the Jordanian capital Amman. The number of banks' employees in the Jordanian capital Amman is 17679 (Association of banks in Jordan, 2017). Based on the recommendations of Krejcie and Morgan (1970), a sample size between 375-377 should be obtained for participants ranging from 15000-20000. Furthermore, added 20% to the study sample, to become a sample study 453 (20%×377) in order to reduce the sampling error and reduce the problem of a missing questionnaire. Regarding the unit of analysis, the individual-level was selected as the unit of analysis in this study. The total number of responses was 412, which represents 90.9 percent of the number of distributed questionnaires, and a total of 41 questionnaires were not received.

All items were measured using a 5-point Likert scale ranging from 1 "strongly disagree" to 5 "strongly agree". Concerning a scale of career planning, the current study developed a scale of Gould (1979) using a focus group interview in survey research. Through this interview, three new items were developed and some of the previous items reformulated. Finally, career planning was measured in nine items (see Appendix A). Career satisfaction was measured using a scale of Greenhaus, Parasuraman, and Wormley (1990) in five items (e.g. "I am satisfied with the progress I have made towards meeting my goals for income"). Employees turnover intention was measured using a scale of Kuvaas (2008) in five items (e.g. "I will probably look for a new job in the next year").

4. Analysis and Results

4.1 Phase One

Phase one includes the results of the focus group interview. The current study used the method of thematic analysis described by Braun and Clarke (2006) to a focus group interview analysis, because no framework has been provided that delineates the types of qualitative analysis techniques for a focus group interview. The thematic analysis comprises a process that involves the encoding of qualitative information. Described differently, this type of analysis refers to a method that consists of the identification, analysis and reporting patterns (themes) inside the data (Braun & Clarke, 2006). The data gathered through a focus group interview was transcribed and reread for familiarization. Listening to the whole interview before typing the transcript helped give us a better understanding of the data. The next step was data coding, to facilitate the coding process, NVivo software

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(version 12) was used to create nodes based on these initial themes. Then, we coded the data based on these nodes. The codes, nodes, and themes were systematically reviewed and refined to ensure that they reflect the subject matter of the study. After that, analysis and interpretation were made in line with the objective of the study, with consideration that a group is a unit of analysis, where the group is seen as a whole rather than individuals within a group. The following points are interpretation and analysis of focus group interview based on responses of respondents in line with objective of the study.

Q1. Please identify the items that are irrelevant to your experiences, awkward, or unclear?

The results of the interview indicate that these items were not awkward, were easily understandable, and were relevant to the experiences of respondents. On the other hand, some of these items were unclear, because it contains negative items (reverse) and positive items together. This will lead to the possibility of inaccurate answers due to the changing nature of the items and may distract the attention of respondents. Therefore, the items should be formulated uniformly and of a positive nature, which will contribute to improving the understanding of respondents of these items and to procure the flexible and neutral responses from respondents. These results correspond to the suggestions of Foddy and Foddy (1994), who indicated that when conducting the survey, it should be assured that the respondents understand the questions and are able to recount activities or provide opinions that fit appropriate response categories.

Q2. What is the important item? Why?

The results of the interview indicate that all these items are of great importance, because each item explains a particular part of the career planning process and no item can be omitted. The argument is that most of the previous studies that examined career planning used these items with a consistently top reliability outcome of 0.80 without deleted any item (e.g. Renn et al., 2014; Hirschi et al., 2015; Spurk et al., 2015; Taber & Blankemeyer, 2015; Neureiter & Traut-Mattausch, 2017; Ko & Kim, 2018; Jawahar & Shabeer, 2019).

Q3. Do these items reflect the real meaning of career planning? Why?

The results of the interview indicate that these items reflect the meaning and dimensions of career planning related to work and employee objectives. These items also focus primarily on plans, strategies, and objectives, which are the future factors for employees. On the other hand, these items do not reflect two important aspects of the career planning process namely the extent of employee participation in the career planning process and personal aspects for employees. These results correspond to suggestions of Orpen (1994) and Clarke (2013), which indicates that career planning is a participatory process between employee and employer. Also, these results correspond to suggestions of Greenhaus and Kopelman (1981) and Murphy and Lambrechts (2015), which indicates that the career planning process aims to acquire career-related information such as information about family, self-interests, and values.

Q4. Is there a need to add a new item\items to measure career planning? Why?

The results of the interview indicate that there is a need to add three new items. The first item should include the joint responsibility for career planning between employees and management. This new item is very important to know the effectiveness of career and the level of understanding between employee and management, where this item fits with suggestions of Orpen (1994) and Clarke (2013). The second item should include personal aspect for employee (e.g. self-interests and family). This new item will indicate the level of management's interest in personal life for the employee, where this item fits with suggestions of Greenhaus and Kopelman (1981) and Murphy and Lambrechts (2015). The third item should include achieving a balance between employee plans and

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their abilities and qualifications. This new item aims to ensure that future plans for employees are commensurate with their skills and abilities, where this item fits with suggestions of Palade (2010).

Q5: Are the employees in your bank participate in the career planning process? How?
The results of the interview indicate that employees do not participate in the career planning process with their management, because of some internal bank procedures. The results indicated that this procedure was unsatisfactory to managers, which will probably lead to leave the employees the bank. The managers confirmed that employees should be involved in the career planning process because they are a part of the bank.

According to the results of the focus group interview, some items were reformulated developed by Gould (1979) and three new items were created (Appendix A). The first item is "I participate with management in the career planning process". Orpen (1994) and Clarke (2013) indicated that careers are a joint responsibility between employer and employee. It's an integrated approach that merges between activities of career planning and career management. The basic assumption is that careers in the past were planned and managed by the employer alone, while now that employer and employee are planning and managing the careers jointly. The second item is "My career plan includes the personal aspects like family travel package". It is useful to recognize that career planning is related to personal issues of self-development, life, and family. Thus, it may be important to design career planning activities without the possibility of a conflict between career, family, and personal roles (Greenhaus & Kopelman, 1981; Murphy & Lambrechts, 2015). Third item is "My abilities and qualifications are considered when formulating my career plan". In order to obtain effective careers, abilities and qualifications of employees' must be consistent with the tasks and responsibilities of those jobs and that it exceeds the requirements of the career (Palade, 2010; Erdogan, Bauer, Peiró, & Truxillo, 2011).

4.2 Phase Two

Phase two includes the results of the survey questionnaire. Since there are new items that will be used for the first time regarding the measuring career planning, the pilot study was necessary not to get data, but to test the language of questions and items by using the software SPSS (version 25). For pilot study testing, the questionnaires were distributed to 50 employees in five banks in the Jordanian capital Amman out of twenty-five banks in the Jordanian capital Amman. In this study, pilot testing obtained a 94% response rates (47 questionnaires). Table 1 shows the results of Cronbach's Alpha and KMO for the pilot study. Hair, Hult, Ringle, and Sarstedt (2016) indicate Cronbach's alpha values from 0.6 and above are acceptable. However, all variables indicate an acceptable level of internal consistency, because all variables have achieved a higher level of 0.848 without deleting any item for Cronbach‘s alpha. Regarding KMO values, Kaiser (1974) indicate that 0.6 is the minimum acceptable level of KMO for any construct. In the current study, all variables have achieved a higher level of 0.845 for KMO, which means that all variables are appropriate for construct validity without deleting any item. In addition, the new items for career planning achieved a high value for Cronbach's Alpha (0.912) and KMO (0.883). Therefore, these items were taken to further actual analysis.

Table 1. Results of Cronbach's Alpha and KMO for Pilot Study

Variable	No. of Items	Cronbach's Alpha	KMO	Bartlett's Test	Item Deleted
Career Planning	9	0.912	0.883	0.000	Nil
Career Satisfaction	5	0.848	0.845	0.000	Nil
Employees Turnover Intention	5	0.919	0.850	0.000	Nil

After confirmed that the items are clear and understandable to the respondents: the next step was assessment of the measurement model and structural model for 412 responses by the software SmartPLS (version 3.2.8). The convergent validity and discriminant validity were used to test the measurement model. Regarding the convergent

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validity, as the results indicate in Table 2, all the items have loadings ranged from 0.712 to 0.902, where items that achieve value greater than 0.70 must be retained (Hair et al., 2016). Meanwhile, all variables achieved values greater than the proposed threshold value of 0.60 regarding Cronbach's alpha and composite reliability (Hair et al., 2016). Therefore, all these items are valid and reliable. Moreover, all variables achieved values greater than the proposed threshold value of 0.50 regarding average variance extracted (Hair et al., 2016).

Table 2. Convergent Validity

Variable	Items	Loadings	Cronbach's Alpha	Composite Reliability	AVE
Career Planning	CP1	0.886	0.932	0.943	0.650
	CP2	0.856			
	CP3	0.838			
	CP4	0.848			
	CP5	0.775			
	CP6	0.789			
	CP7	0.770			
	CP8	0.766			
	CP9	0.712			
Career Satisfaction	CS1	0.740	0.873	0.908	0.665
	CS2	0.813			
	CS3	0.836			
	CS4	0.803			
	CS5	0.879			
Employees Turnover Intention	ETI1	0.739	0.904	0.929	0.725
	ETI2	0.891			
	ETI3	0.902			
	ETI4	0.892			
	ETI5	0.823			

On the other hand, the criterion of Fornell and Larcker was used to test discriminant validity. Table 3 illustrates that this study has discriminant validity (Henseler, Hubona, & Ray, 2016), as the square root of average variance extracted for all variables (bold) was higher than inter-construct correlations (non-bold).

Table 3. Discriminant Validity

Fornell-Larcker Criteria			
	Career Planning	**Career Satisfaction**	**Employees Turnover Intention**
Career Planning	**0.806**		
Career Satisfaction	0.448	**0.815**	
Employees Turnover Intention	-0.413	-0.699	**0.852**

The R^2 values and path coefficient (hypotheses testing) were used to test the structural model assessment by the software SmartPLS (version 3.2.8). Based on the criterion of Chin (1998), the R^2 value for employees' turnover intention was 0.502 (moderate), while the R^2 value for career satisfaction was 0.201 (weak). Therefore, the model of this study has predictive power.

Regarding hypotheses testing, this study used bootstrapping techniques embedded with SmartPLS (version 3.2.8) to test each hypothesis. Table 4 illustrates the results of the hypotheses testing.

Table 4. Results of the Hypotheses Testing

No.	Hypotheses	Path Coefficient	Standard Error	T-Value	P-Value	Decision
H1	CP→ETI	-0.124	0.045	2.761	0.003	Supported**
H2	CP→CS	0.448	0.043	10.419	0.000	Supported***
H3	CS→ETI	-0.644	0.041	15.704	0.000	Supported***

Note: ***: p<0.001, **: p<0.01; 5,000 bootstrap samples

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As indicated in Table 4, career planning had a negative direct effect on employees' turnover intention (β = -0.124; T-Value = 2.761; P-Value = 0.003), as a result, H1 was supported. According to this result, that career planning caused negative emotions that affected the employees' turnover intention. Thus, when employees realize that career planning does not contribute to created and achieved the requirements, ambitions, career opportunity, career goals and, self-development for them, their intention to leave will increase and their will start looking for a new job as soon as. These observations are in line with results of previous studies (Queiri & Dwaikat, 2016; Karatepe & Olugbade, 2017; Chen et al., 2018). Additionally, the results indicated that career planning had a positive effect on career satisfaction (β = 0.448; T-Value = 10.419; P-Value = 0.000), as a result, H2 was supported. This result was consistent with those reported by previous researchers (Spurk et al., 2015; Guerrero et al., 2016; Fasbender et al., 2019), who highlighted that employees that have an effective career planning will have a high level of career satisfaction, because it helps them to identify functional needs in line with their goals and plans, thus performance goal-oriented employees are likely to set career goals. As indicated in Table 4, career satisfaction had a negative effect on employees' turnover intention (β = -0.644; T-Value = 15.704; P-Value = 0.000), as a result, H3 was supported. According to this result, that employees who have a low level of career satisfaction will have the intention to leave the job, because a low level of career satisfaction leads to encouraging employees to search for a new job that has a high level of career satisfaction. These observations are in line with results of previous studies (Chan & Mai, 2015; Chan et al., 2016; Guan et al., 2017; Aburumman et al., 2020).

This study used the method of Preacher and Hayes (2008) to mediation test of career satisfaction. As indicated in Table 5, career satisfaction mediates the relationship between career planning and employees' turnover intention (Indirect Effect = -0.289, P-value = 0.000, LL = -0.342, UL = -0.234), as a result, H4 was supported and the career satisfaction (CS) partially mediated this relationship. Social exchange theory which is based on the principle of reciprocity (Cropanzano & Mitchell, 2005) supported this relationship, where if organizations provided employees' a positive behavior such as effective career planning activities that contribute to achieving the career goals; the employees will behave similarly and will commit to positive behaviors, by showing their satisfaction about the intrinsic and extrinsic aspects of career, thus intention to remain in the work for a long period of time.

Table 5. Results of the Mediation Test (Career Satisfaction)

No.	Hypothesis	Indirect Effect	Standard Error	P-value	Confidence Interval		Decision
					95% LL	95% UL	
H4	CP→CS→ETI	-0.289	0.033	0.000	-0.342	-0.234	Partial Mediation

Note: 5,000 bootstrap samples

5. Conclusions and Future Directions

This study aims to examine the impact of career planning and career satisfaction on employees' turnover intention at the Jordanian banks' sector. The results of this study indicate that career planning and career satisfaction had a significant negative impact on employees' turnover intention. Also, the results indicate that career satisfaction partially mediated the relationship between career planning and employees' turnover intention. Effective career planning is an essential factor in decreasing the problem of employees' turnover intention, because career planning activities allow employees to envision a possible future and to maintain a sense of control over their situation by directing their actions in line with their plans. In addition, all employees desire to earn the chance to completely exploit their abilities, expertise, and skills, and be effective in their careers, thus, employees' general view about his career satisfaction is a sign of the extent of the insight of their career achievements and successes, and that level of career satisfaction is a significant indicator of employees' turnover intention. This study was limited to career planning as an independent variable. This limitation opens the opportunity to procedure future

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research to an expansion of this model by adding variables related to organizational behaviours such as individual career management or career adaptation.

Additionally, this study aimed to evaluate previous items developed by Gould (1979) to measure career planning and identify new items that potentially suitable for the current situation using a focus group interview. According to the results of the focus group interview, some items may require reformulation from that of Gould (1979). This study also introduces three new items. These new items may contribute to broadening the concept of career planning, through integrating the personal aspects of the employee's life and the extent of employees participate with management in the career planning process, as well as to designing career planning activities in line with the abilities and qualifications of employees. The theoretical framework of these new items is based on social exchange theory, which based on the principle of reciprocity, whether positive or negative behaver (Cropanzano & Mitchell, 2005). Thus, if organizations make a positive commitment by allowing an employee to participate in the career planning process, include the personal aspects of an employee in career plans, and consider the abilities and qualifications of an employee when formulating career plans, the employee will behave similarly by increasing commitment, satisfaction and loyalty, high performance, and staying longer in the work. Moreover, through data analysis, these items achieved values greater than the recommended values by Hair et al. (2016) regarding test of Cronbach's alpha, composite reliability, average variance extracted and factor loadings. Therefore, these items are deemed valid and reliable. This study was limited to the evaluation of previous items that were developed by Gould (1979) to measure career planning. Future studies may include evaluating the items that were developed by Greenhaus et al. (1990) to measure career satisfaction.

Appendix A. Survey items of career planning based on focus group interview

No.	Item	Purpose
1	I have really decided my career objectives. *	The extent to which career goals setting.
2	I have a plan for my career.	The extent to which plans exist for a career.
3	I have a strategy for achieving my career goals.	Whether or not a strategy exists for achieving career goals.
4	I know what I need to do to reach my career goals.	How to achieve career goals.
5	My career objectives are very clear. *	The extent clear the plans and goals are.
6	I didn't change my career objectives frequently. *	How frequently career plans are changed.
7	I participate with management in the career planning process. **	Joint responsibility for career planning.
8	My career plan includes the personal aspects like family travel package. **	The extent to which personal aspects exist of employees' life within career plans.
9	My abilities and qualifications are considered when formulating my career plan. **	The extent to which harmony the abilities and qualifications of employees with career plans.

Note: *: Reformulate; **: New Item.

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ENERGY INFRASTRUCTURE AND FOREIGN DIRECT INVESTMENT IN CHINA

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Abstract. China's integration into the world economy, and maintaining its rapid economic growth, demand more energy with a prominent concern of reducing carbon footprints. Keeping in view the shortcomings in previous studies, we investigate the relationship between energy infrastructure and foreign direct investment in China in the framework of the ARDL and VECM approaches. We found that energy positively affects FDI, while the reverse effect does not hold. FDI does not affect the energy sector. Policy implications can be drawn from this study, such as technological diffusion from FDI to enhance energy efficiency and reduce carbon footprints.

Keywords: Energy consumption; FDI; ARDL

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JEL Classifications: O47, F21, C22

1. Introduction

Excessive energy demand accompanies China's rapid economic growth. China has been given the blessing and the curse of being one of the largest energy consumers and was growing rapidly over the last few decades. Some of the drawbacks of its excessive demand for energy include emissions and carbon footprint. To take into account

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the issues of greenhouse emissions and maintain sustainable growth, China is making conscious efforts to increase the proportionality of clean energy in its energy mix.

Similarly, the massive inflow of foreign direct investment (FDI) in China is a marvelous phenomenon the world sees during the last three decades. The opening up policy made China the fourth largest destination for foreign investments with total FDI stock, USD 1769 billion in the year 2019 (UNCTAD 2019). This work explores the relationship between energy and FDI in China. The relationship between FDI and energy infrastructure, though necessary for policy concerns, is not studied. Previous literature mainly focused on the emission and growth enhancing aspects of energy consumption but ignored the foreign investment perspective.

Several factors affect foreign direct investment. Foreign firms make destination those countries with large *market size* (Bevan and Estrin 2004; Flores and Aguilera 2007; Bhaumik and Co 2011), *better institutional quality* (Islam et al. 2020; Wei 2000; Chakrabarti 2001; Blonigen, Ellis, and Fausten 2005) (Wei 2000; Chakrabarti 2001; Blonigen, Ellis, and Fausten 2005), *natural resources* (Deng 2004; Buckley et al. 2007; Kang and Jiang 2012), *technology* (Tihanyi and Roath 2002; Buckley et al. 2007; Kang and Jiang 2012), *taxes* (Blonigen and Davies 2004; Dharmapala and Hines 2009; Bilgili, Tülüce, and Doğan 2012; Azémar and Desbordes 2013), and *trade openness* (Wheeler and Mody 1992; Doytch and Eren 2012; Nagano 2013). However, for the first time, we explore the relationship between energy and FDI.

Foreign firms choose those countries as a destination where they find better energy infrastructure. Energy can leapfrog the production stages and enhances the productivity and efficiency of firms through various channels. For instance, ICT (information and communication technology) requires energy and creates information flow, which indirectly reduces time, distance, and costs of firms. Similarly, transportation sector requires energy, which indirectly reduces delivery times. Therefore, almost all the activities of firms are linked with energy. Therefore, it is assumed here that foreign firms choose those countries as their investment destination where they find better energy facilities.

The rapid development of China's economy demands a large amount of energy. In this regard, coal is the main energy source that drives more than half of the Chinese economy. China plans to build more power plants around the coalfields in its western regions. It wants to convert coal into electricity and then let the power grid carry it to the east, with 70 percent of the country's population and over 80 percent of its economy. Similarly, China imports around sixty percent of the oil that it consumes. It was the world largest oil importer in 2014, but it has been doing a lot to make sure its energy consumption across a range of fuels. That comes with significant benefits and some significant drawbacks, one of which is trying to procure enough energy to keep its rapid economic growth going. Coal is the primary position in China's energy structure, and it is essential to use coal efficiently. The use of traditional fossil fuels is causing enormous environmental damage. Therefore, China's coal demand falls back due to the fact that growing energy needs are increasingly met by renewables, natural gas, and electricity.

Previous studies focus on the impact of energy consumption on economic growth and other macroeconomic variables. Moreover, the majority of the previous literature discusses the environmental effects of energy. Similarly, more studies focused on cross-country analysis. We, for the first time, contribute the existing literature by examining the relationship between FDI and energy infrastructure on a country level to have in-depth insight. Moreover, previous studies are based on a single specification and a single equation. The earlier literature ignores the institutional quality, which may affect the FDI and energy relationship in developing countries like China. We contribute the literature by using the ARDL and VECM approaches in a multi-specification framework, which means that we add additional variables in the baseline model. Similarly, we contribute to the earlier literature by adding an important variable, i.e., institutional quality.

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The rest of the study is divided into the following sections. Section 2 describes the stylized facts of energy infrastructure in China. Section 3 explains the theoretical framework. Section 4 shows the data and methodology. Section 5 reports empirical results. In section 6, we show the concluding remarks of the study.

2. Energy production and consumption in China

In this section, we show how energy is a driving force for the rapid economic development of China. Similarly, China faces challenges that must be overcome to keep the wheels of the country turning under pressure for the ever-greater need for environmental protection. Since the market-oriented reforms in the 1980s, China favored economic growth with an emphasis on having considerable investments in energy infrastructure

Coal is the dominant source of energy in China; therefore, the whole power system is always a pivoted around it. The coal consumption has been increased from 1.05 to 3.97 billion tons from 1990 to 2015. The Gobi desert in the northwest China is producing over 100000 tons of high-quality coal with less sulfur. During 2016, coal made up 62% of China's total energy use. Since 2011, China consumed more coal than the rest of the world combined, where it provides three-quarters of the nation's energy needs. Therefore, many macroeconomic indicators rely on the coal industry in China. In 2014, China contributed to air pollution by 71%, which is far more than the European Union and the USA with 32% and 31% emissions, respectively.

Hydroelectric power has become China's leading source of renewable energy production. Having a generation capacity of 22,500 MW, in the upper reaches of the Yangtze River, Three Gorges Dam is completed in 2012 at the cost of over $37 billion. It is the world largest hydroelectric dam. Additionally, China has also constructed three energy-producing hydroelectric dams. From 2000 to 2015, China increased its hydroelectric energy-generation capacity by 408%. As a result of the Three Gorges Dam and other projects, China became the world leader in hydropower in 2014.

However, abundant water resources are not found everywhere. The west of China is short of water but has plenty of sunshine. The power of the sunlight and the number of hours the sun shines make it an ideal site for *solar* photovoltaic (PV) energy. In the Gobi desert, more than 20 thousand mirrors bounce the light with high precision, which makes China a leading player in solar photovoltaic during the last decade. This way of generating electricity does not consume any fuel or discharged any emissions. China's currently installed solar power capacity exceeds 70 million kilowatts accounting for one-fifth of the world solar generation capacity. More and more ways to utilize solar energy may revolutionize China's supply of clean energy. China's rapid development shows genuine determination to change its energy structure.

There are other emission-free energy sources to be tapped into. China is one of the nations that have taken the lead in seeking renewable energy from the *wind*, where the giant turbines are a common feature of the landscape in many locations. Offshore wind, on the eastern coast of China, is looking more and more like the future of wind power. In 2012, the electricity generated by wind power accounted for just 2.1% of China's total consumption. China accounted for one-third of the global wind-energy capacity in 2015. With a 10.5% increase from the previous year, in 2017, China's wind power capacity reached to 16,367 megawatts (MW).

In China, the progress of science and technology drives energy. On a remote peninsula in eastern China, the most advanced *nuclear* power unit in the world is being prepared to be put into operation. The nuclear reaction releases enormous heat, which is used to turn water into high-pressure steam. It drives the generators to generate electricity. The nuclear fuel's energy density is 2.5 million times that of coal. China generated 38,419 (MW) of energy with the help of 41 *nuclear* power reactors as of July 2018. In its 13th Five-Year Plan, the Chinese government planned to construct 40 new nuclear plants by 2020. Nuclear plants run on nuclear fission and the

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energy released by splitting atomic particles. The energy released in this way is compelling, but it also creates dangerous radioactive wastes. Though controversial, nuclear power is still in its various forms is the great hope for an endless reliable and clean source of energy.

China has important and unconventional *shale gas* resources. China is moving into its own offshore to produce more oil and gas. Historically, it has been challenging for China to develop deep-sea oil and natural gas resources, which become possible by the approach known as the power compensator system. Natural gas emits 60% less CO_2 as compared to coal when it is efficiently combusted. The natural gas consumption reached to 240.4 billion-meter cubic meters during 2017, which makes 6.4 % of China's total energy consumption. The energy consumption, by natural gas, is higher than the earlier decade. The Chinese government is committed to increase energy sources from natural gas by 10% to its total energy demand by the end of 2020. With the advance of deep-sea engineering technology, China has made a further step in acquiring resources from the oceans. The energy stored in deep-sea is beyond imagination.

Fig. 1 shows the energy consumption by sector in 2016. Industry (manufacturing sector) consumes more energy, which is 67%. The household and transportation sectors consume 21% of the total energy. While, in the same year, the manufacturing sector FDI part is 32%, services constitute a 66% portion in total FDI, and the primary sector (agriculture, fishing & mining) counted for only 2% (www.stats.gov.cn). Therefore, a question may arise that what is the contribution of the energy sector in attracting FDI.

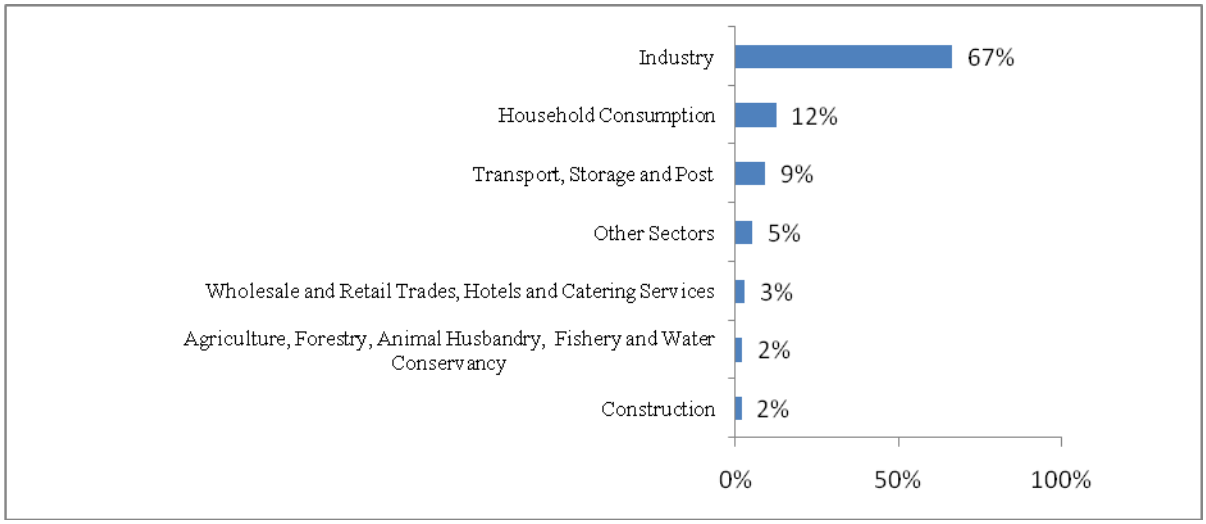

Figure 1. Energy consumption by sector in 2016 (%). Source: China Statistical Yearbook 2018 *(authors' calculations)*

It can be seen in Table 1 that China has decreased the coal consumption from 76.2% in 1990 to 60.4% in 2017, while its coal production decreased from 74.2% in 1990 to 69.6% in 2017. The clean energy consumption has been increased from 5.1% to 13.8% during 1990 to 2017, and its production increased from 4.8% to 17.4% from 1990 to 2017. The figures highlighted the importance of renewables for China.

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Table 1. Consumption and production of energy and its composition (in percent)

Year	Consumption				Production			
	Coal	Crude Oil	Natural Gas	Hydro-, Nuclear-, and Wind Power	Coal	Crude Oil	Natural Gas	Hydro-, Nuclear-, and Wind Power
1990	76.2	16.6	2.1	5.1	74.2	19.0	2.0	4.8
1995	74.6	17.5	1.8	6.1	75.3	16.6	1.9	6.2
2000	69.2	22.2	2.2	6.4	73.2	17.2	2.7	6.9
2005	70.8	19.8	2.6	6.8	77.6	12.0	3.0	7.4
2010	68.0	19.0	4.4	8.6	76.6	9.8	4.2	9.4
2017	60.4	18.8	7	13.8	69.6	7.6	5.4	17.4

Source: China Statistical Yearbook (2018)

3. Theoretical framework

Energy infrastructure, through the efficient ways of its utilization, plays an essential role in sustainable economic growth and in attracting foreign firms through different channels (Haider, Adil, 2019; Khan et al. 2020). Previous literature shows that energy efficiency is a crucial component of economic development (Akbar et al. 2020), which is only possible if robust energy infrastructure is in place. Energy sector can positively induce the productivity, efficiency, and effectiveness of firms operating across diverse sectors (Rehman et al. 2020). Countries with frequent power shutdowns attract less FDI, because the power cuts interrupt the business and production operations, and ultimately waste the precious time.

Activities and processes involved in agriculture, industry, and services are affected by energy consumption. Foreign firms choose those countries as their destination where they find well-developed energy infrastructure. The more energy consumption means improved productivity. Previous literature shows the pros and cons of using energy as a factor of production. The adverse effects of energy consumption stem from a lack of proper arrangement to control greenhouse gases and CO_2 emissions.

Information and communication technology (ICT) can leapfrog the productivity of firms through the information flow (Gholami, Lee, and Heshmati 2006), which is not possible without proper energy resources and infrastructure in the host economies. The argument is justified that such facilities enable firms to reduce time and distance costs. The presence of energy infrastructure, in host economies, can enhance the impact of spillovers originate from MNEs (multinational enterprises). Similarly, energy infrastructure bridges diverse communities, especially through ICT, connected with FDI's activities to contribute positively to economic development.

Similarly, transportation plays a vital role in trade and investments. Energy consumption affects the performance of transportation. The efficient transportation system reduces cost and time. Foreign firms choose those countries with proper transport infrastructure to reduce the additional costs for delayed deliveries, etc. Hence, indirectly energy usage affects the FDI inflows into the host economies.

Energy infrastructure is like an amenity that helps in reducing the cost of production. Hence, it is believed to have relatively more influence on vertical FDI though it also has an impact on horizontal FDI. The amenities are composed of oil & gas pipelines, electric power distribution, and transmission, storage, etc., which are essential for MNEs to achieve productivity targets and competitiveness. Therefore, infrastructure in the energy sector helps to maximize profit and reduce the cost of doing business for multinational corporations. In the absence of energy infrastructure, the MNEs may incur additional costs and results in reluctance in investments (Erenburg 1993).

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No proper arrangement for greenhouse gases and CO_2 emissions can lead to deter foreign investors from entering the host countries. So, the environmental factors also determine the location choice for FDI. Moreover, to reduce the hazards from greenhouse gas emissions, the firms incur additional production costs. The improper safety measures in using energy can affect workers' health and additional costs incur to cure the disease. Nowadays scientific community is engaged in finding renewable and sustainable energy resources, which can reduce the footprints of carbon resulting from the industrial production process. Therefore, countries are investing in renewable energies to reduce their dependence on fossil fuels, etc. The measures can lead to higher energy efficiency and lower energy intensity. These measure may enhance the FDI inflows. Therefore, countries with higher energy efficiency attract more foreign firms.

4. Data and analytical framework

4.1 Data

The fundamental concern of our study is to show the energy and FDI relationship. The study is based on time series annual data from 1988 to 2017. We rely on the data by Donaubauer et al. (2016). The authors used the unobserved component model (UCM) to construct an index about energy infrastructure. Moreover, the authors used electric power consumption and production (both variables are measured in per capita terms). To measure the reliability and quality of the national electrical power supply, the authors used data on electric power transmission and distribution losses (as a percentage of output). These data run from 1990 to 2010. Following Cooray et al. (2017), we fill in the missing data points up until 2017, by interpolating the data. Control variables are selected, keeping in view the broad review of the literature. FDI is affected by institutional quality (Shah, Ahmad, and Ahmed 2016), trade openness (Iamsiraroj and Ulubaşoğlu 2015), and domestic investment.

The data about institutional quality is obtained from the International Country Risk Guide (ICRG) database. The dataset contains several indices (bureaucratic quality, democratic accountability, the rule of law, investment profile, corruption, and government stability) prepared from the multidimensional sub-datasets. (Buchanan, Le, and Rishi 2012; Globerman and Shapiro 2002) argue that it is not possible to include all the individual aspects of institutional quality in a single regression equation, because they are correlated with each other. Moreover, it is not a good approach for policy concern to include a single aspect of institutional quality in a regression equation and ignoring other aspects of it. Some dataset contains time-invariant indicators, so the indices are developed to make it feasible. For the construction of index and to determine the weight to the indicators regarding various dimensions of institutional quality, the technique of principal component analysis (PCA) is used.

Trade share percent of GDP is used as a proxy for trade openness. Gross fixed capital formation (% of GDP) is used as a proxy for domestic investment. The data about trade openness and domestic investment is extracted from World Bank (2018).

The descriptive statistics, given in Table 2, show the measure of central tendency and variability of the data. In this regard, we report the mean, median, standard deviation, minimum, and maximum. The mean and median values of primary FDI are close to each other, with the standard deviation is 0.17, which shows that the data is more scattered. Stability implies that China attracted more FDI in the manufacturing and services sectors. This implies that the macroeconomic environment affects FDI, which may arise due to open-door policies, energy consumption, and production. However, the energy infrastructure shows more variability with the standard deviation is 0.13. Moreover, all variables follow a normal distribution, according to the Jarque-Bera (JB) test of normality.

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Table 2. Descriptive statistics

Variables	Notation	Mean	Median	Max.	Min.	SD	JQ	Prob.
FDI (% share in GDP)	FDI	1.61	1.65	1.86	1.14	0.17	6.20	0.05
Energy consumption	EC	0.93	0.90	1.13	0.73	0.13	2.66	0.26
Institutional quality	IQ	0.95	1.13	1.39	-0.29	0.45	4.45	0.11
Trade share in GDP (%)	TO	2.62	2.61	2.82	2.40	0.12	0.66	0.72
Domestic investment share in GDP (%)	DI	2.58	2.60	2.67	2.41	0.07	2.46	0.29

Note. One is being added to actual values. SD and JQ represent standard deviation and Jarque-Bera statistics.

4.2 Analytical framework

In this study, we apply the autoregressive distributive (ARDL) technique of cointegration, developed by Pesaran et al. (2001). There are several advantages to use the ARDL approach. First, the method is applicable irrespective of the order of integration of variables, i.e., I(0), 1(1), 1(1,0). If the variables are I(2) or above, then the F-statistics is not invalid (Ouattara 2006). Second, ARDL is applicable in case some of the regressors are endogenous (Odhiambo 2009). Third, the method is effective even in the case of small samples (Ghatak and Siddiki 2001). In the case of small samples, the method is better than Johansen and Juselius (Johansen 1991), Engle & Granger (Engle and Granger 2015), and Phillips and Hansen (Phillips and Hansen 1990). Another advantage of using ARDL is that it overcomes the problems resulting from series with unit-roots, and the unrestricted error correction model (UECM) seems to take satisfactory lags that captures the data generating process in a general-to-specific framework of specification (Kinkyo, Matsubayashi, and Hamori 2013). We aim to investigate the causal relationship between sectoral FDI and infrastructure across different specifications.

Before the estimation of the empirical results, it is imperative to determine the order of integration. In this regard, we use the Augmented Dicky Fuller (ADF) test. We also apply the Phillips- Perron (PP) test to get robust results. Moreover, we also apply the Zivot-Andrews breakpoint unit root test to avoid misleading and biased results (Muhammad Atif Khan et al. 2020). We follow Ayala and Triguero (2017) and apply Baum's modified methodology for unit root testing against the alternative of trend stationarity with a shift in time trend, shift in mean, and a shift in both slope and intercept.
The next step is to apply the ARDL bounding testing model of cointegration. The bound test F-statistics are obtained that will show us whether cointegration exists or not. If the F-statistic value is higher than the upper bound, then there is cointegration. Similarly, the values of the F-statistic below the lower bound value indicate no cointegration. While the F-statistic value between the upper and lower bound indicate inconclusive region.

To investigate the relationship between infrastructure and foreign direct investment, we can formulate the unrestricted error correction model (ECM) as the following:

$$\Delta FDI_t = \alpha_{0\,fdi} + \sum_{i=1}^{p} \psi_{ifdi} \Delta FDI_{t-i} + \sum_{i=1}^{p} \rho_{ifdi} \Delta EC_{t-i} + \sum_{i=1}^{p} \phi_{ifdi} \Delta IQ_{t-i} + \lambda_{1\,fdi} FDI_{t-1} + \lambda_{2\,fdi} EC_{t-1} + \lambda_{3\,fdi} IQ_{t-1}$$
$$+ \mu_{1t} ------ Equation(1)$$

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$$\Delta EC_t = \alpha_{0ec} + \sum_{i=1}^{p} \psi_{iec} \Delta EC_{t-i} + \sum_{i=1}^{p} \phi_{iec} \Delta FDI_{t-i} + \sum_{i=1}^{p} \rho_{iec} \Delta IQ_{t-i} + \lambda_{1ec} EC_{t-1} + \lambda_{2ec} FDI_{t-1} + \lambda_{3ec} IQ_{t-1}$$
$$+ \mu_{2t} ------ Equation(2)$$

$$\Delta FDI_t = \alpha_{0\,fdi} + \sum_{i=1}^{p} \psi_{ifdi} \Delta FDI_{t-i} + \sum_{i=1}^{p} \rho_{ifdi} \Delta EC_{t-i} + \sum_{i=1}^{p} \phi_{ifdi} \Delta IQ_{t-i} + \sum_{i=1}^{p} \delta_{ifdi} \Delta TO_{t-i} + \lambda_{1\,fdi} FDI_{t-1} + \lambda_{2\,fdi} EC_{t-1}$$
$$+ \lambda_{3\,fdi} IQ_{t-1} + \lambda_{4\,fdi} TO_{t-1} + \mu_{3t} ------ Equation(3)$$

$$\Delta EC_t = \alpha_{0ec} + \sum_{i=1}^{p} \psi_{iec} \Delta EC_{t-i} + \sum_{i=1}^{p} \phi_{iec} \Delta FDI_{t-i} + \sum_{i=1}^{p} \rho_{iec} \Delta IQ_{t-i} + \sum_{i=1}^{p} \delta_{iec} \Delta TO_{t-i} + \lambda_{1ec} EC_{t-1} + \lambda_{2ec} FDI_{t-1}$$
$$+ \lambda_{3ec} IQ_{t-1} + \lambda_{4ec} TO_{t-1} + \mu_{4t} ------ Equation(4)$$

$$\Delta FDI_t = \alpha_{0\,fdi} + \sum_{i=1}^{p} \psi_{ifdi} \Delta FDI_{t-i} + \sum_{i=1}^{p} \rho_{ifdi} \Delta EC_{t-i} + \sum_{i=1}^{p} \phi_{ifdi} \Delta IQ_{t-i} + \sum_{i=1}^{p} \delta_{ifdi} \Delta TO_{t-i} + \sum_{i=1}^{p} \rho_{ifdi} \Delta DI_{t-i} + \lambda_{1\,fdi} FDI_{t-1}$$
$$+ \lambda_{2\,fdi} EC_{t-1} + \lambda_{3\,fdi} IQ_{t-1} + \lambda_{4\,fdi} TO_{t-1} + \lambda_{5\,fdi} DI_{t-1} + \mu_{5t} ------ Equation(5)$$

$$\Delta EC_t = \alpha_{0ec} + \sum_{i=1}^{p} \psi_{iec} \Delta EC_{t-i} + \sum_{i=1}^{p} \phi_{iec} \Delta FDI_{t-i} + \sum_{i=1}^{p} \rho_{iec} \Delta IQ_{t-i} + \sum_{i=1}^{p} \delta_{iec} \Delta TO_{t-i} + \sum_{i=1}^{p} \rho_{iec} \Delta DI_{t-i}$$
$$+ \lambda_{1ec} EC_{t-1} + \lambda_{2ec} FDI_{t-1} + \lambda_{3ec} IQ_{t-1} + \lambda_{4ec} TO_{t-1} + \lambda_{5ec} DI_{t-1} + \mu_{6t} ------ Equation(6)$$

In Eq. (1), (3), and (5), the dependent variable is FDI. Similarly, the dependent variable in the Eq. (2), (4), and (6), is represented by EC. Institutional quality, trade openness, and domestic investment are used as controlled variables for various specifications. The subscript t is the time dimension. ARDL technique is applied to the model for identifying the long-run and short-run dynamics.

Pesaran et al. (2001) provided upper and lower bound critical values. However, the values are applicable for large samples. In the case of small samples, the decision based on the Pesaran et al. (2001) critical values can mislead the estimation results (Herzer 2010). Therefore, we rely on the critical values provided by Narayan (2005), which apply to small sample sizes ranging from 30 to 80 observations. If the computed F-statistic falls above the upper value bound, the null is rejected, indicating cointegration. If the computed F-statistic falls below the lower bound, the null hypothesis of no cointegration is accepted. In contrast, if the computed F-statistic falls within the bounds, the inference would be inconclusive.

The establishment of a long-run relationship means that there must be at least unidirectional causality among the underlying variables (Narayan and Smyth 2005). Moreover, the long-run relationship is only a necessary but not a sufficient condition for the causal relationship among the variables (Morley 2006; Khan et al. 2019; Khan, Chaudhary, and Latif 2020).

If the long-run relationship exists (which is a necessary condition for cointegration but not a sufficient condition), then under the VECM environment, Granger causality test shows long-run and short-run causality for the two variables. Under the VAR framework, the traditional Granger causality test can produce ambiguous results; therefore, under the VECM framework, the following is its improved version.

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$$\Delta FDI_t = \alpha_{0\,fdi} + \sum_{i=1}^{p} \psi_{ifdi} \Delta FDI_{t-i} + \sum_{i=1}^{p} \rho_{ifdi} \Delta EC_{t-i} + \sum_{i=1}^{p} \phi_{ifdi} \Delta IQ_{t-i} + \Omega_1 ECT_{t-1} + \mu_{7t} ------Equation(7)$$

$$\Delta EC_t = \alpha_{0ec} + \sum_{i=1}^{p} \psi_{iec} \Delta EC_{t-i} + \sum_{i=1}^{p} \rho_{iec} \Delta FDI_{t-i} + \sum_{i=1}^{p} \phi_{iec} IQ_{t-i} + \Omega_2 ECT_{t-1} + \mu_{8t} ------Equation(8)$$

$$\Delta FDI_t = \alpha_{0\,fdi} + \sum_{i=1}^{p} \psi_{ifdi} \Delta FDI_{t-i} + \sum_{i=1}^{p} \rho_{ifdi} \Delta EC_{t-i} + \sum_{i=1}^{p} \phi_{ifdi} \Delta IQ_{t-i} + \sum_{i=1}^{p} \delta_{ifdi} \Delta TO_{t-i} + \Omega_3 ECT_{t-1}$$
$$+\mu_{9t} ----Equation(9)$$

$$\Delta EC_t = \alpha_{0ec} + \sum_{i=1}^{p} \psi_{iec} \Delta EC_{t-i} + \sum_{i=1}^{p} \rho_{iec} \Delta FDI_{t-i} + \sum_{i=1}^{p} \phi_{iec} \Delta IQ_{t-i} + \sum_{i=1}^{p} \delta_{iec} \Delta TO_{t-i} + \Omega_4 ECT_{t-1}$$
$$+\mu_{10t} ------Equation(10)$$

$$\Delta FDI_t = \alpha_{0\,fdi} + \sum_{i=1}^{p} \psi_{ifdi} \Delta FDI_{t-i} + \sum_{i=1}^{p} \rho_{ifdi} \Delta EC_{t-i} + \sum_{i=1}^{p} \phi_{ifdi} \Delta IQ_{t-i} + \sum_{i=1}^{p} \delta_{ifdi} \Delta TO_{t-i} + \sum_{i=1}^{p} \delta_{ifdi} \Delta DI_{t-i} + \Omega_5 ECT_{t-1}$$
$$+\mu_{11t} ------Equation(11)$$

$$\Delta EC_t = \alpha_{0ec} + \sum_{i=1}^{p} \psi_{iec} \Delta EC_{t-i} + \sum_{i=1}^{p} \rho_{iec} \Delta FDI_{t-i} + \sum_{i=1}^{p} \phi_{iec} \Delta IQ_{t-i} + \sum_{i=1}^{p} \delta_{iec} \Delta TO_{t-i} + \sum_{i=1}^{p} \delta_{iec} \Delta DI_{t-i} + \Omega_6 ECT_{t-1}$$
$$+\mu_{12t} ------Equation(12)$$

To reach in long-run equilibrium for the variables EC and FDI; ECTs (error correction term) are the speed of adjustment. The significant value of F-statistics determines the short-run causality. The causality is determined by the F-statistics to test the joint significance of all the lagged first differences of independent variables (Ali and Wang 2018; Zhang 2001; Lee 2010; Khan et al. 2019; Khan, Ilyas, and Hashmi 2018). Whereas the significant value of t-statistics for ECT_{t-1} indicates the long-run causality.

5. Results

Table 3 shows the unit-root results for the underlying variables of the study. The results indicate that all the variables are stationary at the level and 1st difference. Moreover, the response variable is integrated of order I(1), which satisfied the precondition specified by Pesaran et al., (2001).

Table 3. Unit root and stationary test results.

Variable	ADF		Phillips- Perron		Zivot-Andrews					
	I(0)	I(1)	I(0)	I(1)	Zd	Break	Zt	Break	Zdt	Break
FDI	-3.003	-4.32**	-3.62**	-4.26**	-3.111	2014	-5.173***	1994	-4.106	2013
EC	-3.495*	-7.38***	-3.57*	-7.26***	-3.986	1995	-4.087	2000	-4.832*	1999
IQ	-1.853	-5.22***	-3.35*	-5.49***	-3.723	1995	-3.832	1999	-4.782*	2001
TO	-0.75	-3.58*	-0.974	-3.62**	-4.504	2013	-4.148	2011	-4.912*	2013
DI	-3.83**	-3.71**	-2.264	-3.52*	-4.497	2015	-4.717**	2014	-5.839***	2011

Note. * p<0.10, ** p<0.05, *** p<0.01. ADF and PP tests include intercept and trend. The ZA tests are the minimum Dicky–Fuller statistics with one structural break in intercept (Zd), trend (Zt), and both intercept and trend (Zdt). Break indicates the year when minimum DF statistic is obtained.

The significant F-statistics of the estimated ARDL bound test in Table 4 for FDI as a dependent variable reject the null of no cointegration, which indicates a stable long-run relationship between FDI and EC. However, when we

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use EC as a dependent variable, then the values of F-statistic are below the lower bound; hence found no cointegration.

Table 4. ARDL bounds test results.

Specifications	Max lag	F-statistics	Critical values					
			1%		5%		10%	
			I(0)	*I(1)*	*I(0)*	*I(1)*	*I(0)*	*I(1)*
Panel A. EC to FDI								
Model 1. FDI /(EC, IQ, DM)	(4,0,4,4)	9.804**	5.2	6.3	3.5	4.4	2.9	3.7
Model 2.FDI/(EC, IQ, DM ,TO)	(4,4,3,4,4)	42.20 ***	4.6	6.0	3.3	4.3	2.7	3.6
Model 3.FDI/(EC, IQ, DM, TO, DI)	(3,3,3,3,3,3)	6.00 ***	4.3	5.8	3.1	4.2	2.5	3.6
Panel B. FDI to EC								
Model 1.EC/(FDI, IQ, DM)	(4,3,4,2)	2.509	5.2	6.3	3.5	4.4	2.9	3.7
Model 2. EC /(FDI, IQ, DM, TO)	(4,4,4,4,3)	2.69	4.6	6.0	3.3	4.3	2.7	3.6
Model 3. EC /(FDI, IQ, DM, TO, DI)	(3,1,3,2,3,3)	1.67	4.3	5.8	3.1	4.2	2.5	3.6

Notes: The first letter outside the brackets denotes dependent variables. The symbol ***, **, and * indicate significance at 99%, 95% and 90% confidence level, respectively. The null hypothesis of no cointegration is tested with F-test, critical values are taken from Narayan (2005) for case II: restricted intercept and no trend. Lag selection is based on the AIC. DM ressprents a dummy variable used to control structural breaks.

Johansen multivariate cointegration test is conducted to check for robustness. Table 5 reports the results. We see that there are three cointegrating vectors which validate the presence of a long-run relationship between the variables, which indicate the ARDL results are robust and reliable.

Table 5. The Johansen cointegration analysis.

Hypothesis	Trace statistic	Max. Eigenvalue
R=0	129.27***	63.324***
R≤1	65.95***	33.99***
R≤2	31.952**	20.188*
R≤3	11.764	11.646
R≤4	0.1176	0.1176

Note. * p<0.10, ** p<0.05, *** p<0.01

After identifying the long-run relationship between EC and FDI, we estimate the long-run effects. Table 6 shows the estimation results. Here we see that the coefficients of EC are significant and positive. The results imply that energy infrastructure positively impacts foreign investment. Similarly, the coefficients of control variables are according to our expectations and economic theories. The diagnostic results show that the inclusion of additional variables improves the overall goodness of fit. The Lagrange Multiplier (LM) test shows that our models are not suffering from the autocorrelation. Autoregressive conditional heteroskedasticity (ARCH) reveals that we have no heteroskedasticity problem. Ramsey reset tests indicate that our models are correctly specified. Similarly, the Jarque-Bera test shows that residuals of the models are normally distributed.

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Table 6. Results on Long-Run Effect.

Variables	Mode 1	Mode 2	Mode 3
EC	0.319*** (0.03)	0.534*** (0.04)	0.405* (0.15)
Institutional quality	0.429* (0.18)	0.305 (0.17)	1.095 (0.89)
Trade openness		1.110 (0.31)	2.718** (0.59)
Domestic investment			3.152 (1.65)
Dummy	-0.709*** (0.18)	0.990* (0.53)	0.018 (0.12)
Constant	4.646*** (0.87)	4.095 (0.84)	2.857 (4.44)
Diagnostic results			
F-statistics	13.324***	17.33***	9.317**
LM test (chi-square)	2.189 (0.199)	1.426 (0.23)	2.032 (0.154)
ARCH test (chi-square)	1.437 (0.230)	0.603 (0.43)	2.563 (0.109)
Ramsey reset (F-stat.)	3.98 (0.143)	4.20 (0.10)	3.83 (0.355)
Jarque-Bera (chi-square)	3.133 (0.208)	0 .182 (0.913)	2.79 (0.25)

Note. * p<0.10, ** p<0.05, *** p<0.01. Standard errors are in parenthesis. The numbers in the parenthesis in the diagnostic panel are the p-values. Models are stable.

Table 7 reports the short- and long-run causality, which indicates that there is a unidirectional causal relationship between EC and FDI. The values of ECTs are significant and negative in the upper panel where we used FDI as a dependent; however, in the lower panel, the values ECTs are insignificant. The short-run F-statistic is significant in the model where FDI is dependent. For the rest of the models, the short-run F-statistics are insignificant. Hence, except model 1, we are unable to see short-run causality.

Table 7. Granger causality results.

EC to FDI		
Specifications	Short Run (F-Stat)	Long-run ECT_{t-1}
Model 1. FDI /(EC, IQ, DM)	8.05***	-0.43**
Model 2.FDI/(EC, IQ, DM, TO)	21.56	-0.57***
Model 3.FDI/(EC, IQ, DM, TO, DI)	2.75	-0.69***
FDI to EC		
Model 1.EC/(FDI, IQ, DM)	1.95	-0.13
Model 2. EC /(FDI, IQ, DM, TO)	1.69	-0.20
Model 3. EC /(FDI, IQ, DM, TO, DI)	2.66	-0.39

Note. * p<0.10, ** p<0.05, *** p<0.01.

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The summary results of the short-run and long-run causality between the EC and foreign direct investment are shown in Table 8.

Table 8. Long-run and short-run causality.

Specifications	Short-run causality	Long-run causality
	FDI & EC	
Model 1.	Unidirectional	Unidirectional
Model 2.	No causality	Unidirectional
Model 3.	No causality	Unidirectional

Overall the results show that there exist unidirectional long-run causal relationships between energy and FDI. Our study confirms the hypothesis that energy consumption and its infrastructure positively attract foreign investors; the reverse impact does not hold. The presence of energy infrastructure boosts FDI inflow in China. However, we find that FDI does not explain energy. The findings are similar to (Dong, Shao, and Zhang 2019). It means that developing countries, like China, with low restrictions on greenhouse emissions, attract more FDI (*Pollution paradise" hypothesis).* On the other, we see that there is no technological effect of FDI on reducing the energy intensity in China. The possible explanations of the results are that substantial Chinese investments in the energy sector and its consumption are growing enormously and become more influential. Market reforms and greater transparency are making energy projects attractive in China. In this regard, the '*I Squared Capital'* wastewater treatment industry is a prominent figure in the energy sector of China.

Conclusions

China's integration into the world economy, and maintaining its rapid economic growth, demand more energy with a prominent concern of reducing carbon footprints. Coal is the leading energy source that drives more than half of the Chinese economy. Similarly, China imports around 60 percent of the oil that it consumes. It is the world largest oil importer as about 2014, but it has been doing a lot to make sure that its energy consumption across a range of fuels. To take into account the issues of greenhouse emissions and to maintain sustainable growth, China is making conscious efforts to increase the proportionality of clean energy in its energy mix. Similarly, the massive inflow of foreign direct investment (FDI) in China is a marvelous phenomenon the world sees during the last three decades. The opening up policy made China the fourth largest destination for foreign investments.

The relationship between FDI and energy infrastructure, though important for policy concerns, is not studied. Previous literature mainly focused on the emission and growth aspects of energy consumption but ignored the foreign investment perspective. Previous studies focus on the impact of energy consumption on economic growth and other macroeconomic variables. Moreover, the majority of the previous literature discusses the environmental effects of energy. Similarly, more studies focused on cross-country analysis. We, for the first time, contribute the existing literature by examining the relationship between FDI and energy infrastructure on a country level to have in-depth insight.

Moreover, the previous studies are based on a single specification and a single equation. The earlier literature ignores the institutional quality, which may affect the FDI and energy relationship in developing countries like China. We contribute the literature by using the ARDL and VECM approaches in a multi-specification framework, which means that we add additional variables in the baseline model. Similarly, we contribute to the earlier literature by adding an important variable, i.e., institutional quality.

We find a long-run relationship between energy and growth. The causality analysis shows that there is a unidirectional causal relationship running from energy to FDI. We find that energy contributes positively to FDI inflows. The Johansen multivariate cointegration test validates the ARDL results. The inclusions of control variables (FDI, institutional quality, domestic investment, and trade openness) increase the goodness of fit of the models.

This study carries several policy recommendations. Efforts should be made to enhance alternative means of energy like thermal and solar energy resources to achieve the desired economic outcomes. The current study can be augmented by incorporating a broader set of energy variables into a single index, which will provide more accurate and reliable results. Similarly, future research should be targeted at a provincial and sectoral level.

Disclosure statement
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SHAREHOLDERS' RIGHTS IN INTERNATIONAL LAW: (CON)TEMPORARY REFLECTIONS IN THE DIALLO CASE

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Abstract. In the 21st century there is still an ongoing intensive discussion among practitioners and scholars as to whether, under international law, an independent right to property exists. When the International Court of Justice (hereinafter – ICJ) announced its decisions in the *Ahmadou Sadio Diallo* case (*Republic of Guinea v. Democratic Republic of Congo*, 2007, 2010, 2012; hereinafter – *Diallo*), these debates intensified. This article analyzes the decisions of the *Diallo* case, as this case is a valuable source which: (a) help to determine the approach of the most authoritative Court towards the right to property in international law, and (b) assist in evaluating the chance of defending the rights of shareholders in the ICJ. After examination, several observations are made. First, althought Guinea claims that the core issue in the case is a violation of property rights, the ICJ is not willing to elaborate on the right to property, its scope, or its content. This silence leads to further queries on the understanding of the concept of a global right to property. Second, the World Court rules that diplomatic protection based on the rule of protection by substitution does not amount to an international custom. A conclusion is made that the *Diallo* case is not a repetition of a standard discussed in the *Barcelona Traction, Light and Power Company, Limited* case (*Belgium v. Spain*, 1970; hereinafter – *Barcelona Traction*), but rather a reflection of a narrowed standard of *Barcelona Traction*. Therefore, the ICJ is not an amiable forum for the protection of the property rights of shareholders.

Keywords: diplomatic protection of shareholders; right to property; shareholders' rights

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Additional disciplines: law

1. Introduction.

In contemporary international law, two opposite positions exist regarding the concept of a right to property. On the one hand, such scholars as Jose E. Alvarez claim that there is "…no such a thing as a single global regime for property protection" (2018, p. 650), but on the other hand some advocate for the emergence of the global right to property (Sprankling, 2011). Opinions regarding the phenomenon of fragmentation of this right also differ: from defending the distinct international regimes and denying the need to harmonize rights contours either though a global treaty or by recognizing its status as customary law (Alvarez, 2018, p. 581), to promoting initiatives that

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bridge the gaps between the areas of human rights law and international investment law and their isolated understanding of a right to property and its protection (Kriebaum & Schreuer, 2007, p. 20).

The protection of a right to property developed independently in human rights law and in international investment law. Therefore, protection for a natural or legal person in the European Court of Human Rights and insurances for an "investor" provided under the International Centre for Settlement of Investment Disputes (hereinafter – ICSID) regime vary enormously in scope. As a result, there is a need to identify what the general international law has to say about the right to property. Naturally, the opinion of the World Court matters.

This article focuses on a single, key case of the ICJ as an authoritative decision in the field on a global scale. *Diallo* (2010) is an important case because it is a rare opportunity to set standards for understanding the right to property as well as pronounce the existing rules on diplomatic protection on behalf of the shareholders.

The aim of this article is two-fold. Firstly, to answer the following questions: what is the current and prevailing test for standing on behalf of the shareholders in the ICJ? Does it represent customary international law? Are there any changes since the *Barcelona Traction* case? Secondly, this article argues for the need to recognize the evolution of a right to property and shareholders' rights at the international level.

This article consists of two parts. In the first part we address the right to property in international law as it stands today. Secondly, the analysis of the procedural and substantial questions in the *Diallo* case is presented. Lastly, conslusions and observations are made.

Methodology. This study is based on the qualitative methodology principles. A starting point of the research is the need to identify whether a right to property is a self-standing right under international law, and whether a natural person as a shareholder of a company can protect his or her right to property under international law. The method of conceptual analysis helps to collect relevant data (international treaties, case law, reports of international organizations, and scholary writings on the subject of the study). The comparative method, which is used for data analysis, helps to identify the differences regarding the understanding of the existence of the right to property. Regional courts as well as scholars interpret this right in a variety of ways. Therefore, a method of case study is helpful. The *Diallo* case is a special case, both because it is solved by the most authoritative court – the World Court – and because it is the first opportunity to rule on the shareholders' rights after the *Barcelona Traction* (1970) case.

2. Right to property in international law

Although a natural person's right to property is an ordinary and widely accepted right under domestic law, it does struggle to achieve its full acknowledgement in public international law. In the 20th century, international recognition of the right to property as a universal human right failed. Once solemnly announced in the Universal Declaration of Human Rights of 1948 (hereinafter – Universal Declaration) as a basic human right, it was rejected as an existing universal right: first, by the drafters of the International Covenant on Civil and Political Rights (1966; hereinafter – ICCPR) and the International Covenant on Economic, Social and Cultural Rights (1966; hereinafter – ICESCR); and, second, by the UN Commission on Human Rights (1993). While the other fundamental human rights were acknowledged by enshrining them in the 1966 law-making treaties, right to property was undeservedly left out of the list of "human rights and fundamental freedoms inherent to all individuals of all nations" (Universal Declaration, 1948, preamble).

It is true that the right to property is mentioned in several core human rights treaties in specific contexts: the right to own property without distinction as to race, colour, or national or ethnic origin in the International Convention on the Elimination of All Forms of Racial Discrimination (1965, art. 5 (d) (v); hereinafter – ICERD); the right to

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enjoy property without discrimination based on gender in the International Convention on the Elimination of All Forms of Discrimination against Women (1979, art. 15 (2), art. 16 (1) (h); hereinafter – CEDAW); prohibition on arbitrarily depriving migrant workers or their family members of their property in the International Convention on the Protection of the Rights of All Migrant Workers and Members of Their Families (1990, art. 15; hereinafter – ICRMW); and the guarantee of access to intellectual property without discriminatory barriers for persons with disabilities in the Convention on the Rights of Persons with Disabilities (2007, art. 30(3); hereinafter – CRPD). Even international humanitarian law protects property rights in times of armed conflict, by prohibiting destruction of real or personal property as stated in the IV Geneva Convention Relative to the Protection of Civilian Persons in Time of War (1949, art. 53; hereinafter, Geneva Convention). But these constant reflections of property rights in various areas are not sufficient for a self-standing universal right. Therefore, even a leading U.S. scholar on the subject, John Sprankling, has noticed that the traditional answer to the question "does a right to property exist under international law" is "no" (2014, p.1). However, further in his article Sprankling (2014) argues that the global right to property should be recognized as a general principle of international law as well as a customary international law.

The most effective way to translate a right into a legally binding obligation is via a multilateral treaty. There are multiple options to be discussed; for example, an amendment to an existing international covenant or a protocol to one of the existing international covenants. We argue for the need to enshrine right to property at a universal level because of the following two reasons: value at the theoretical level; and benefits in practice. In the case of theoretical value, it would encourage a rapid development on such questions as the right's nature, scope, and content. As for practical considerations, it would help to bridge regional differences regarding standards and limitations as well as enlarge possibilities to protect property rights for those who have no such guarantee under regional human right treaties. For example, the American Convention on Human Rights (1969, art. 21; hereinafter, ACHR) protects only natural person's right to property, but not legal person's right to property; therefore the Inter-American Commission on Human Rights has denied standing even where the application had been made not by the company but by its controlling shareholder (*Bendeck-Condinsa v. Honduras*, 1999, para.17): "The Commission therefore considers that the Convention grants its protection to physical or natural person. However, it excludes from its scope legal or artificial persons, since they represent a legal fiction".

Meanwhile, the existence of the universal right to property as a human right has to be grasped in international customary law. It is widely considered that the rights announced in the Universal Declaration (1948) have at present become binding either by way of custom or general principles of law. On this point a comprehensive analysis and extensive overview is found in the work *The Status of the Universal Declaration of Human Rights in National and International Law* by Hurst Hannum (1995). According to article 17 of the Universal Declaration "1. Everyone has the right to own property alone as well as in association with others. 2. No one shall be arbitrarily deprived of his property". The most authoritative voice on international customs is the World Court, and it was asked by Guinea to rule on questions regarding the right to property in the *Diallo* case (2007). In that case, three groups of property rights were allegedly violated: a) the personal property of Mr. Diallo (namely, loss of furniture, high-value items, and assets in bank account [*Diallo*, 2012, para. 29]); b) the shareholder's right to property over Mr. Diallo's *parts sociales* (or shares) in his companies Africom–Zaire and Africontainer–Zaire; and c) the right to property of the above-mentioned companies. From Guinea's perspective, property rights triggered by the unlawful arrest and expulsion of Mr. Diallo from the Democratic Republic of Congo (hereinafter – DRC) were the essential part of the case. Nevertheless, the ICJ focused on treaty-based human rights and unanimously found that Mr. Diallo's expulsion and detention violated both regional and universal treaties – respectively, article 12 (4) of the African Charter on Human and People's Rights (1982; hereinafter – ACHPR) and article 13 of the ICCPR (1966), and article 6 of ACHPR and article 9(1) and (2) of the ICCPR (*Diallo*, 2010, para. 165). Regrettably, in the final finding of the Court nothing was said about the violation of property rights.

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There were two choices available for the ICJ: to rely on the regional treaty, which is binding for Guinea and the DRC and states that "the right to property shall be guaranteed" (ACHPR, 1982, art. 14); or to deliberate on international customary rule of property rights. None of these options was used. Does this mean that the right to property does not exist in international law, as John G. Sprankling summed up as the traditional prevailing approach (2014, p. 1)? Or does it mean that the Court was not persuaded that any of the property rights were violated? We assume that the answer to the first question is "no", and most probably the answer to the second question is "yes". However, having in mind the World Court's authority and contribution to international law development, as well as the unsatisfactory situation that this fundamental right is not a part of a universal treaty, it would be helpful and thoughtful to elaborate on it.

A particularly interesting choice of the Court was to acknowledge that compensation should be paid "…for the material injury suffered by Mr. Diallo in relation to his personal property…" (*Diallo*, 2012, para. 61), but not clearly pronouncing what the violation was. International responsibility requires proving two elements, namely: (a) attributability, and (b) a breach of an international obligation of the state (Draft Articles on Responsibility of States for Internationally Wrongful Acts, 2001, art. 2; hereinafter – ARS). What was the international obligation for the breach of which the Court awarded the compensation in the decision of 2012? The Court says:

> The Court recalls that Mr. Diallo lived and worked in the territory of DRC for over thirty years, during which time he surely accumulated personal property. (…) Thus, the Court is satisfied that the DRC's *unlawful conduct* [emphasis added] caused some material injury to Mr. Diallo with respect to personal property that had been in the apartment in which he lived, although it would not be reasonable to accept the very large sum claimed by Guinea for this head of damage. In such a situation, the Court considers it appropriate to award an amount of compensation based on equitable considerations (*Diallo*, 2012, para. 32).

What is the "unlawful conduct" mentioned by the Court? Is it a breach of the right to property? It is doubtful that it was the Court's intention to say so, because it never mentioned a violation of the right to property in the decisions of 2007, 2010, and 2012. The other possible explanation for what is meant by "unlawful conduct" is the Court's acknowledged incompliance with the prohibition of unlawful expulsion and detention of Mr. Diallo. According to the judgment, expulsion and detention is the direct reason that caused material injury to personal property. This leads to the conclusion that a breached obligation for which compensation is granted is unlawful expulsion and detention, and not property rights. The authors do agree that these unlawful actions of the DRC prevented him from peaceful enjoyment of the property owned. However, we cannot agree that indirect limitation of property rights caused by unlawful expulsion and detention does not constitute a self-standing breach of the right to property.

One unlawful act can violate more than one international obligation. For example, a person can be tortured and then die, which will cause a violation of the right to life as well as incompliance with the prohibition of torture; or unlawful armed attack can destroy a private house, which causes a violation of the prohibition on use of force and triggers the right to housing and the right to property. This could be the case for Mr. Diallo. The unlawful actions of the DRC caused not only illegal expulsion and detention, but also a violation of the right to property. The choice of the Court to acknowledge the violation of the former but keep silent on the latter leaves uncertainties and fosters further queries on the understanding of the concept of a global right to property.

The other important questions in regard to a global right to property are: what are the recognized types of property in international law? Does shareholding qualify as a protected right? If yes, what is the scope of that right? Do specific rights (i.e., a right to vote, a right to monitor and others) enjoy a property protection standing on their own? Does international law protect only ownership of the shares or reduction of the value of the company as well?

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These questions demonstrate the need to find all of the pieces of the puzzle surrounding "right to property" and determine what the scope and content of the right is.

3. Shareholders' rights according to the *Diallo* case

In the 21st century the ICJ faced questions on shareholders' property rights on a single occasion. This occasion was the Diallo case and its decisions in 2007, 2010, and 2012. In the case there were no options for the full protection of property rights other than at the universal level, as regional instruments were helpless. The African Commission on Human and Peoples' Rights accepts claims from natural persons but not legal persons. Thus, at the regional level, only a small part of the property rights would be activated. In order to defend his shareholder rights fully, Mr. Diallo had only one option – to ask his state of nationality to advocate for him on the basis of diplomatic protection. And, obviously, the World Court was the only possible forum.

Further we elaborate on the *Diallo* case from two perspectives: procedural questions and findings on the substance.

A. Procedural questions: lack of standing

Guinea relied on diplomatic protection for the following reasons: first, to protect Mr. Diallo's rights as a shareholder and, second, to protect the property rights of two companies by substitution, i.e., by letting the shareholder's state of nationality protect Africom–Zaire and Africontainer–Zaire.

To start with, Guinea relies on article 12 of the Draft Articles on Diplomatic Protection (2006; hereinafter – ADP), according to which "to the extent that an internationally wrongful act of a State causes direct injury to the rights of shareholders as such, as distinct from those of the corporation itself, the State of nationality of any such shareholders is entitled to exercise diplomatic protection in respect of its nationals". Before answering the question of whether the right to protect direct shareholders' rights in international law exists, the ICJ refers to its former findings in the *Barcelona Traction* (1970) case. The Court states that, in determining whether a legal person is independent and distinct from their *associes* (or shareholders), international law examines the rules of the relevant domestic law (*Diallo*, 2007, para. 61). According to the domestic law of the DRC, Africom–Zaire and Africontainers–Zaire are distinct from Mr. Diallo as a shareholder (*Diallo*, 2007, para. 62). Therefore, the property of the *associe* is completely separate from that of the companies (*Diallo*, 2007, para. 63). To put it in the words of the *Barcelona Traction* case: "So long as the company is in existence the shareholder has no right to the corporate assets" (1970, para. 41). After this explanation, the Court affirms that Guinea does indeed have standing in this case regarding the alleged violation of Mr. Diallo's direct rights as *associe* (*Diallo*, 2007, para. 65). To summarise, there is a general rule that customary international law acknowledges the diplomatic protection of shareholders' direct rights, irrespective of whether this is a limited liability company and its *associes* or a public company and its shareholders (*Diallo*, 2007, para. 64). Article 12 of the ADP (2006) reflects customary international law, and this leads to the conclusion that the ICJ is a considerable forum for the protection of shareholders' rights in case of direct injury. Of course, the effectiveness and quickness of this forum is rather debatable, but in cases like Mr. Diallo's it is better late than never.

The second question surrounds the exercise of diplomatic protection with respect to Mr. Diallo "by substitution" for Africom–Zaire and Africontainers–Zaire and in defense of their rights (*Diallo*, 2007, para. 76). Guinea asserts that such a possibility was mentioned in the *Barcelona Traction* case as an exception to the general rule that a corporation's state of nationality has the right to apply diplomatic protection (*Diallo*, 2007, para. 82). This exception is based on the reason of equity *infra legem*. The relevant part of the dictum states: "It has been suggested that if in a given case it is not possible to apply the general rule that the right of diplomatic protection of a company belongs to its national State, considerations of equity might call for the possibility of protection of

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the shareholders in question by their own national State" (*Diallo*, 2007, para. 93). The ICJ in the *Barcelona Traction* case admitted that the theory has been developed that a state has the right of diplomatic protection on behalf of its shareholders when the state whose responsibility is invoked is the national state of the company (*Barcelona Traction*, 1970, para. 92). Thus, the standard pronounced in the *Barcelona Traction* case acknowledges that the Court could grant standing to the state of the shareholders, if the state of nationality of the company is violating international law. In other words, the ICJ did recognize the existence of diplomatic protection "by substitution" in 1970.

In the *Diallo* case this is exactly the situation: the two companies cannot be protected by the DRC (i.e., the state of their nationality) because it has allegedly infringed on their property rights. Guinea claims that this exceptional rule is a part of customary internal law (*Diallo*, 2007, para. 83). According to Guinea, this is confirmed by certain decisions of the European Commission on Human Rights, the Washington Convention establishing the ICSID and by its jurisprudence, and by the Iran–United States Claims Tribunal (*Diallo*, 2007, para. 83). Moreover, Guinea underlines the importance of protection by substitution because of the factual circumstances that Mr. Diallo is the sole shareholder of the companies as well as their *gerant* (or general manager of the company; *Diallo*, 2007, para. 84). Finally, Guinea refers to article 11(b) of the ADP (2006):

> A State of nationality of shareholders in a corporation shall not be entitled to exercise diplomatic protection in respect of such shareholders in the case of an injury to the corporation unless: (b) the corporation had, at the date of injury, the nationality of the State alleged to be responsible for causing the injury, and incorporation in that State was required by it as a precondition for doing business there.

The Court stresses that since the *Barcelona Traction* (1970) case there was no occasion to rule on whether, in international law, an exception to a general rule exists (*Diallo*, 2007, para. 87). The ICJ does confirm that in the *Elletronica Sicula S.p.A. (ELSI)* case (*United States of America v. Italy*, 1989) it "…allowed a claim by the United States of America on behalf of two United States corporations, in relation to alleged acts by the Italian authorities injuring the rights of the latter company" (*Diallo*, 2007, para. 87). However, that decision was based not on customary international law, but rather on bilateral treaty. Thus, the Court faces a task to examine whether Guinea's assertions are well grounded, and the claimed exception is a part of customary international law. It states that in contemporary international law rights of companies and shareholders are governed by: (a) bilateral or multilateral agreements for the protection of foreign investments; (b) Convention on the Settlement of Investment Disputes Between States and Nationals of Other States (1965; hereinafter – Washington Convention); and (c) contracts between States and foreign investors; meaning that protection by substitution is the very last resort for the protection of foreign investments and shareholders (*Diallo*, 2007, para. 88). It is, indeed, the very last resort and a rarely used one. We suggest that this is exactly why it has to be comprehensible and reliable when needed.

The Court rejects both arguments for protection by substitution presented by Guinea. First, it concludes that "…at least of the present time – an exception in customary international law allowing for protection by substitution, such as is relied on by Guinea" (*Diallo*, 2007, para. 89) does not exist. The ICJ is not satisfied with the examples of international agreements, bilateral contracts, and the decisions of international tribunals, which rely on these documents, as they are a mere mirroring of established special investment regime governing investment protection and not sufficient to prove that there has been a change in the customary rules of diplomatic protection (*Diallo*, 2007, para. 87). Second, it pronounces that article 11 (b) is a more limited rule of protection by substitution, but it is not relevant in the present case because it does not fall within the scope of the mentioned article (*Diallo*, 2007, para. 94). The Court leaves an open question as to whether this rule is of a customary nature. This doubt expressed by the Court is not a desirable outcome, as one is left to wonder: is any protection by substitution possible at all? Or is this last resort taken away as well? Regrettably, but most likely, at present the World Court is not a suitable forum to offer shareholders property rights protection by substitution even as a last resort.

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Several conclusions can be made. First, as is clear from the Court's explanation in the *Diallo* case, international investment law should exclusively deal with the protection of shareholders' property rights. Is seems to us that this is true concerning giant multinational corporations, however, this is less true in cases of the protection of a firm, a partnership, a unipersonal limited liability company, or any other similar association of persons. We would propose that a human rights protection mechanism could be more efficient in such or similar cases. Therefore, the demand for an effective present-day tool that could help to protect shareholders' property rights in the field of human rights does exist.

Second, although the Court relied on the *Barcelona Traction* (1970) case a lot, with all due respect, it seems that this was done either superficially or by purposely picking out forceful rhetoric by focusing on the desired result. While carefully reading the *Barcelona Traction* case and the separate opinions of Judges Fitzmaurice, Tanaka, and Jessup, one gets the impression that support for the need to defend shareholders' property rights by substitution was realized in 1970. Judge Fitzmaurice even claims that it is not necessary to prove this principle because the considerations of the principle "…based on domestic law analogies, are quite sufficient in themselves to justify the doctrine of right of intervention on behalf of shareholders "substituted" for a moribund or incapable company of local nationality, in order to protect its interests ant their own" (Separate Opinion of Judge Sir Gerald Fitzmaurice, 1970, para. 18). Meanwhile in the *Diallo* case, forty years later, the Court could not find any proof that such a rule exists in international law. Therefore, we cannot agree with some others (for example, Vermeer-Kunzli, 2011) who see the *Diallo* case as a mere repetition of *Barcelona Traction's* dictum. We would rather argue that the *Diallo* case even narrowed the standard pronounced in 1970. Theoretically, it was admitted that intervention by the government of the foreign shareholders is permissible when the company concerned's nationality was that of the state responsible for the damage under review. However, at that time the factual circumstances were different, and the above-mentioned principle was discussed but not applied. When these factual circumstances had arisen in the *Diallo* case, however, the Court rejected Guinea's atempt to rely on it. Thus, this represents a different treatment, and not a mere restatement.

B. Substantial questions on shareholders' rights

A share is one of the forms of property. If the owner is a natural person, then shares are a form of personal property. To own shares means to have an array of certain legal rights (shareholders rights), which are not all of equal significance. A right to property over the shares can be seen as a puzzle made of many small pieces. Each piece represents a distinct and separate legal right. All of them together constitute shareholders right to property. The question then arises: what is considered to be a violation of the shareholders right to property at the international level? What if only one piece (i.e., a right) of the puzzle is triggered? Is this a violation of this single right, or only a limitation on the general right to property? Or does it amount to a breach of a general right to property?

In theory, shareholders' rights are categorized into at least four groups: a) economic rights (i.e., the right to receive dividends or right to sell shares), b) control rights (i.e., the right to vote on fundamental matters), c) information rights (i.e., the right to at least some information about the corporation's affairs), and d) litigation rights (i.e., the right to seek enforcement of management's fiduciary duties; Velasco, 2006, p. 413). Which of these rights can be protected in the World Court? The ICJ pronounced that this would be determined according to the law of the State of the nationality of the company. This is an important principle and a logical finding, because it defines with clarity the legal framework applicable (Alvarez-Jimenez, 2008, p. 543).

The practice of the ICJ does not acknowledge all of the array of the shareholders' rights. The decision in the *Diallo* case to reject standing for protection by substitution shuts the door for protection of the indirect rights of

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the shareholders (although they are accepted by the European Court of Human Rights, for example, in *Kaplan v. United Kingdom* [1980], not to mention international investment law forums).

Guinea claims that the DRC violated the following direct rights of Mr. Diallo as a shareholder: a) the right to participate and vote in general meetings of African–Zaire and Africontainers–Zaire; b) the right to appoint *gerant*; c) the right to oversee and monitor the management of the companies; and d) the right to property of Mr. Diallo over his *parts sociales* (*Diallo*, 2010, para. 116).

Before addressing each of these rights, the ICJ announces that a strict distinction should be made between the allegedly violated rights of the two companies and Mr. Diallo as a shareholder, and says (*Diallo*, 2010, para. 115):

> The Court understands that such a distinction could appear artificial in the case of an SPRL in which the parts sociales are held in practice by a single associe. It is nonetheless well-founded juridically, and it is essential to rigorously observe it in the present case.

Having that in mind, the Court analyzes all of the direct rights and reaches the conclusion that none of them were breached. Some comments on each of these rights are addressed in turn.

The right to take part and vote in general meetings

The Court is of the opinion that the illegal detention and expulsion of Mr. Diallo from the DRC does not amount to the deprivation of his right to take part and vote in general meetings because there is no evidence that such a meeting has been organized, and, in any event, Mr. Diallo could have appointed a representative (*Diallo*, 2010, para. 126). In practice, it is hard to imagine how Mr. Diallo, being a sole shareholder and *gerant* at the same time, organizes a general meeting with himself and with the help of his representative. It is a bizarre suggestion and not a cogent argument in Mr. Diallo's case. Even hypothetically, if a person were to be one of the major shareholders, why it is to be considered that removing their right to participate in person in a general meeting and vote does not amount to a violation, if they are illegally expelled from the country by the state authorities? National law of the DRC grants a shareholder the right to choose whether they want to participate directly or appoint a representative. Unlawful acts such as expulsion narrow this right, and a shareholder is forced to appoint a representative. To conclude, the ICJ holds that the limitation of the right to take part and vote in a general meeting caused by illegal acts does not amount to the deprivation of the right to take part and vote in a general meeting. This is a perception we do not share.

The rights relating to the *gerance* (management)

This is quite a rare group of rights to be examined at the international level. Guinea claimed that Mr. Diallo allegedly has the following rights, and that they have been violated: a) a right to appoint a *gerant*; b) a right to be appointed as a *gerant*; c) a right to exercise the function of a *gerant*; and d) a right not to be removed as a *gerant* (*Diallo*, 2010, para. 127). However, Mr. Diallo had been appointed and was still a *gerant* at the time on the case. Consequently, there is no breach for rights a), b), and d). On the right to exercise the function of a *gerant*, the Court notes that "while the performance of Mr. Diallo's duties as gerant may have been rendered more difficult by his presence outside the country, Guinea has failed to demonstrate that it was impossible to carry out those duties" (*Diallo*, 2010, para. 135). The Court suggests appointing a proxy, who could act on Mr. Diallo's instructions. Again, the ICJ speaks of "difficulties" to exercise the functions of a *gerant*, which implicitly means that the right was indeed limited.

This group of rights is not well-established shareholders' rights. Rather they are combined *gerant associe* rights. According to the national law of the DRC, a *gerant* is an organ of a company; therefore, a *gerant*'s rights are the

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rights of the company, not the rights of the shareholder. This leads to the conclusion that a claim on rights relating to *gerance* cannot be accepted in any case because it was precluded by the judgement of 2007 (*Diallo*, 2010, para. 140).

Two observations are made. First, the ICJ does not see the illegal limitation of a right as a violation of that right. Second, the Court relies on the strict distinction between the rights of a shareholder as a natural person and the rights of a *gerant* as an organ of a company, although Mr. Diallo is a *gerant* as well as a sole *associe*.

The right to oversee and monitor the management

The Court expresses its uncertainty as to whether such a right exists in companies with one *associe* at all, and restates its already articulated point of view: "while it may have been the case that Mr. Diallo's detention and expulsion from the DRC rendered the business activity of the companies more difficult, they simply could not have interfered with his ability to oversee and monitor the gerance, wherever he may have been" (*Diallo*, 2010, para. 147). According to the national law of the DRC, an *associe* "shall have the powers of an auditor" (*Diallo*, 2010, para. 143); thus, it is very attentive and practical of the Court to express its doubt about the existence of the mentioned right in Mr. Diallo's case.

The right to property of Mr. Diallo over his shares in Africom–Zaire and Africontainers–Zaire

It is alleged that Mr. Diallo suffered indirect expropriation of his shares (or *parts sociales*) in the two companies because his property rights were interfered with by the DRC's unlawful conduct – namely, detention and expulsion. These violations prevented Mr. Diallo from the possibility to effectively enjoy his ownership rights. Guinea contends that, from a factual perspective, the property of the two companies merges with Mr. Diallo's (*Diallo*, 2010, para. 151). The ICJ disagrees with Guinea's proposition as rights and assets of the company must be considered separately from the rights and assets of the shareholder (*Diallo*, 2010, para. 155). The Court urges us to grasp the difference between the infringement of a right and of an interest, and recites part of the *Barcelona Traction* dictum: "Not a mere interest affected, but solely a right infringed involves responsibility, so that an act directed against and infringing only the company's rights does not involve responsibility towards the shareholders, even if their interests are effected" (*Diallo*, 2010, para. 156). Therefore, a wish of a shareholder to have valuable shares or a desire to gain profit, which is expected to become a part of dividends, cannot be considered as a legal right. From the moment a natural person acquires property rights over the shares, they gain both ownership over the shares (with an array of shareholders rights), and the risk of not recouping any of the money paid. Their shares represent part of the company's capital but are distinct from it. In the *Diallo* case, the Court looked into the national law of the DRC and determined that shareholders' rights to property meant: a) a right to receive dividends; and b) a right to receive any monies payable in the event of the company being liquidated (*Diallo*, 2010, para. 157). However, none of these rights were a part of Guinea's claim, thus, the Court was not able to find an infringement of Mr. Diallo's right to property over his shares (*Diallo*, 2010, para. 159).

Arguments presented by Guinea were based on a specific factual perspective. However, it was more than probable that the Court would reject the idea that the property of the companies merges with Mr. Diallo's; especially having in mind the decision of 2007 (*Diallo*, 2007) and the Court's willingness to follow the rhetoric of the *Barcelona Traction* case. Moreover, it looks like Guinea was trying to prove that the right to property of a natural person to own shares was violated (as a right under international law for which international responsibility had risen), while the ICJ at the same time was saying that no direct shareholder's rights were infringed (as rights under the national law of the DRC). Guinea complained that Mr. Diallo was not able to enjoy his ownership rights over the shares peacefully and effectively. Indeed, it is hard not to agree with this assertion having in mind all the difficulties and limitations caused by the unlawful detention and expulsion. However, the Court applied the

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national law of the DRC and was not comenting on possible limitations on the right to property under international law (*Diallo*, 2010, para.104).

3. Conclusions

1. The factual circumstances of the *Diallo* case are strangely compelling. Usually, a legal person suffers damage from the illegal actions of an authority and, consequently, a shareholder experience is harmed as well. In the case at hand it was the other way around. The illegal actions were directed at a natural person, Mr. Diallo, as he was unlawfully detained and expelled from the DRC. The consequence was that a unipersonal limited liability company based in the DRC, where he was a *gerant associe*, was allegedly paralyzed and unable to continue its activities. Guinea asserts that the DRC detained and expelled Mr. Diallo with the purpose of ruining the two companies. The key point is to ascertain whether a violation of Mr. Diallo's personal human rights has an impact on or constitutes a violation of his shareholders rights, rather than whether direct infringement of shareholders rights was present as a consequence of a violation of a legal person's rights. Sadly, no comments on this can be found in the decisions.

2. The World Court decided that diplomatic protection on the rule of protection "by substitution" is not an international custom. However, there are contemporary developments and practical needs which call for revision of such a decision. Law does not make human needs; human needs make law. Therefore, the Honorable Court cannot disregard numerous bilateral investment treaties and the extensive practice of international tribunals in the sphere of international investment law, as well as human rights law (on which Guinea relies in its claim), to be free from indirect expropriation.

3. According to the ruling, the unlawful limitation of certain rights of the shareholders, such as the right to take part in the general meeting and vote and the right to exercise the function of a *gerant*, does not amount to a violation. This is a perception that we do not share. It is a dangerous precedent as the mentioned rights cannot be put into practise fully.

4. Although the ICJ avoided elaborating on the right to property and its place in international law in the *Diallo* case, which was primarily about a right to property, we would dare to evaluate it as a temporary phenomenon. We suggest that the national and regional differences as well as contrasts between international human rights law and international investment law regarding the right to property and shareholders' protection can be bridged by means of a multilateral treaty.

5. Finally, the above-mentioned conclusions reached in the *Diallo* case are not a repetition of a standard discussed in the *Barcelona Traction* case. They are rather a reflection of a narrowed standard of the *Barcelona Traction* case. Therefore, it is in no way a contemporary treatment of shareholders' rights. Regrettably, at present the World Court is not an effective last resort regarding the protection of the property rights of shareholders.

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SHORT-TERM EUROPEAN UNION ALLOWANCE PRICE FORECASTING WITH ARTIFICIAL NEURAL NETWORKS*

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Abstract. The European Union Emissions Trading Scheme (EU ETS) was created to reduce greenhouse gas emissions. Companies producing carbon emissions have to manage associated cash flows by buying or selling carbon allowances. Moreover, future carbon prices could affect company decision making on decarbonization technology investments. In this paper, we forecasted short-term future carbon allowance prices using an artificial intelligence tool: a neural network. The resulting mean error was 1.7617 %. This is indicative of very good performance for a time series whose evolution is influenced by subjective economic and political decisions. The inclusion in the forecasting model of variables possibly directly related to the evolution of the price of CO_2 emission allowances did not improve prediction accuracy. Therefore, we can assume that emission allowances evolve following a random path. The neural network provided reliable predictions which agents selling or buying allowances can use to make their decisions.

Keywords: European Union Allowances; Carbon Allowance price; Neural Networks; Time Series Forecasting

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JEL Classifications: Q50, Q52, C45

1. Introduction

The European Union introduced the emissions trading system (EU ETS) in 2005 in order to reduce greenhouse gas emissions which are very much responsible for climate change. The EU ETS is a market mechanism that determines a price for CO_2 emissions and tries to create incentives to reduce emissions from industrial sectors. This system allows companies producing carbon emissions to effectively manage associated costs by buying or selling emission allowances. There is a great deal of literature concerning the theoretical foundations of greenhouse gas emission allowance trading schemes, their effects as an instrument of environmental policy, and

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the origins and early stages of the European system (see, for example, Sorrell and Skea, 1999, or Ellerman et al., 2010).

The EU ETS is a cap-and-trade system including large sources of emissions from the most pollutant industrial sectors of the European economy. Three phases (Figure 1) were defined to gradually implement the system. The first one (2005-2007) was a trial period with grandfathering allocation. The auctioning began in the second (2008-2012) and third phases (2013-2020) and has been increasing slowly and asymmetrically. Free allowance allocation is a key factor that could have curbed the effectiveness of the EU ETS in Phases I and II, thus countering its ability to generate climate-related innovations (Joltreau and Sommerfeld, 2019). In this respect, increased auctioning in Phase III could stimulate low carbon emission innovations. Thus, if the EU ETS works properly, it could motivate firms to innovate, improving financial performance by lowering costs and/or raising revenues (Marin et al., 2015). Therefore, a carbon trading system is a mechanism to reduce emissions and, additionally, may result in advantages for companies through innovation and cost reduction (known as the Porter effect, where "stimulating innovation, strict environmental regulations can actually enhance competitiveness" (Porter and Van der Linde, 1995, p. 98)). Specifically, future carbon prices could affect company decision making about decarbonization technology investments (Benz and Trück, 2006; Fuss et al., 2009; Fuss and Szolgayová, 2010, and Shahnazari et al., 2014). Likewise, Zeng and Zhu (2019) analyzed the effect of market power in the emission trading market on technology adoption. Zhang et al. (2019) pointed out that an ETS pilot project has achieved the Porter effect in China, whereas Wang et al. (2019) found empirical evidence supporting the fact that the pilot ETS project had a significant causal impact on the reduction of CO_2 intensity.

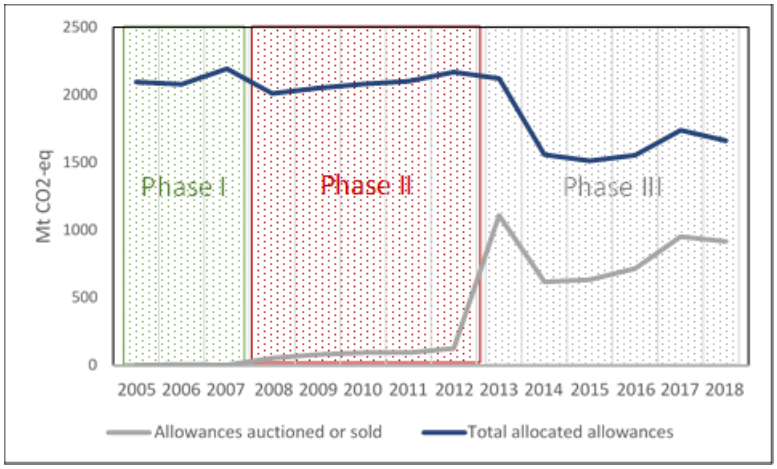

Fig. 1. Total allocated allowances (EUA). Phases I, II and III (1,000 million ton CO_2eq)
Source: European Environment Agency (EEA)

Therefore, the evolution of the price of CO_2 allowances is a highly interesting variable for many different agents. As Figure 2 shows, there have been large price fluctuations since the market came into being. There have even been periods when prices reached rock bottom, calling into question market operation and its capability to generate decarbonization incentives. The aim of this paper is to determine a model that helps to understand and predict EUA price evolution. Based on the above, we can identify at least three broad arguments that justify the interest of this research.

First, the determination of allowance (EUA) prices and price evolution has major implications for companies covered by the EU ETS, as it conditions the cost-effectiveness of their activity and is crucial for decision making

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on how to organize their system of production, promoting investment in machinery, plant or, generally, less pollutant forms of production (with changes that can even affect their choice of suppliers or raw materials).
Second, as some authors have recently pointed out (e.g., Atsalakis, 2016), corporations, and their directors and officers, are at increasing risk of incurring severe financial costs for not properly addressing EU environmental issues. Additionally, EUA can be classed as a financial asset, which raises EUAs to the portfolio decision-making level. EUA pricing is vital, not only for the companies covered by the system, but also for agents operating in financial markets.

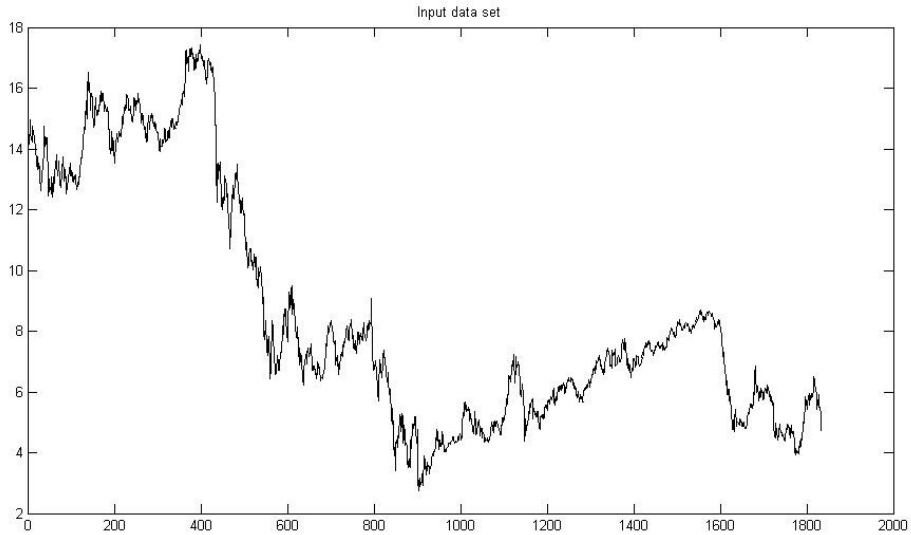

Fig. 2. EUA price (October 2009 - October 2016) in €/Ton EUA
Source: Thomson Reuters Datastream and Bloomberg Databases

Finally, as already mentioned, EUA price plays a very important role in EU environmental policy. If the market works properly, the EUA price should generate incentives driving pollutant companies to invest in less pollutant machinery and plant, use more sustainable raw materials or switch to more environmental-friendly suppliers, moving towards the economy's decarbonization targets.

Economic theory dictates that market *fundamentals* (basic factors that affect the supply and demand of goods or assets traded on the market) should characterize the evolution of emission allowance prices (EUA). As in other markets, the price of allowances is expected to be determined by the balance between supply and demand (Fezzi and Bunn, 2009). In order to analyze EU ETS operation, the academic literature has tried to identify the factors that shape the price of carbon (Table 1).

Supply and demand elements, such as the number of distributed allowances or expected emissions, can usually be expected to define the CO_2 price, but the allowance market can also be affected by macroeconomic or financial market shocks (Chevallier, 2011). Aatola et al. (2013) found that the fundamentals (German electricity and gas and coal prices) had a big impact on the daily future EUA prices from 2005 to 2010. Lutz et al. (2013) also found a strong relationship between EUA prices and fundamentals (prices of gas, coal, oil...) from 2008 to 2012. Their empirical results suggested that the price dynamics behaved nonlinearly. Oberndorfer (2009) and Moreno and Pereira (2016) analyzed and found a significant relationship between CO_2 prices and stock market returns (power sector).

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Although there has been limited research related to forecasting the price of carbon emissions, some researchers have proved that fuel prices drive EUA prices (Paolella and Taschini, 2008; Alberola et al., 2009; Keppler and Mansanet-Bataller, 2010; Hammoudeh et al., 2014; Hammoudeh et al., 2015). Convery and Redmund (2007) claimed that an increase in oil prices had the largest impact on EUA prices, and Boersen and Scholtens (2014) found that natural gas and oil prices, and the switching possibilities between gas and coal for electricity generation, are significant drivers of EUA futures prices. Feng et al. (2011) used a random walk model to examine EUA price volatility. Their empirical results showed that heterogeneous environmental features such as temperature, allowances, energy prices and special events would affect the carbon price, causing substantial fluctuations and complicating the carbon price.

Table 1. Overview of background and literature review

Article	Method	Study
Pardo *et al*. (2002)	Neural network	Electricity demand and weather in Spain
González-Romera *et al*. (2006)	Neural network	Energy demand in Spain
Mirasgedis (2006)	Neural network	Electricity demand and meteorological parameters in Greece
Convery *et al*. (2007)	Discussion paper	EUA prices (phase I)
Paolella *et al*. (2008)	GARCH model	Allowance prices and its fundamentals in Europe and in the US
Alberola *et al*. (2009)	GARCH model	EUA price and its fundamentals (phase I). Industrial sectors
Fezzi *et al*. (2009)	Co-integrated vector error-correction model	EUA market and allowance prices (phase I) in UK
Oberndorfer (2009)	GARCH model	EUA price on electricity corporations (phase I). 12 European power companies
Keppler *et al*. (2010)	Granger causality test	EUA prices (phases I and II). European carbon, electricity and gas sectors
Azadeh *et al*. (2011)	Neural network	Oil price forecasting
Chevallier (2011)	Literature review	Main econometric studies: carbon price determinants in EU ETS (phases I and II)
Feng *et al*. (2011)	Non-linear dynamic models	EUA prices (phase I)
Aatola *et al*. (2013)	Several econometric time-series models	Price determination in the EU ETS market (phases I and II)
Lutz *et al*. (2013)	Markov regime-switching model	EUA price and its fundamentals (phase II)
Boersen *et al*. (2014)	T-GARCH model	European electricity markets and EUA prices (phase II)
Hammoudeh *et al*. (2014)	Bayesian Structural VAR	Allowance prices and its fundamentals
Hammoudeh *et al*. (2015)	Nonlinear autoregressive	Allowance prices and its fundamentals
Szoplik (2015)	Neural network	Gas consumption in Poland
Keles *et al*. (2016)	Neural network	Electricity price forecasting.
Moreno *et al*. (2016)	Panel data model	EUA prices and stock market returns. Power sector
Kuo *et al*. (2018)	Neural Network	Electricity price forecasting.
Alblawi *et al*. (2019)	Neural Network	Energy consumption

The above research highlights the strong relationship between fuel and energy prices and allowance prices. Therefore, the evolution of fuel and energy prices is important enough to attract the attention of researchers. Indeed, a lot of research has focused on forecasting energy (mainly electricity) and fuel demand and prices (González-Romera *et al*., 2006; Azadeh *et al*., 2011; Szoplik, 2015; Keles *et al*., 2016; Kuo *et al*., 2018, or Alblawi *et al*., 2019).

Generally, an analysis of the results reported in the empirical literature does not reveal any clear consensus on either the characterization of EUA prices or the sign or temporal stability of the effects that variables like carbon, fuel or gas prices have on the market. Some of the more recent research suggests that standard time series analysis

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methodologies may be unsuitable for this type of price behavior models, as the relationships between the variables may behave nonlinearly.

Although there are many different forecasting tools, neural networks are powerful tools that have been widely used for time series forecasting. They have been proven to reproduce nonlinear time series behavior and provide very accurate predictions, mainly when dealing with nonlinear systems, where other tools fail. They are also a valuable forecasting tool for market agents because they can provide very reliable predictions when enough data are used for network training and network structure is properly defined.

The aim of this paper is twofold. First, we use a neural network model (a multilayer perceptron or MLP) to forecast short-term carbon allowance prices (one-day ahead) providing accurate and reliable predictions. Second, we prove that only past variable data are needed to provide these predictions. To do this, we also used data related to electricity and iron and steel prices to find out whether or not they improve forecasting accuracy when included in the forecasting model. The model aims to generate more reliable and simpler predictions than earlier models. Besides, we address a more interesting operating period than used in earlier papers, as we use price data for years when allowances were no longer freely allocated. Again, as opposed to other models conducting medium-term analyses, our predictions refer to the short term, aiming to capture EUA behavior as a financial asset.

The remainder of the paper is organized as follows. Section 2 provides a description of the methodology, that is, the forecasting tool applied (artificial neural networks), and also a description of the dataset and performance indices used. Section 3 analyzes the numerical results and provides the discussion. Finally, Section 4 sets out the conclusions.

2. Methods and materials

As already mentioned, economic theory dictates that the market *fundamentals* should characterize allowance price (EUA) evolution. From another point of view, if the allowance market works properly, allowances may evolve, in the short term, like financial assets. This two-sidedness complicates EUA price prediction, which should, besides, be based on techniques suited for analyzing nonlinear relationships between variables. Thus, we use a neural network methodology, that is, a mathematical algorithm that mimics brain structure (Bishop, 1995). A neural network can approximate any system because it can learn the system behavior from a data set (a time series describing the time evolution of allowance prices in this paper) by adaptively modifying its internal parameters (weights) during a training stage prior to use in the task for which it was designed. It is a valuable forecasting tool for market agents because it can provide very reliable predictions when enough data are used to train the network and its structure is properly defined (Rather et al., 2015; Göçken *et al*., 2016; Ilie *et al*., 2016; Moghaddam *et al*., 2016; Qiu *et al*., 2016). Consequently, neural networks will be used in this paper to forecast future values of carbon allowances.

On the other hand, the influence of magnitudes related to energy or raw materials production on EUA prices needs to be studied in order to find out whether or not they have an impact on allowance price forecasting performance. Some researchers have pointed out that, apart from using past data of a particular variable (future carbon allowance prices in this case), other data that influence this variable may be included in the forecasting model (Pardo *et* al., 2002; Mirasgedis *et al*., 2006). Therefore, carbon allowance prices and energy costs (or any other variable relating to allowance prices) may be used to feed a neural network model to forecast future carbon allowance prices. In this way, it will be possible to find out how such energy variables influence forecasting accuracy.

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The predictions provided by a neural network fed with only past data of carbon allowance prices should be compared with forecasts provided by others also fed with variables other than price. However, there is no guarantee that the inclusion of such variables in the forecasting model could improve the prediction accuracy.
Feedforward neural networks (FFNN) are the most widely used for time series forecasting. They are made up of a number of processing elements (neurons) arranged in a multilayer structure. They have the property that information flows from the input to the output of the network without feedback to neurons in the previous layers. They have been shown to be universal approximators (Hornik *et al*., 1989), that is to say, they are able to approximate any continuous function with only one hidden layer (between the input and output layers), provided that this layer contains enough neurons. One member of this class of neural networks is the multilayer perceptron (MLP), which is one of the most popular neural network models for time series forecasting due to its conceptual simplicity and adaptability to different types of forecasting problems. It is made up of an input layer, one or more hidden layers and an output layer. Nevertheless, only one hidden layer is usually defined, because, as mentioned above, this structure should be enough to approximate any system. The first layer is actually the set of network input data, and the hidden layer is the processing layer, where each neuron receives all the network inputs. The output layer is defined to provide a network response adapted to the values of the processed data rather than to provide another processing layer.

In a MLP every neuron computes the weighted sum of all its inputs plus a bias constant. The result is processed by a function that provides the neuron output:

$$y_k = \Psi\left(\sum_{j=1}^{n} w_{kj} x_j + \theta_k\right) \qquad (1)$$

where x_j represents the jth input of the kth neuron, w_{jk} stands for the strength (synaptic weight) of the connections between a neuron and all neurons in the previous layer, y_k is the neuron output and θ_k signifies a bias constant. $\Psi(\cdot)$ represents the neural activation function that provides its output. This is usually a nonlinear function, enabling the neural network to learn the nonlinear behavior of complex systems. Bounded functions, such as Gaussian, hyperbolic tangent or sigmoid functions, are usually used, as a result of which the neural output behavior is bounded as in natural neurons. A linear function is also used in some models. In MLPs, nonlinear functions are usually used in the hidden layers, whereas a linear function is used in the output layer. This is because the aim of the output layer is to provide a response that fits the values of the processed data.

A neural network's ability to approximate any dynamical system is provided by a learning process in which the network adjusts its inner parameters to define a model whose time evolution is close to that of the system that it is trying to approximate. Therefore, before a neural network is used to carry out any task, it must be trained by means of a process in which it learns the system behavior. Accordingly, available data must be split into two different sets: one to train the system and another to validate the model.

In a MLP, training data must be arranged into pairs of network inputs and desired outputs. Accordingly, every time the network is fed with an input pattern, it provides an output response that must be compared with the desired response to output an error function. This error function will be used to properly modify the neuron weights in order to minimize error. This is done by backpropagating the output error to the previous layers and adjusting the respective synaptic weights in a step-by-step process that is iteratively repeated until a predefined minimum error is reached. The algorithm performing this process is therefore known as backpropagation (Bishop, 1995). There are a number of numerical methods that can be used to implement this process. Our research applies the well-known Levenverg-Marquart algorithm. This algorithm uses a two-stage procedure to optimize neuron weights. The first stage provides a rough approximation of the optimum weights, while the second stage outputs a closer approximation of this value. It is the most widely used method to train MLPs.

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Before training a neural network, its structure, that is to say, the number of layers and the number of neurons in each layer, must be defined. As mentioned above, a network with one hidden layer suffices to approximate any dynamical system. This is, therefore, the structure that was used in this paper. The number of data to be forecasted determines the number of neurons in the output layer. As the aim of this research is to predict the one-day ahead price of CO_2 emission allowances, the output layer will have only one neuron. The number of network inputs (to the first layer of the network) must also be carefully specified in order to provide the network with enough data to accurately perform the forecasting process. Therefore, different numbers of input data should be tested to find out the best option: too many inputs will make the model unnecessarily complex, whereas too few inputs will prevent the model from capturing the system dynamics due to missing information. Note that prediction accuracy will not necessarily improve with a high number of network inputs, as was proven by the simulations carried out (results will be shown later). Indeed, they could possibly degrade forecasting accuracy because unnecessary input data, especially if there are a lot, add noise to the information that the network is to process.

It is essential to select the right number of neurons in the hidden layer on two grounds. First, a network with too few neurons will not be able to accurately reproduce the system dynamics. Second, a network with too many neurons will, at best, behave properly (at the expense of an excessive computing load), or, at worst, only learn the input patterns, in which case it will be unable to generalize the knowledge acquired to predict non-learned patterns (an effect known as overfitting). Therefore, different structures must be trained to then select the one that provides the most accurate predictions. Taking these issues into account, several network structures were tested to find out which one provided the most accurate predictions.

The time series used in this research contains 1834 daily future allowance prices of CO_2 from 14 October 2009 to 24 October 2016 (Figure 2). Therefore, this time series includes EUA data from Phase III, located at the end of the series, which will be subsequently forecasted. This is a significant contribution of this research with respect to previous studies that used data from the early auctioning period only (Feng *et al*., 2011).

A question that often arises when forecasting time series is whether or not variables other than the predicted variable can affect its time evolution, and, hence, whether their inclusion in the forecasting model could improve prediction accuracy. Therefore, this paper also looks at the influence of other variables on the time evolution of future of CO_2 allowance prices. It has already been claimed that such an influence does exist. Indeed, several authors have pointed out the possible influence of energy and fuel prices on the evolution of CO_2 allowance prices (Paolella and Taschini, 2008; Alberola *et al*., 2009; Keppler and Mansanet-Bataller, 2010; Hammoudeh *et al*., 2014; Hammoudeh *et al*., 2015; Convery and Redmond, 2007; Boersen and Scholtens, 2014). In Jaramillo and García (2019), the influence of energy and raw material prices on this variable was studied by analyzing their correlation. It was found that only electricity and iron and steel prices were correlated with the price of CO_2 allowances. In that paper, a MLP provided twenty-day ahead predictions. It was proven that the inclusion of electricity and iron and steel prices along with CO_2 prices did not significantly improve forecasting accuracy. Only when the trend or fluctuations of one of the exogenous variables were included did the forecasting error undergo a slight decrease. This paper split the time series into two different series: one describing the price trend and the other, fluctuations around that trend. They were independently forecasted so that the exogenous variable trends and fluctuations could be used as network inputs. The resulting decomposition led to a complex forecasting model, as all the time series had to be preprocessed before they were used.

In this paper, we use a simpler scheme where the time series is forecast directly. This scheme is, as shown below, just as accurate as the complex model. We test the influence of the use of exogenous variables on forecasting accuracy. Taking into account the results reported in Jaramillo and García (2019), only the electricity and iron and steel price time series are considered here. The prices of these three variables were taken from the Thomson Reuters Datastream and Bloomberg Databases.

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The forecasting accuracy is measured with four error indices which will be used as figures of merit to find out the best forecasting structure and will show how good predictions are. They are: mean absolute percentage error (MAPE), mean absolute error (MAE), mean squared error (MSE) and root mean squared error (RMSE):

$$MAPE = \frac{1}{N}\sum_{i=1}^{N}\left|\frac{A_i - F_i}{A_i}\right| \cdot 100 \quad (2)$$

$$MAE = \frac{1}{N}\sum_{i=1}^{N}\left|A_i - F_i\right| \quad (3)$$

$$MSE = \frac{1}{N}\sum_{i=1}^{N}\left(A_i - F_i\right)^2 \quad (4)$$

$$RMSE = \sqrt{\frac{1}{N}\sum_{i=1}^{N}\left(A_i - F_i\right)^2} \quad (5)$$

where A_i and F_i are the actual and forecasted data and N their number. They are widely used in literature to analyze accuracy in time series forecasting. Although they all provide information about how good predictions are and can compare different tools forecasting a specified data set, only MAPE is able to compare the accuracy of a specified tool when applied to different time series with different value ranges in their data, as this index provides a scale-independent percentage error. Its only drawback is that it cannot be used to measure errors for the time series with near-zero values in case a division by zero is performed when calculating its value.

3. Results and discussion

We selected a multilayer perceptron (MLP) with one hidden layer to carry out the forecasting process in this paper, because, as stated above, it has been proven to be a powerful and reliable forecasting tool to predict time series and one hidden layer is enough to guarantee that the network can efficiently approximate the time series behavior. Several neural structures were tested in order to find out which performed best: we considered different numbers of inputs and different numbers of neurons in the hidden layer. The training process was carried out using the first 60% of the available data, whereas the remaining 40% was used to test the network performance. Each network provided a single output: the CO_2 allowance price on the day following the prices used as network inputs.

The best performance was provided by a network with two inputs and three neurons in the hidden layer (Figure 3, Table 2). Other structures with similar numbers of inputs and neurons in the hidden layer provided slightly higher errors. Therefore, we can conclude that, although the best structure has two inputs and three hidden neurons, other neural networks with low values for these two parameters may also provide reliable predictions.

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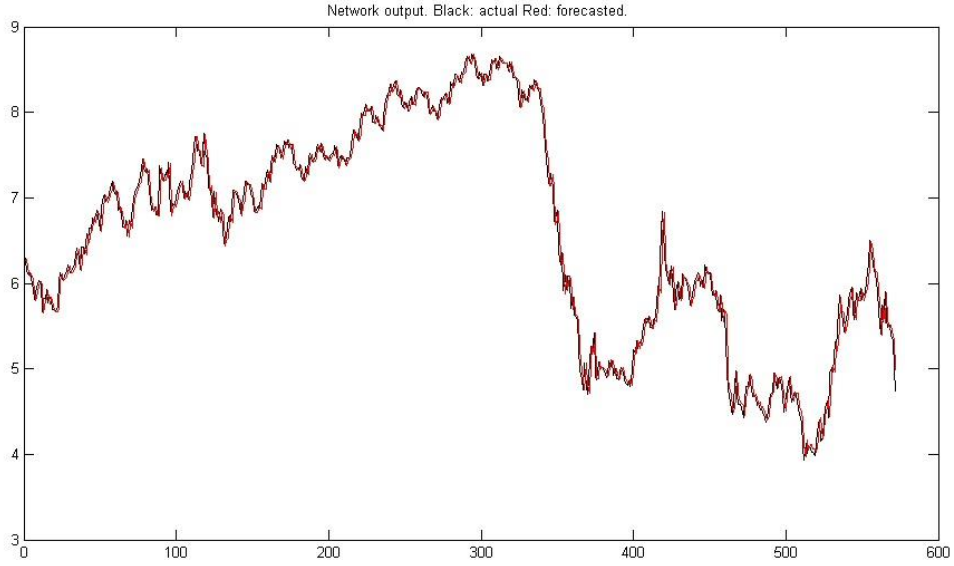

Fig.3. Network outputs with two inputs and three neurons in the hidden layer (in €/ton EUA)

Structures with higher values of both parameters provided worse results. This is hardly surprising bearing in mind that adding more elements (both inputs and neurons) to a network structure capable of learning the system behavior with a small number of neurons and inputs could actually degrade, rather than improve, network performance (as pointed out above). In fact, the extra input data and neurons may increase global error as a result of the accumulation of the individual errors that each element adds to the network response.

Table 2. Forecasting errors for different network configurations

Inputs x neurons	MAPE	MAE	MSE	RMSE
2x3	1.7617	0.1079	0.0222	0.1488
5x5	1.8477	0.1139	0.0238	0.1542
3x6	1.8110	0.1090	0.0227	0.1506
6x3	1.8329	0.1118	0.0233	0.1527

The resulting errors can be regarded as really low because the future carbon allowance price evolution is governed by both objective circumstances, for which a deterministic model can account, and subjective conditions (for instance, political decisions), which are unpredictable and could disturb the inherent behavior of the system. Therefore, the neural network can be said to be able to capture the time evolution of the future allowance prices and, therefore, provide a reliable prediction of its short-term evolution.

These results were obtained using only 1434 data. The first 400 were rejected as they were very high and could have degraded network forecasting accuracy since they were to be learned along with the lower values that appear at the end of the training interval. This could worsen the accuracy of predicting low value data (contained in the validation set). In order to check the validity of this assumption, several data sets with different numbers of data were tested. The best results were achieved with the aforementioned data set. Simulations with the whole data set slightly worsened the forecasting accuracy. On the other hand, data sets with fewer elements led to higher errors. This is hardly surprising, since, in this case, the supplied data were insufficient for the network to be able to efficiently learn system behavior.

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Table 3. Forecasting errors with exogenous variables

Exogenous variable	MAPE	MAE	MSE	RMSE
Electricity	1.7642	0.1080	0.0221	0.1486
Iron	1.7815	0.1095	0.0225	0.1502
Electricity+Iron	1.7746	0.1090	0.0224	0.1498

Different sizes of the training and validation data sets were also tested, and the best results were achieved with 60% used for training and 40% for validation. This is the division used for all the results presented here.

Having proven that a neural network is able to provide reliable predictions of future carbon allowances prices by taking into account only past values of this variable, we can test the effect of adding exogenous variables (that is to say, variables other than the predicted variable) to the forecasting model. The aim is to find out whether or not they can improve the performance of the model with only one variable. As discussed above, only electricity and iron and steel price indices are correlated with future carbon allowance prices. Therefore, only they were used along with carbon prices as network inputs. The network providing the best performance (the network with two inputs and three neurons in the hidden layer) was used to find out whether or not adding these variables improved network performance. For the sake of simplicity, the same number of future carbon allowance and exogenous variable prices were used as network inputs (two). Three options were tested: adding only one exogenous variable (two cases) and adding them both. The results are shown in Table 3, which illustrates that adding these exogenous variables does not improve forecasting accuracy. The networks including these variables provide more or less the same accuracies as the network using only past data on future allowance prices. Therefore, we can conclude that there is no point in including exogenous variables in the model because it does not lead to any improvement in the forecasting accuracy and merely complicates the network structure.

This could, initially, be surprising because it is logical to think that adding variables correlated with the predicted variable to the model should provide additional information to help the neural structure provide more accurate predictions. Nevertheless, a more detailed analysis shows that the observed results are consistent: the correlation between the above three variables means that they evolve in the same way. Therefore, we can assume that, as previously stated in Section 2, the same market decisions drive their values (Pardo *et* al., 2002, and Mirasgedis *et al*. 2006). In other words, they evolve together following the same market rules, but they do not in fact influence each other. Taking this point into account, it is clear what caused the above results.

We believe that the explanation necessarily depends on the time range of the price predictions and the ability of companies to make decisions that affect their production in the medium or long term. Jaramillo and García (2019) found that allowance prices from EU ETS auctioning phases are related to pollutant sector information in the mid-term (the time horizon that is expected to affect company production or investment decisions). Nevertheless, companies do not have the chance to adapt production to a change in fuel prices or to a new technical situation from day to day. In the short-term, then, agents are bound to play the role of financial investors. Agents will decide whether or not to sell or buy allowances exclusively bearing in mind asset profitability. In this situation, rational expectations will lead EUA prices to follow a random path. If this is the case, perhaps the best specification will be to use only close past data to forecast future data, as additional variables will not improve the model's predictive power. This result has been broadly studied in the efficient market hypothesis for the financial market (Lo and MacKinlay, 2002), but the intuitive idea was also used in consumption theory (Hall, 1978). In a simple approach, an optimal temporal distribution of allowances can be expected. Market decisions are driven by rational agents looking for an optimal temporal EUA distribution in order to maximize profits:

$$E_t\left[\pi'(EUA_{t+1})\right] = \pi'(EUA_t) \quad \rightarrow \quad E_t\left[P_{t+1}^{EUA} \middle| I_t\right] = P_t^{EUA} \tag{6}$$

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where P_t^{EUA} represents the carbon price at time t, $\pi'(.)$ is the firm's marginal profit function, and E_t is the conditional mathematical expectation at time t (I_t). This result has major policy implications. In the short term, only unknown information or unexpected policy can affect company behavior, while, in the long term, companies could change their production decisions, in which case changes in fuel prices or stock returns could affect CO_2 prices.

4. Conclusions

In this paper a type of neural network known as multilayer perceptron has been used to forecast carbon allowance prices. It was able to reproduce their nonlinear behavior, providing accurate predictions. It is very difficult, if not impossible, to define an accurate functional form for this time series. Therefore, the approximation provided by the neural network is very useful, as it gives reliable predictions of future values. It was able to successfully capture the nonlinear behavior of the time evolution of carbon allowance prices and provide a one-day ahead prediction, taking into account only past data of the actual time series. The neural model works like a black box that processes data but does not provide a mathematical model of time series behavior. Accordingly, it is not, unfortunately, able to provide a description of the variables driving the system evolution, which could facilitate its understanding and provide information that could be used by agents in the EUA market to make their decisions. Nevertheless, as it is intractable to define a deterministic mathematical model characterizing the carbon allowance price evolution, the neural network approach reported in this paper can be regarded as the best option for predicting EUA price evolution.

Unlike other empirical studies (Feng *et al*., 2011), this paper uses data from the second and third EU ETS phases, when allocation by auctioning increased. This is a significant difference from previous forecasting models, which provided predictions from Phase I driven by grandfathering allocation. Besides, we provide predictions for a long data set and prove the robustness and accuracy of the forecasting model. As compared with previous forecasting systems, our model provides a simpler analytic tool for companies to manage environmental decision related to EUA market. Its accuracy can help companies to manage the cost of carbon emissions.

It has also been proved that adding energy variables closely related to carbon allowance prices (electricity and iron and steel prices) to the forecasting model did not improve prediction accuracy, despite the fact that those variables had been found to be highly correlated with carbon allowance prices. This result is hardly surprising since the correlations indicate that these three variables evolve in the same way, but not that they influence each other. Thus, they can be said to be driven by the same market decisions that affect them all in the same way. Therefore, past carbon allowance prices alone suffice to forecast future ones.

Hence, EUA prices operate in the short term like a kind of financial asset, following a random-walk-like process. This result contradicts the findings of Feng et al. (2011), who used data from the first phase of the market, suggesting that, once allowances began to be allocated by auctioning, market operation changed. In contrast to Jaramillo and García (2019), the model proposed in this paper provides short-term forecasting prices, that is, it considers the allowances as financial assets, whose time evolution is not affected by the inclusion of additional variables apart from allowance price. Price evolution is compatible with an optimal temporal distribution of allowances. Market decisions are made by rational agents looking for an optimal temporal EUA distribution in order to achieve profit maximization. Carbon markets may work properly by taking into account only their time evolution, as, in the short run, only unknown information or unexpected policy could affect company behavior.

Furthermore, the EUA market provides new business development opportunities for financial intermediaries, since, in the short term, companies are unable to adapt production to changes in the environment (fuel prices, technical innovation…) or even to changes in allowance prices. Current, as well as predicted, EUA prices are

critical for financial market brokers and traders. Our model provides accurate and flexible estimations to improve knowledge of short-term price evolution and can, therefore, provide support for decision making.

Based on Porter effect, the environmental policies that stimulate green innovation may lead to positive innovation-related outcomes and affect company competitiveness (Lundgren and Zhou, 2017). Thus, a more stringent emission trading system has the potential to stimulate company innovation. Consequently, it is necessary to continue researching the impact of the pollutant sectors on allowance prices, building on Jaramillo and García (2019), as it is directly related to EU ETS effectiveness in the context of EU environmental policy.

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SOCIAL ENTREPRENEURSHIP IN THE BALTIC AND NORDIC COUNTRIES. WOULD THE VARIETY OF EXISTING LEGAL FORMS DO MORE FOR THE IMPACT ON SUSTAINABLE DEVELOPMENT?

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Abstract. Social enterprises have gained importance in European and national policies in recent years. There is a growing awareness that they create sustainable and inclusive growth and stimulate social innovation. Moreover, the question can be raised as to whether social entrepreneurship and, more precisely, legal forms available for social enterprises can make an impact on sustainable development. The United Nations 2030 Agenda for Sustainable Development, including its 17 Sustainable Development Goals (SDGs), is committed to eradicating poverty and achieving sustainable development worldwide by 2030. In the run-up to the adoption of the 2030 Agenda, the European Commission worked closely with the European Union (EU) Member States to ensure an ambitious global outcome. The European Commission committed to mainstreaming the SDGs into EU policies and initiatives. Amongst different tools for the implementation of SDGs, social entrepreneurship or social business can contribute to this process both nationally and internationally. The aim of this paper is to evaluate the current situation and capture best practice in the Baltic countries (Estonia, Latvia, and Lithuania) and the Nordic countries (Denmark, Finland, Iceland, Norway, and Sweden), through comparison of the legal forms available for social entrepreneurship or social business.

Keywords: social enterprise; social business; social entrepreneurship; soft law; social innovation; sustainable development goals.

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JEL Classifications: K20, L31

Additional disciplines: law, economy, business

1. Introduction

Social enterprises have gained importance in European and national policies in recent years. There is a growing awareness that they create sustainable and inclusive growth and stimulate social innovation (GECES, 2016). By focusing on people as much as profit, they foster a sense of social cohesion and promote common well-being. To

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promote the social economy, we must develop an environment that facilitates access to funding, adequate legal framework, and awareness at both the national and local levels.

The 2030 Agenda for Sustainable Development, including its 17 sustainable development goals (SDGs), was adopted by Heads of State at a special United Nations (UN) Summit in 2015. The Agenda is a commitment to eradicate poverty and achieve sustainable development worldwide by 2030.

This article analyses the possible legal forms of social enterprise and their impact on the development of social entrepreneurship, as well as contributions to achieving the SDGs in particular countries. Legal forms suitable for social enterprise – such as foundations, associations, or limited companies – have developed over time in different directions in the different contexts of European Union (EU) Member States. In addition to the range of legal forms available to social enterprises, there is significant variation with respect to each legal form. Legal frameworks bring clarity by defining the nature, mission, and activities of social enterprises. In this research, the evaluation of different legal forms may be emphasized as one of the most important parts of the legal framework, because without sufficient legal identity enterprises cannot fully use their potential. Different organizations and researchers note that granting recognition and visibility to social enterprises through the creation of framework laws or the implementation of national strategies helps policymakers to target their support more effectively. Fostering the social economy requires the development of an environment that facilitates access to funding, adequate legal framework, and awareness at both the national and local levels.

The paper does not deal with the entire legal framework of social entrepreneurship (e.g. competition law, tax law, funding issues, etc.). This paper is based on comparative analysis of the legal forms as essential part of the framework for social entrepreneurship or social business in the Baltic and Nordic countries, in order to distinguish those main features and best practices of the legal regulation in this area that could help to achieve the SDGs.

Methodologically, this research focuses on the legislation of the EU and some recent initiatives that were undertaken by the Baltic and Nordic States to promote the development of social business through the development of new or adaptation of existing legal forms. The authors utilize qualitative research methods – such as the textual analysis method that has been used to examine the content and meaning of legal texts and other documents, as well as their structure. The scope of this research covers the EU legislation regulating this area and a comparative analysis of the legal regulation of social entrepreneurship in selected countries.

Scholars mostly approach the problems of social entrepreneurship through the lens of economics. J. Austin, J. Defourny, M. Nyssens, G. Lasprogata, M. Cotten, R. Martin, S. Osberg, and A. Nicholls could be mentioned as authors whose insights are valuable when looking into the conceptual development of the definition of social entrepreneurship.

Most of the scholars mentioned above consider that the definition of social entrepreneurship differs among the EU Member States. However, they also agree that social entrepreneurship plays an important role in society today and will continue to do so in the future. It will become an important tool to tackle social problems, especially those defined in the SDGs. Therefore, the justification of the concept of social entrepreneurship and the definition of its legal framework and regulatory characteristics remain important (e.g. Austin, Stevenson and Wei-Skillern, 2006).

2. Legal status of social enterprise: the state of play

Why are different legal forms of social enterprise important in seeking to implement SDGs? It was already stressed that social entrepreneurship could provide an additional space for using entrepreneurial methods where

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social needs could be more effectively met and tackled. The legal framework for social entrepreneurship is crucial in empowering them to act as SDG facilitators.

Legal frameworks play a fundamental part in any ecosystem of social entrepreneurship. They can help to make it relatively straight-forward to start-up and grow a social enterprise, and raise the visibility of this way of doing business. On the other hand, they can also hold people back by forcing entrepreneurs to spend time and effort looking for ways around barriers imposed by the legal system (ESELA, 2015). Legal regulation and measures tackling different social problems do not always come hand in hand. Therefore, it is important to evaluate the state of play in this field by assessing whether current legal regulation on legal forms for social entrepreneurship responds to SDGs in the countries under study.

The European Commission (EC) defines a social enterprise as an operator in the social economy whose main objective is to have a social impact rather than to make a profit for its owners or shareholders, and which operates by providing goods and services for the market in an entrepreneurial and innovative fashion and uses its profits primarily to achieve social objectives. A social enterprise is managed in an open and responsible manner and involves employees, consumers, and stakeholders affected by its commercial activities (European Commission [EC], 2011). It should be noted that the EC Communication on Social Business Initiative (SBI) does not emphasize any specific form of legal entity as a social enterprise.

The Organisation for Economic Cooperation and Development (OECD) notices that by granting recognition and visibility to social enterprises through the creation of framework laws or the implementation of national strategies, policy makers target their support more effectively (OECD/EU, 2017).

Antonio Fici stresses that the law — and, in particular, organizational law — is necessary to establish, preserve, convey, and disseminate the distinct identity of an organizational model that is primarily, though not exclusively, based on a specific purpose (as is the case with social enterprises). In this instance, organizational law performs a necessary and otherwise irreplaceable identifying function (Fici, 2015).

As will be seen from the examples analysed in this article, every legal form – such as a foundation, association, or limited company – has developed in different directions. In addition to a range of legal forms available to social enterprises, there is significant variation with respect to and within each legal form. Scientists from the European Social Enterprise Law Association (ESELA; from November 2018 – "Esela – The Legal Network for Social Impact") note that even when looking solely at a single legal form in a single state, there can be a wide variation as to the way the constitution of the legal form is drafted (ESELA, 2015). For example, with respect to a variety of social purposes which might be pursued, other aspects also might diverge (which stakeholders have an influence with respect to governance and decision-making and the way that profits are distributed, etc.). ESELA (2015) also notes that it is quite common in most countries to use different legal forms by adapting them specifically for use by a social enterprise. The most common scenario is to specify a social purpose for the enterprise and limit possibilities to distribute profits and surplus assets. This is not always possible, however, and, even where possible, it is also often feasible to remove or change such adaptations.

ESELA has identified three main types of legal forms used by social enterprises, namely: non-profit organizations; co-operatives; and share companies. Practically, there can be other legal forms (e.g. partnership, mutual organization, or mutual society, etc.) which are quite widespread, but only in certain countries. All these types of companies have common feature of hybridity balancing between social mission and traditional business approaches. It must be mentioned that one of the main aspects of research in this area is the transformation of traditional corporate law, introducing new hybrid legal forms of entities. Classical corporate law conception becomes more flexible and – in the case of social business legal regulation – falls into area of social law. This

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process leads to formation of new hybrid legal forms of businesses that are regulated not only by the principles of corporate but also social law and other branches of law.

In April 2013, the EC launched a social enterprise mapping study entitled "A Map of Social Enterprises and Their Eco-Systems in Europe" (hereafter – Mapping Study), as a follow-up to its 2011 Communication on the SBI. The Study concluded that insufficient legal recognition of social businesses in many countries made it difficult for policy makers to design and target specialist support for such businesses (e.g. fiscal incentives). Another problem is the so-called "narrow" understanding of the concept of a social enterprise. In some countries, like Finland or Lithuania, dedicated laws on social enterprise focus only on work integration social enterprises (WISE) and not on the SBI concept of a social enterprise, which is a much wider concept in all cases (ESELA, 2015, pp. 11–29).

It was mentioned that the concept of a Social Enterprise is interpreted differently in various EU Member States. Different Member States make available different legal forms for social enterprises. Moreover, the legal forms most used by social enterprises diverge greatly. The study of ESELA demonstrated that some social enterprises would benefit from some other legal status, such as a non-profit tax status or a WISE (ESELA, 2015, p. 32).

Summarising the definition of social enterprise provided in the SBI, we could say that the operational definition of social enterprise consists of three dimensions: an entrepreneurial dimension; a social dimension; and a dimension related to governance structure. Provided that the pursuit of explicit social aims is prioritised through economic activities, these three dimensions can interact in different ways, and their balanced combination matters most when identifying the boundaries of the social enterprise.

Therefore, there is no single model but rather many different models of social enterprise. This includes models that favour democratic and inclusive legal forms and business approaches, and those that include more managerial legal forms and business approaches. In the latter, the managers exercise control and seek independently to solve social problems. The EC (2015, p. 61) stresses that the legal recognition of social enterprises is an essential condition for developing the sector, arguing that legal forms or statuses recognize the specificity of social enterprises and contribute to giving them a clear, precise, and easy-to-convey identity, and clearly set the boundaries between social enterprises and other concepts (e.g. Corporate Social Responsibility). Moreover, it is the case in a lot of countries that legally recognized social enterprises are eligible for different tax exemptions, often involving some sort of corporation tax relief, relief from local or municipal taxes, etc. However, the legal status and recognition of social enterprise varies from state to state, therefore it is useful to analyse different examples of legal regulation to identify the best practices.

3. Legal status of social enterprise in the Nordic and Baltic countries

Different legal forms of social enterprise can be important for seeking to implement SDGs in every country. They can provide spaces for entrepreneurial methods to meet social needs. The main legal forms that can be used by social enterprises in the Nordic and Baltic countries will be explored here to evaluate the actual conditions in the countries researched. The SDGs cover such areas as: health, education, equality, employment, environment, and others. Traditionally and historically, most of those areas are, alongside other political measures, tackled by social enterprise, especially in those countries where social entrepreneurship is more advanced.

Here we make a comparative analysis of legal forms used by social enterprises in the Nordic and Baltic countries. As a preliminary remark, all of the countries mentioned have developed some legal statuses for social enterprise. However, not all of them have a special legal framework dedicated to social enterprise. Moreover, all of the countries have chosen not to create a dedicated legal form for social enterprise, but instead to establish a legal status which can be used by different legal entities. Despite the similarity mentioned across different countries, there are different approaches to status and the definition of a social enterprise.

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Regarding the identification of legal forms, as mentioned above, in some countries, such as Finland or Lithuania, dedicated laws on social enterprises focus only on WISEs. WISEs are, in essence, companies that promote the employment of disadvantaged or disabled people. On the other hand, they have a social enterprise related legal status, which can be obtained by organizations established for social purposes and that undertake activities wider than just work integration. It is noteworthy that the concept of a WISE is understood as a legal status in some of the countries, while in others it is regarded as a legal form. Where WISEs have a dedicated legal status, theoretically, any legal form can be called an integration enterprise – it only must meet the criteria set out in the dedicated law.

In advance, we can mention that the long tradition of association, foundation, and cooperative movements has a significant impact on the development of the social enterprise sector. However, of all Nordic countries only Denmark has a law that regulates the status of social enterprises. The Law on Registered Social Enterprises (Folketinget, 2014) adopted in June 2014 defines a registration system for social enterprises. This legal status can provide social enterprises with the basis for a common identity. The registration system gives the possibility for enterprises that meet certain criteria in the field of their operation and transparency to publicly show their social aims to authorities, business partners, and other stakeholders, through the right to use the term *registered social enterprise* (RSV). To qualify for the RSV, the enterprise must have a social purpose as an important element of operating business and meet several special requirements in the field of management, as well as apply restrictions on the distribution of their profits (Startupsvar.dk, n.d.). If an enterprise does not comply with the requirements of the Law, the Danish Business Authority has the right to remove it from the register. Three main legal forms of undertaking that can obtain the status of RSV may be distinguished: association (*forening*), foundation (*fonden*), and company limited by shares (CLS; *aktieselskab).*

In all Nordic countries, an association is defined as a voluntary union of persons founded to achieve the goal set in the statutes of the organization. What is important for us is that the goals set out in the association's articles of association can have a reference to a social enterprise's social aim(s). The Danish Act on Commercial Foundations (Retsinformation, 2014) and the Danish Act on Foundations and Certain Associations (Retsinformation, 2012) regulate the legal form of a foundation. Both legal forms (foundation and association) are not exclusively dedicated to social enterprises. The other common legal form – CLS – is a form of company commonly used by for-profit organisations and regulated by the Danish Act on Public and Private Limited Companies (Retsinformation, 2019). A CLS in Denmark, as elsewhere, is typically created with commercial aims in order to distribute profits to its shareholders. However, a social enterprise has the option to use a CLS (whether public or private) as its legal form. The articles of association of a CLS can be written in a way that provides the features of a social enterprise (EC, 2014a, pp. 33–44).

The most used legal forms in Sweden that fit the social enterprise needs are economic association (*ekonomisk förening*), non-profit association (*ideell förening*), and limited company (*aktiebolag, AB*). An economic association in Sweden is understood as an association of people united to meet their common economic, social, and cultural goals and needs through a legal entity, owned and democratically controlled in cooperation. Economic associations, in most cases (including the activity of social enterprises), are created to achieve social value. The legal status of an economic association is regulated by the Law on Economic Associations (*Lagen om ekonomiska föreningar*; Riksdagen, 2018). The statutes of a non-profit association can also be used by the founders to establish the characteristics of a social enterprise and can include social purposes. This form is also not exclusively dedicated to social enterprises. Finally, a social enterprise can also (whether it is a WISE or another kind of social enterprise) use a private limited liability company as its legal form. The articles of association can have provisions regarding the characteristics of a social enterprise, and the Law on Limited Companies (*Aktiebolagslagen*) regulates this legal form. There are no restrictions on the distribution of profits unless the articles of association include such limits (Riksdagen, 2005). Additionally, we must stress that Sweden

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has a long history of not-for-profit organizations with societal aims. However, some research shows (e.g. Thomas, Persson, & Hafen, 2014) that although the level of institutionalisation of the different legal forms of social enterprises in Sweden remains low, some social innovations are quite significant.

Among others, WISEs actually have a different status compared to other social enterprises, because the Swedish Government recognizes them officially. However, in Sweden WISEs do not represent a specific legal form and are therefore managed by the same laws as other enterprises of the relevant legal form (EC, 2014d, p. 5).

In Finland, the status of social enterprises is defined in the Act on Social Enterprises, indicating that they "produce goods and services for the market and try to make a profit, the same as any other business." According to the Act, the purpose of social enterprises is to create jobs, in particular for the disabled and long-term unemployed. A social enterprise is a registered trader who is entered in the register of social enterprises (Act No. 1351/2003; Finlex, 2003). Therefore, the Act defines that social enterprises can operate only in the field of work integration as a WISE. The above-mentioned status can be applied to different forms of legal entities: limited liability company (*osakeyhtiö*, LLC); cooperative (*osuuskunta*); and foundation (*rahasto*; EC, 2014c, pp. 47–52). Moreover, social entrepreneurs get the mark of certification (the Social Enterprise Mark) if they promote well-being, limit their distribution of profits, and offer transparency of their business operations (Association for Finnish Work, 2019).

In Norway, the sector of social entrepreneurship has its origins both in the voluntary and business sectors. It is true that in the Norwegian government's reporting on its compliance to the UN 2030 Agenda for Sustainable Development, there is no reference made to corporate forms or the subject of this paper. The only reference made to domestic corporate entities is the reporting requirements that apply to them. It was stated that "Norwegian companies are expected to exercise corporate social responsibility and the Government is maintaining its engagement to further develop international reporting requirements, which are transposed into national law" (United Nations SDG Knowledge Platform, 2016).

We must notice that there is no specific legal act regulating social enterprises in Norway. Social enterprises operate by choosing one of several suitable legal forms: private limited company *(privat aksjeselskap)* that has a special branch of non-profit limited company (*ideelt aksjeselskap*), association *(forening)*, foundation *(stiftelse)*, general partnership *(ansvarlig selskap)*, limited liability partnerships *(selskap med begrenset ansvar)*, or cooperative *(samvirke)*. The most used legal form for social enterprise in Norway is the *ideelt aksjeselskap* (Lovdata.no, 2007) – a non-profit limited company (NOU, 2016, 21 Kapittel 12 Stiftelsesloven, pp. 47–48). Such companies provide in their statutes that their profits should go to a specific purpose and not, as normally, to the shareholders. The non-profit limited company is not a separate legal form, but is a special branch of a private limited company under the Limited Liability Companies Act 1997. Voluntary associations are the second largest group of social enterprises. However, data from EC country fiche (European Commission, 2019b) shows that many initiatives of social entrepreneurship choose to operate as sole proprietorships which, according to the EC definition, fall into a "grey area" of the social enterprise sector.

In Iceland, historical research showed that civil society was a great contributor to social innovation and social entrepreneurship. Today this is still the case, however there is a noticeable tendency in that some of the older initiatives have grown into partially governmental organisations. Different social initiatives in Iceland closely cooperate with the public sector, and this can be considered as a favourable environment for the implementation of the SDGs. So far, social enterprises do not have specific legal regulation in the country. According to the EC country fiche (European Commission, 2019a, pp. 9–10), social enterprises in Iceland usually take one of the three following forms: association *(félag)*, cooperative *(samvinnufélaga)*, or self-governing foundation *(sjálfstjórnandi grunnur)*.

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An association in this context would be defined as "an organised entity of a number of persons who unite or join together on a voluntary basis for some special non-profit purpose". There is no distinguished legal regulation of associations in Iceland. Cooperatives are founded based on cooperation, to seek mutual monetary benefit for cooperatives' members. Cooperatives operate in Iceland in accordance with regulation of the Co-operatives Act (Act No. 22/1991; Althingi, 1991). Moreover, some forms of cooperatives are regulated by special legislation: the Act on Housing Cooperatives (Act No. 66/2003; Althingi, 2003b) and the Act on Building Cooperatives (Act No. 153/1998; Althingi, 1998). However, not many social companies in Iceland operate as cooperatives. In addition, the elements of the operational definition of the social enterprise in Iceland can be found in the legislation on self-governing foundations (Act No. 19/1988; Althingi, 1998), legislation on cooperatives (Act No. 22/1991), legislation on Vocational Rehabilitation, and legislation on the Operation of Vocational Rehabilitation Funds (Act No. 60/2012). It was mentioned that there is no general law on associations, and yet the term *association* occurs 44 items in Icelandic legislation. According to the Act on the Registration of Enterprises (Act No. 17/2003; Althingi, 2003a), associations can be voluntarily registered in the public register of enterprises. Summarising, it can be stressed that organizations that can be considered as social enterprises are mostly registered as self-governing foundations and associations.

Some of the legal forms mentioned in the Nordic countries correlate with the implementation of SDG's more closely than others. It must be noted that not only legal forms of social enterprise determine correlation with SDG's. Other factors, such as different strategies and state policies, are also important. In Denmark, the role of social enterprise has so far been disconnected from the implementation of the SDGs. Although with the potential of the new legislation on social enterprise status, the country is on the right track. Denmark currently has an action plan as a framework for how the Danish government is working with the SDGs. Priorities are divided among growth, prosperity, environment, climate, and ensuring peaceful and safe communities. We see that social enterprises can work in all of these areas, especially in cooperation with government and local municipalities (Regeringen.dk, 2019). However, social enterprises have almost entirely been used as means of including people with some form of disadvantage or disability into the ordinary labour market – in businesses or projects with no attachment to public service delivery (Bruhn Lohmann, 2015).

The Swedish Government itself also works hard to achieve better results in the implementation of the SDGs. As the office of the Swedish Government announces, in 2020 the Government will submit a bill to the Riksdag setting out the overall direction for Sweden's work on implementing the 2030 Agenda nationally, at the EU level, and globally (Government Offices of Sweden, 2020). So far, the National Action Plan 2018-2020 is still intact (ESDN, 2020). The Government declares that with this Agenda it seeks to end poverty and hunger, realise the human rights of all, achieve gender equality and the empowerment of all women and girls, and ensure the lasting protection of the planet and its natural resources.

Regarding the correlation between the SDGs and the social enterprise sector in Finland, we think that the Finnish Social Enterprise Mark can become an instrument in helping to achieve such goals as: reduced inequalities or decent work and economic growth. Officially, Finland declares that it is one of the forerunners in the implementation of the 2030 Agenda. Finland developed a practical tool, called "Society's Commitment to Sustainability", through which the government gathers stakeholders from different fields to promote the goals of sustainable development.

In Norway at present, no specific legal form fits the concept of social enterprise on the full basis. The way Norway declares great political and public awareness about the SDGs, and its involvement in the implementation of these goals (e.g. United Nations SDG Knowledge Platform, 2016), can be potentially merged with a high level of social innovation and become a tool for the further development of the synergy between SDGs and social entrepreneurship.

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According to Iceland's voluntary national review on the implementation of the 2030 Agenda for Sustainable Development, the SDGs have been integrated into government policy on social, economic, and environmental affairs. Therefore, we can say that country's government understands the potential of different stakeholders to help in implementing SDGs. The government of Iceland declares that it seeks to identify and help marginalised groups in society, and to build partnerships with different stakeholders to address environmental issues. An inter-ministerial working group leads the work of the Icelandic government towards implementing the SDGs. Also, the government builds public–private partnerships and thinks that the SDGs will not be met without the involvement of the private sector (Government of Iceland, 2019, p. 4).

The situation differs in the Baltic countries, although some similarities can also be identified. In Estonia, there are no legal forms that are created specifically for use by social enterprises. In addition, there are no official identification tools for social enterprises. This means that, although there are no specific regulations or pieces of legislation that restrict their establishment, there is also no legal form which can help with the establishment of social enterprises. The most common legal forms for social enterprises are associations *(ühing)* and foundations *(sihtasutus)*. A social enterprise can also use a private limited company as its legal form. Under the Non-profit Associations Act (Riigiteataja, 2019a), an association can only use its profits to achieve the objectives specified in its articles of association, and it is not allowed to distribute profits among its members. The legal form of foundation – under the Foundations Act (Riigiteataja, 2018) – is also not allowed to distribute its profit to its members, and can use its income only to achieve the goals specified in its articles of association. The third legal form – regulated by the Commercial Code (Riigiteataja, 2019b) – is a limited company, that is usually used by for-profit organizations. However, a social enterprise still has the possibility to use a private limited company as its legal form. In such a case, the articles of association should provide the clear features of a social enterprise, as well as the social goals and provisions regarding limitations on the distribution of profits to shareholders (EC, 2014b, pp. 22–28).

It is worth mentioning that, despite the limited legal recognition at the level of self-regulation, the social enterprise community of Estonia enjoys quite active advocacy from the Estonian Social Enterprise Network. In addition, several soft-law tools, such as "Social Impact Measurement Tools for Young Social Entrepreneurs", are available (Know Your Impact, 2017).

We can therefore conclude that Estonia is one of two Baltic countries (alongside Lithuania) that have not developed a concrete legal framework for social entrepreneurship. However, it must be mentioned that the sector has been actively developing for several decades. Since there is no special legal structure for social enterprises in Estonia, registering as a "non-profit" is the default option for social purpose initiatives there. More specifically, most of them are registered as so-called civil society organizations: either non-profit associations (governed by their members), or foundations (governed by a board; Network of Estonian Non-profit Organizations, 2018).

Latvia is the only Baltic state that has already developed a new legal framework for social entrepreneurship. The Latvian Law on Social Business (Likumi.lv, 2017) entered into force on 1 April 2018. The Law foresees that a social enterprise is a limited liability company *(Sabiedrība ar ierobežotu atbildību)* which, in accordance with the procedures laid down in this Law, has been granted the status of a social enterprise, and which conducts an economic activity that creates a positive social impact. This can be the provision of social services, the formation of an inclusive civil society, the promotion of education, support for science, protection and preservation of the environment, animal protection, ensuring cultural diversity, or a variety of other causes. The status of a social enterprise shall be granted to a limited liability company if the objectives defined in its articles of association conform to the purpose of the Law and a meeting of its shareholders has made the decision to acquire the status of a social enterprise. The profit of a social enterprise cannot be divided between the members, but is invested to achieve the objectives defined in the articles of association. Moreover, to acquire the status of a social enterprise the enterprise shall ensure conformity with one of the following requirements. The first option requires that a

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representative of the target group must be involved in the executive body or supervisory body of the enterprise. The second option requires that a representative of the target group, or a representative of an association or foundation representing the target group, or an expert of the specific field, has to be involved in the advisory body of the enterprise, if such a body has been established.

Separately, we must mention that WISEs constitute an important type of social enterprise in Latvia, although they represent only one type and one way in which social enterprises can operate. It is not obligatory for social enterprises to employ individuals at risk of social exclusion. They may also promote the accessibility and quality of education, environmental protection, cultural diversity, social and health care, etc. (EC, 2018, p. 11).

The Lithuanian Government is acting similarly to the Latvian government in developing the Draft Law on the Social Business (E-seimas, 2019). This way, the government seeks to define the criteria and forms of social business, as well as the support measures to boost the social economy. The Draft Law was preliminarily evaluated by the committees of Parliament but has not yet attained reading in the plenary. It defines that a social enterprise is a legal entity (small or medium-sized enterprise) which works towards a social aim. The social enterprise shall gain its income from commercial activities in the market. It can distribute only 20 percent of its profits to shareholders, and so a major part of its profits should be reinvested towards its social aim.

This means that any small or medium-sized enterprise can apply for the status of social enterprise if it sets out the above-mentioned goals in its articles of association. Technically, this can be limited company (*bendrovė;* which already has the status of WISE or not), association (*asociacija*), foundation (*fondas*), or public establishment (*viešoji įstaiga*). Under the Lithuanian legislation, three of the mentioned forms (association, foundation, and public establishment) can be considered as non-profit organizations.

Despite the initiatives foreseen in the Draft Law, it still must be negotiated and adopted by Parliament. The question remains, then: what is the relationship between the existing legal regulation of WISEs and the provisions foreseen in the Draft Law? Several years ago, Lithuania already adopted the Law on Social Enterprise, regulating only the legal status of WISEs (as it is in Finland). The Law in fact institutionalized WISEs, focusing on any type of enterprise that is set up to create employment for people who are severely disadvantaged in the labour market. A financial aid system for WISEs was then set up to sustain their competitiveness in the market. Following the implementation of the Law, newly created "social enterprises" were indeed criticized for taking advantage of the financial aid system by following the letter (i.e. hiring disadvantaged individuals) but not the spirit of the Law (i.e. creating social impact; OECD/EU, 2019, p. 26).

Baltic countries (as well as Nordic) also have strategies for helping to reach the SDGs. It can be stressed that the Estonian government is already implementing measures and taking actions in the fields of 17 SDGs with the help of the non-governmental sector (Government Office of Estonia, 2016). This is a good sign; however, there is a lack of information on the potential involvement of the social entrepreneurship sector in this field.

In Latvia, newly established social enterprises can receive benefits (e.g. section 8 of the Law on Social Business defines types of benefits available to social enterprises) in the form of several fiscal awards and many other benefits. However, so far it is difficult to say how this situation correlates with SDGs. As with other countries mentioned, Latvia has a Sustainable Development Strategy that outlines the sustainable development objectives. One quite recent review showed that Latvia's sustainable development challenges are mostly visible in such areas as development of an innovative and eco-efficient economy and reduction of income and opportunity inequality (United Nations SDG Knowledge Platform, 2018a). We can state that these problems can also be tackled by, alongside governmental measures, using the potential of social enterprise, especially bearing in mind new legislation on social business entities.

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It also must be stressed that the Lithuanian Draft Law on Social Business has a close relationship to the SDGs. Although it is not stressed in the Draft Law explicitly, the authors of the Draft Law distinguished an obligatory social aim that must be sought by the social enterprise. The Draft Law defines a variety of activities, from the integration of the disadvantaged to cultural activities or the protection of the environment, that closely correlate with the SDGs.

Now is too early to assess whether some legal innovations will be introduced in the process of establishing and maintaining social business entities, or whether they will correlate with the SDGs. In the Lithuanian report to the UN, it is stressed that one of the main priorities is the development of an innovative economy and smart energy (United Nations SDG Knowledge Platform, 2018b). If the legal framework for social enterprise is implemented soon, it could significantly help with the implementation of the above-mentioned priorities by using social enterprises as partners of government and municipalities in different projects.

Concluding about variety of legal forms that can be used as some sort of social enterprise, it must be noted that all compared jurisdictions have developed legal forms suitable for social enterprises. Some of countries (like Denmark or Latvia) have legal framework that is directly dedicated to foster development of social enterprise sector as such. Other jurisdictions have developed different legal forms that can be used by the social enterprise, even if these forms are not directly developed for social entrepreneurship. In such cases, if countries only indirectly recognise social enterprise as such, their main characteristics still meet the criteria of mentioned dimensions of SBA (an entrepreneurial dimension, a social dimension, and a dimension related to governance structure).

All legal entities that act as social enterprise have their explicitly defined social mission, whether it is defined in entity's statute or is expressed in some other way. In this research, we can exclusively speak only about legal entities that meet above mentioned criteria and how they correlate with SDGs. The other part of social enterprise which fall into so called "grey" area of legal regulation, is so called *quasi* social enterprises or social enterprises acting in *quasi* markets (See: Mason, Roy, and Carey, 2019) that could be more detailed discussed in the future.

4. The framework of the EU legislation

As demonstrated in the examples analysed, the legal frameworks bring clarity by defining the nature, mission, and activities of social enterprises. By granting social enterprises recognition and visibility through the creation of framework laws or the implementation of national strategies, policy makers can target their support more effectively. The updated EC report on social enterprises and their eco-systems in Europe (OECD/EU, 2017, p. 17) illustrates the state and development of social enterprise, and pays attention to the findings of recent empirical and theoretical research on social enterprise at the international level.

The report shows that in the year 2016 social enterprises were still conceived in significantly different manners by national legislatures, policy strategies, academics, and social entrepreneurs. In addition, there is a tendency to mix two main approaches. The first approach aims to identify the key features of social enterprises. The second approach designates general entrepreneurial dynamics oriented towards social innovation and social impact, and addresses the issues of social entrepreneurship in general more than the issues of social enterprise. From a legal point of view, the EC states that legislation designed for social enterprises could succeed in boosting social enterprise replicability if discussion on new legislation was reinforced by a deep understanding of social enterprise dynamics.

As mentioned earlier, the EC defined the term *social enterprise* in its Communication on SBI, and refers not to concrete legal forms but to a variety of types of business for which the social or societal objective of the common good is the basis for the commercial activity. Those businesses provide social services and/or goods and services

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to vulnerable persons and/or businesses with a method of production of goods or services that has a social objective (EC, 2011).

From the legal perspective, the Communication is not legally binding. However, it became the basis for different stakeholders (including EU Member States) to follow this definition. Moreover, the EC itself used this definition in further documents, some of which are legally binding. For example, Directive 2014/24/EU of the European Parliament and of the Council of 26 February 2014 on Public Procurement (hereafter – Directive 2014/24/EU) is an important and legally binding document which sets public procurement rules for all Member States. Article 77 (1) of the Directive speaks about reserved contracts. Member States may provide that contracting authorities may reserve the right for organisations to participate in procedures for the award of public contracts exclusively for those regarding health, social, and cultural services. Whilst it is not stressed explicitly that these measures are aimed to better the achievement of SDGs, evaluating systematically this can be considered as one additional tool for implementation of SDGs EU-wide. An organisation referred to in paragraph 1 shall fulfil all of the following conditions: its objective is the pursuit of a public service mission; profits are reinvested with a view to achieving the organisation's objective; and the structures of management or ownership of the organisation performing the contract are based on employee ownership or participatory principles, or require the active participation of employees, users, or stakeholders. There are several other criteria defined in Article 77, but the most important ones are the three above-mentioned features of the organization, which match the criteria of social enterprise as defined in the Communication.

Moreover, Article 20 of Directive 2014/24/EU also speaks about reserved contracts. According to it, Member States may reserve the right to participate in public procurement procedures for sheltered workshops and economic operators whose main aim is the social and professional integration of disabled or disadvantaged persons, or may provide for such contracts to be performed in the context of sheltered employment programmes, provided that at least 30 % of the employees of those workshops, economic operators, or programmes are disabled or disadvantaged workers. The comparison of the legislation in several Member States demonstrates that this Article directly refers to WISEs, which in most countries are the main forms of social enterprise.

Another legally binding document is Regulation (EU) No. 1296/2013 of the European Parliament and of the Council of 11 December 2013 on an EU Programme for Employment and Social Innovation. Article 2 of the Regulation defines social enterprise in the same way as the Communication does. Although the definition of the status of social enterprise is not the aim of this Regulation per se (it regulates financial support measures for different activities, including support for social enterprises), the recognition of social enterprise status for practical purposes is definitely an important aspect when strengthening its legal status.

These examples show that legally non-binding definition becomes legally binding and affects not only the supranational legislation of the EU but also, for the purposes of implementation of the above-mentioned documents, the legislation of the Member States. As already mentioned, measures of the EU are not explicitly aimed to better achievement of the SDGs, however EU goals and actions on the implementation of SDGs have, among others, a clear social dimension. The European Economic and Social Committee recently stressed this (EESC, 2019), also emphasizing that this initiative can be "beneficial to civil society as a whole, including businesses (large and small), workers, consumers, farmers, NGOs, and citizens of all ages". Therefore, there is further potential for social entrepreneurship in the global field of the implementation of SDGs.

Conclusions

The comparative research of the legal forms available for social enterprises in particular countries showed that Nordic and Baltic countries, despite significantly different experiences and historical backgrounds, have a lot in common when developing a legal environment for social entrepreneurship. All discussed countries pay some

attention to development or adaptation of legal forms that can be used by social enterprises. The pattern of non-institutionalization of the separate legal forms of social enterprise is common in all of the states discussed. Only several exceptions (e.g. Danish and Latvian legislation on the status of social enterprises) are relevant, however they are not dedicated tools for the implementation of the SDGs. Although through the research a clear correlation of legal forms with successful implementation of the SDGs did not emerge, indirectly, sufficient spectre of legal forms undoubtedly contributes to development of social entrepreneurship sector.

The examples discussed allow us to argue that every country analysed has the potential for social entrepreneurship that can be exploited in implementing the SDGs. As has been seen, all of the countries researched have some legal framework for the implementation of the SDGs and spectre of legal forms that can be used by social enterprise. Moreover, it is obvious that some of the countries have longer traditions of social entrepreneurship (particularly, Nordic countries). Some of them already use the potential of social entrepreneurship in different schemes of public–private partnership (e.g. Iceland). Different forms of public–private partnership and greater trust in the potential of social enterprises could lead to more successful implementation of the SDGs. However, this fact does not necessarily correlate with the legal framework in every country discussed, because the legal status of social enterprise varies from country to country. Therefore, constant attention to the development of social entrepreneurship must be paid at a political level.

Despite some similarities in the countries analysed, there are different approaches to the legal status and definition of social enterprise. Not all countries have a special legal form dedicated exclusively to social enterprise. Moreover, all of the countries researched have chosen not to create a dedicated legal form for social enterprise, but instead to establish legal status, which different legal entities can use. From the examples analysed, it became evident that legal and, in some cases, institutional frameworks bring clarity by defining the nature, mission, and activities of social enterprises. In addition, where concrete legal forms are available, this creates a favourable environment for different cooperation schemes (e.g. cooperation with government and local municipalities in Denmark) that can add value to the implementation of the SDGs.

EU goals and actions on implementation of SDGs have among others a clear social dimension. However, the legal framework does not stress explicitly that the EU's initiatives in the field of social entrepreneurship are aimed at better achievement of the SDGs. Nevertheless, evaluating systematically, the EU social enterprise policy can be considered to be one additional tool for the implementation of the SDGs EU-wide. EU legislation affects the legislation of the Member States, and legally non-binding definitions become legally binding (specifically when speaking about operational definition of social enterprise). However, discussion on new legislation can also be exploited more effectively in order to achieve SDGs.

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PERCEIVED INFLUENCE OF CORPORATE SOCIAL RESPONSIBILITY ON CONSUMER LOYALTY: THE ROLE OF ETHICAL IDEOLOGY

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Abstract. This study explored how different types of perceived corporate social responsibility serve to affect customer loyalty, and how consumer ethical ideologies affect perceived corporate social responsibility. The empirical research analysis reveals that respondents are more often characterised by an ethical ideology of idealism, and that they are most aware of any corporate social responsibility (CSR) that is consumer-orientated. In addition, it has been found that the perceived CSR, which focuses on the public, has a significantly lower impact, while the impact of the perceived employee-orientated CSR is statistically significant only in respect to repeat purchases.

Keywords: CSR; ethical ideologies; consumer loyalty

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1. Introduction

Research shows that consumers are characterised by different ethical ideologies that influence their decision-making. The corresponding values between consumer and company have been widely discussed in academic literature, and ambiguous results show that the relevancy of such values leads to a more desirable consumer attitude and behaviour. In theory, the argumentation of the effect of value-matching in terms of desirable consumer behaviour could be extrapolated to the level of compatibility between consumer and corporate values. Nevertheless, it should be noted that the effect of matching consumer and corporate values in terms of consumer loyalty has not been extensively investigated by the ethical ideologies of the consumer (representing certain ethically-based values) and those values of the company that are disclosed, including the company's activities through corporate social responsibility. The identified knowledge gap raises the need for further research.

Morality and ethics have a long history of discourse in a variety of contexts, including philosophy, religion and, more recently, business (Kolodinsky, Madden, Zisk and Henkel, 2010). Researchers (Ellen, Webb and Mohr,

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2006; Valentine & Bateman, 2011; Leonidou, Leonidou and Kvasova, 2013); Palihawadana, Oghazi and Liu, 2016; Arli & Leo, 2017) are increasingly focusing on the analysis of indirect connotations of perceived CSR and consumer loyalty, but the factors that are associated with consumer characteristics are rarely taken into account. In scientific marketing literature, the ethical ideologies of consumers are mainly analysed by taking into account the theoretical basis offered by Forsyth (1980), in which consumer behaviour is analysed from the point of view of idealism (in other words it is in keeping with moral values while making ethical decisions) and relativism (when moral actions are taken with a dependence upon the nature of the situation and the people involved). Valentine & Bateman (2011) analysed the influence of idealism, relativism, and consumer-perceived moral intensity on consumer decisions in relation to ethical issues and ethical-based intentions within a social context. Arli and Pekerti (2016) explored how the ethical ideologies of idealism and relativism, religion and belonging to a certain generation of consumers serves to determine decisions that are driven by the consumer ethic. Later, Arli and Leo (2017) conducted a study which evaluated the ethical decision-making phenomenon of individuals that can be characterised by the aforementioned ethical ideologies as affected by the factors of guilt and self-control. Palihawadana, Oghazi and Liu (2016) explored how CSR as perceived by consumers affects the evaluation of goods that are offered by companies in developing Vietnam, with the ethical ideology (idealism and egoism) of consumers being included in the study.

The results that were obtained by the aforementioned authors have revealed a strong positive relation between idealism and consumer concerns about the unethical nature of marketing activities. From this it was possible to identify a direct negative relation between corporate unethical marketing activities and consumer confidence in a company. Research shows that the loss of consumer confidence has a direct impact on their behavioural changes in terms of repeated purchases, consumer recommendations, and loyalty. In addition, Leonidou, Leonidou and Kvasova (2013), when basing this on the results of the study, also identified the relation between idealism and egoism, and concluded that individuals with a high level of idealism also change the attitude of those who lean towards egoism.

It is noted that the relation between consumer moral ideologies and company values which is indirectly affected through the activities of companies, such as CSR, and its impact on consumer loyalty have been investigated only indirectly and in a highly fragmented fashion. It has been noticed that the ethical attitudes of consumer idealism and egoism have an impact not only on the perceived CSR, but that they also are reflected in consumer behaviour when making decisions in terms of quality (specifically the quality and ethical value ratio), determining the level of trust in the company and behaviour towards it when that company applies unethical marketing solutions.
The present study addresses this research gap by exploring how different types of perceived corporate social responsibility serve to affect customer loyalty and how consumer ethical ideologies serves to affect perceived CSR.

2. Literature review and hypotheses

2.1 The relationship between the ethical ideologies of consumers and perceived CSR

The authors of this study take the view that, when making consumer-related decisions and choosing companies to whom they will express their loyalty, consumers base their decisions on the company's perceived corporate social responsibility, with such a choice being influenced by the ethical ideologies of idealism and egoism that are specific to the consumer. Many authors agree that the ethical ideologies of consumers (idealism and egoism) are an important factor which serves to influence the perception by consumers of CSR and their decision-making (Al-Khatib, Stanton & Rawwas, 2005; Ellen, Mohr, and Webb, 2006; Leonidou, Leonidou and Kvasova, 2013). It has been observed that the ideologies of idealism and egoism have been considered in scientific sources as being highly fragmented. The choice of the aforementioned ideologies is also based on research that has been carried out by Palihawadana, Oghazi and Liu (2016), which analysed the relation between the ethical ideologies of

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idealism and egoism on the one hand and CSR on the other, and managed to identify their different levels of impact on the consumer perception of CSR. Therefore it is important to evaluate the impact of ethical ideologies by incorporating the ethical ideologies of idealism and egoism into the conceptual model of research.

Research shows that individuals who can be characterised by the ideology of idealism find it important to discover solutions that will have positive effects and can benefit all parties. Consumers who confess this ideology follow moral rules when making decisions and seek to solve ethical issues that are likely to lead to a positive attitude towards CSR due to matching moral values. The positive influence of idealism on consumer perception of CSR was empirically determined by Forsyth (1980), Kolodinsky, Madden, Zisk and Henkel (2010), Leonidou, Leonidou and Kvasova (2013) and Palihawadana, Oghazi and Liu (2016). The authors noted that the positive relationships were determined by the ethical ideology of idealism and the inherently common nature of CSR, as reflected in a respect for ethical and moral values. Therefore, we hypothesise that:
H1: Idealism has a positive impact on CSR as perceived by consumers

2.2 The ethical ideology of egoism and CSR as perceived by consumers

Research shows that consumers who can be characterised by the ethical ideology of egoism tend to accept only those corporate socially responsible initiatives that, in essence, strictly meet their personal needs, do not contradict their interests, and deliver the most personal benefit. The results of empirical research by Palihawadana, Oghazi and Liu (2016) revealed that users who are prone to egoism support only those CSR activities in which they see direct personal gain. Russell and Russell (2010), however, have found that consumers who can be characterised by egoism are more focused on locally-developed CSR initiatives that directly affect their daily lives. Therefore we hypothesise that:
H2: Egoism has a negative impact on CSR as perceived by consumers

2.3 The impact of the perceived CSR on consumer loyalty

The analysis of research on the perceived impact of CSR in terms of consumer loyalty has revealed that even though the aforementioned relationship has widely been analysed, the research results are inconsistent and can be characterised as providing different results due to different perceptions of CSR and the conceptualisation of the consumer loyalty phenomena. In work in which the relationship was assessed between perceived CSR and consumer loyalty, the results have been identified which indicate that CSR has a positive impact on brand recognition, company reputation, loyalty, and confidence in the company. However, it is assumed that different forms of CSR have a positive impact on consumer loyalty and areas in which it is expressed - the attitude towards the company, the verbal recommendation, and the intention to purchase repeatedly. In aiming to identify which dimension of perceived CSR has the greatest level of impact in terms of consumer loyalty, the classification will be applied of consumer-perceived CSR that is being offered by Marquina & Vasquez (2013). This involves corporate social responsibility which is orientated towards the public, consumers, and employees.

Maignan & Ferrell (2001) found that consumers are attentive to the physical and tangible aspects of corporate social responsibility, which are usually associated with the levels of quality of products or services, innovation, and the compliance of standards. When taking this into account, a significant influence by perceived CSR through perceived quality was identified by Wan, Poon and Yu (2016). It was found that CSR indirectly influences the purchasing intentions of and recommendations by consumers. The influence of CSR through perceived quality of service upon consumer loyalty, however, was also evaluated by Mandhachitara and Poolthong (2011), whose research showed that there is a positive impact in terms of the perceived CSR in relation to consumer loyalty and repeat purchases. It has been noticed that research shows ambiguous results in terms of any positive relation between perceived quality and consumer loyalty. When taking into account the aforementioned relation, it is

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assumed that perceived CSR which is orientated towards consumers should also be positively linked to consumer loyalty. Therefore we hypothesise that:

H3: perceived consumer-orientated CSR has a positive impact on consumer loyalty;
H3a: perceived consumer-orientated CSR has a positive impact on consumer attitude;
H3b: perceived consumer-orientated CSR has a positive impact on verbal recommendations;
H3c: perceived consumer-orientated CSR has a positive impact on repeat purchases.

2.4 The impact of perceived employee-orientated CSR on consumer loyalty

The impact of this construct in terms of consumer loyalty is based on the fact that, within the context of socially responsible initiatives, companies indirectly communicate their values which their own employees cherish and pass on to consumers. According to Peloza & Shang (2011), the publicised CSR initiatives have the potential to establish a stronger relationship with a stakeholder, in this case this being the consumer, and thereby form a positive image for the company. For this reason, consumer engagement and decision-making based on ethical values have a positive impact upon their behaviour and expressed loyalty. Marquina & Vasquez (2013) discussed the impact that employee-orientated CSR has on consumer loyalty, basing their thoughts on research, revealing that while developing corporate social responsibility and company-employee relationship, that company also has a positive impact upon consumer behaviour at the same time. Therefore we hypothesise that:
H4: perceived employee-orientated CSR has a positive impact on consumer loyalty;
H4a: perceived employee-orientated CSR has a positive impact on consumer attitude;
H4b: perceived employee -orientated CSR has a positive impact on verbal recommendations;
H4c: perceived employee -orientated CSR has a positive impact on repeat purchases.

2.5. The impact of perceived society-orientated CSR on consumer loyalty

Research shows that society-orientated CSR and its forms such as support, investment in infrastructure, or support for social and cultural events, leads to the creation of positive associations towards the company and its product which serve to influence consumer loyalty. Henderson (2007) observes that the dissemination of information regarding socially-responsible activities which are carried out by companies has a significant level of impact on the positive attitude of consumers towards the company. Abdeen, Rajah and Gaur (2016) have also identified CSR initiatives as having a positive impact on consumer intentions to support a company, to promote purchasing behaviour, and to create a sense of trust and loyalty towards the company. Based on the aforementioned insights, it can be assumed that the more favourably consumers view different forms of a company's society-orientated social responsibility, the more loyal they are to that company. Therefore we hypothesise that:
H5: perceived society-orientated CSR has a positive impact on consumer loyalty;
H5a: perceived society -orientated CSR has a positive impact on consumer loyalty;
H5b: perceived society -orientated CSR has a positive impact on verbal recommendations;
H5c: perceived society -orientated CSR has a positive impact on repeat purchases.

All hypotheses that have been formed in this section, and which serve to outline the relation between consumer ethical ideologies, perceived CSR, and consumer loyalty, are visually depicted in a conceptual context, a model of ethical ideologies, and the impact that the perceived CSR has on consumer loyalty (Figure 1).

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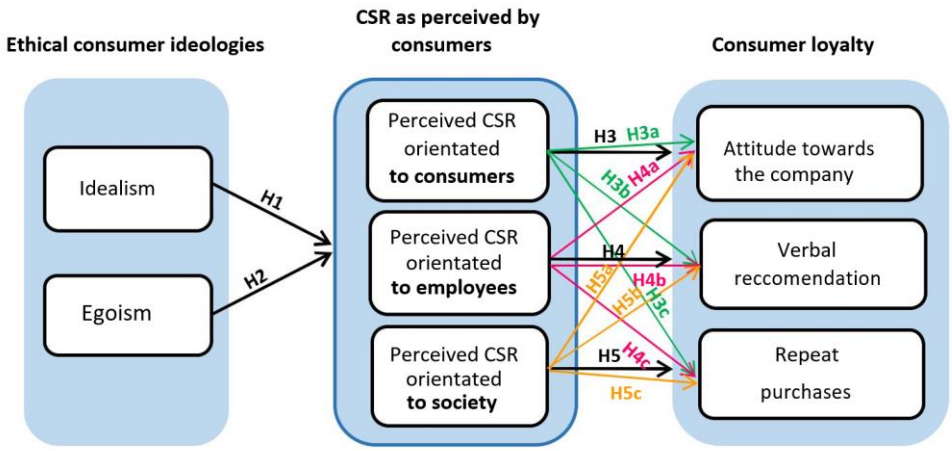

Fig 1. The conceptual model of the perceived CSR influence on consumer loyalty within the context of consumer ethical ideologies

3. Research methodology

In order to explore how different types of perceived corporate social responsibility affect customer loyalty and how consumer ethical ideology affects perceived CSR, we carried out a survey (between July 2019 and September 2019). The quantitative exploratory research design was adopted to test the conceptualized relations between ethical consumer ideologies, perceived CSR and consumer loyalty. Questionnaires were distributed to Lithuanian users of mobile communications, using a convenience sampling technique. The results were collected from Lithuanian users of mobile communications services. A total of 391 valid survey responses were utilised for the analysis. We addressed the non-response bias through the t-test. There was no significant difference in scores for early and late responses and no significant differences between respondents and non-respondents with regard to age or gender. We carried out two different tests in order to examine a common method bias. In order to be able to measure the constructs we used previously established and validated scales. The five-point Likert-type scales by Pérez & Bosque (2015) were used to capture the CSR orientation towards consumers, employees, and society. The five-point Likert-type scales by Leonidou, Leonidou and Kvasova (2013) were adopted to measure the ethical ideology of idealism and egoism. The five-point Likert-type scales by Moreira & Moutinho (2016) and Fatma, Khan and Rahman (2016) were adopted to measure the positive attitude towards the company. The five-point Likert-type scales by Pérez & Bosque (2015) and Fatma, Khan and Rahman (2016) were used to capture positive verbal recommendation and repeat-purchases.

4. Data analysis and results

The analysis of the results from the factor analysis showed that, in all cases, KMO values are prevalent that are higher than 0.4 and with Bartlett's sphericity criterion the figures are no higher than 0.01. As a result, it has been concluded that the analysis that has been carried out is effective and useful, and that the constructs of the research model that have been developed and the variables belonging to them are suitable for further analysis.

The descriptive analysis of variables in terms of consumer ethical ideologies that was carried out, plus the perceived CSR and consumer loyalty constructs, revealed that respondents to the survey can often be characterised by an ethical ideology of idealism and, when taking into account the average values for answers to the questions, it was found that respondents are most aware of CSR where it is consumer-orientated. The Kruskal-Wallis tests that have been carried out, based on grouping variables of gender, age, and mobile operator, revealed statistically significant differences between the construct variables that were included in the study. These are

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likely to explain standard deviations in respondent responses. Whilst analysing the results of the tests that were carried out, it was established that women can be characterised by their possessing a more ethical ideology of idealism more often than do men. They also express a higher level of loyalty and a better understanding of socially responsible corporate initiatives.

A correlation analysis was carried out in order to identify the relationship between the ethical ideologies of consumers, their perceived CSR, and consumer loyalty. Summary results for multiple regression analysis which was used to measure the impact of various dimensions of consumer-perceived CSR on consumer loyalty and its forms, such as attitude towards the company, positive verbal recommendation, and repeat purchases, which were represented by all statistically significant correlations, are presented in the table below (Table 1).

Table 1. The results of testing the hypotheses

Independent variables	Dependent variables	Hypothesis	Has the hypothesis been confirmed?	R^2	Beta
Idealism	Perceived CSR	H1	Yes	0.140	0.272**
Egoism	Perceived CSR	H2	Yes	0.209	-0.106*
Perceived consumer-orientated CSR	Consumer loyalty	H3	Yes	0.546	0.867**
	Attitude	H3a	Yes	0.564	0.643**
	Verbal recommendation	H3b	Yes	0.692	0.563**
	Repeat purchases	H3c	Yes	0.377	0.352**
Perceived employee-orientated CSR	Consumer loyalty	H4	No	0.546	0.062
	Attitude	H4a	No	0.564	0.044
	Verbal recommendation	H4b	No	0.692	0.027
	Repeat purchases	H4c	Yes	0.377	0.098*
Perceived society-orientated CSR	Consumer loyalty	H5	Yes	0.546	0.157**
	Attitude	H5a	Yes	0.564	0.092**
	Verbal recommendation	H5b	Yes	0.692	0.141*
	Repeat purchases	H5c	Yes	0.377	0.200**

*N=391. Level of significance: **p < 0.001; *p < 0.05; with control variables being gender, age, and phone service provider.*

5. Conclusions and further research directions

Having analysed research results regarding the influence of the perceived social responsibility of Lithuanian telecommunications companies (mobile operators) in terms of the loyalty of consumers within the context of ethical ideologies, a model can be provided which is based upon empirical research. All hypotheses in the applied conceptual model have been confirmed and only three of them had a statistically insignificant factor (perceived employee-orientated CSR and its statistically insignificant impact on consumer loyalty, attitude, and verbal recommendation). At that time, the influence on employee-orientated CSR was determined only after repeat purchase. The results of research that was carried out by Jensen, Annan-Diab and Seppala (2018) in a very similar context - the telecommunications industry in Europe - did not reveal any clear impact of perceived employee-orientated CSR on repeat purchases. The research that was conducted by Pérez and Bosque (2015) also showed that the impact of employee-orientated CSR is not always identifiable and can be determined by other factors which may be influencing this link.

A summary of hypotheses is provided in Table 2 which shows that these hypotheses were formed within the conceptual model of the study and their established relationships in the empirical model. The table also shows that perceived society-orientated CSR can be characterised by a relatively weak relationship. According to Forehand & Grier (2003), the aforementioned weakness of the connection could be caused by the increasing scepticism of consumers regarding socially responsible initiatives. In addition, it has been noticed that consumers are not

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informed about corporate socially responsible activities in society. Lauritsen & Perks (2015) propose an assumption that consumers do not actively seek information regarding CSR on their own, and instead tend to understand CSR through inclusive communication and interactivity. They also suggest that in order to generate benefits from CSR, it is first and foremost necessary to communicate it well to the target audience.

Table 2. A summary of the hypotheses and the relationships in the empirical model

Hypotheses		R^2	*p*
H1	Idealism has a positive impact on CSR as perceived by consumers	0.140	0.272**
H2	Egoism has a negative impact on CSR as perceived by consumers	0.209	-0.106*
H3	Perceived consumer-orientated CSR has a positive impact on consumer loyalty	0.546	0.867**
H3a	Perceived consumer-orientated CSR has a positive impact on attitude towards a company	0.564	0.643**
H3b	Perceived consumer-orientated CSR has a positive impact on verbal recommendation	0.692	0.563**
H3c	Perceived consumer-orientated CSR has a positive impact on repeat purchases	0.377	0.352**
H4	Perceived employee-orientated CSR has a positive impact on consumer loyalty	0.546	0.062
H4a	Perceived employee -orientated CSR has a positive impact on attitudes towards a company	0.564	0.044
H4b	Perceived employee -orientated CSR has a positive impact on verbal recommendation	0.692	0.027
H4c	Perceived employee -orientated CSR has a positive impact on repeat purchases	0.377	0.098*
H5	Perceived society-orientated CSR has a positive impact on consumer loyalty	0.546	0.157**
H5a	Perceived society -orientated CSR has a positive impact on attitudes towards a company	0.564	0.092**
H5b	Perceived society -orientated CSR has a positive impact on verbal recommendation	0.692	0.141*
H5c	Perceived society -orientated CSR has a positive impact on repeat purchases	0.377	0.200**

*N=391. Level of significance: **p < 0.001, *p < 0.05; control variables include gender, age, and phone service provider.*

Based on the recommendations proposed in the study that was carried out by Lii & Lee (2012), it is suggested that personalised CSR initiatives be carried out that reflect consumer values and lifestyle and thereby enhance the effectiveness of CSR. The author states that, by applying this method, CSR makes it possible to reach a larger part of the target audience and the possibilities in terms of being able achieve a well-defined group of users by exercising CSR initiatives are realistic, although it is necessary to deliberately implement corporate social responsibility.

The research has several limitations. Firstly, a cross-sectional research design, so it is difficult to claim cause-effect inferences. Also findings may not be generalizable to other populations (respondents – users of mobile communications services)**.** The nonprobability sampling has been used as it was not be possible to acquire the sampling frame and ensure that all members of the population had a reasonable opportunity to be invited to participate in the study.

Further directions of research could be based on focusing upon specific consumer characteristics, especially where they are related to consumer values or character features, seeking new insights into the affected perceived

CSR. In this study, statistically significant differences in perceived CSR and consumer loyalty were also identified, basing them on the aspects of gender and age. According to Leonidou, Leonidou and Kvasova (2013), younger individuals can be characterised as having a lower level when it comes to promoting their ethical values, while older, educated individuals have a higher level of ethics and idealism. Therefore it would be useful to further analyse the perceived CSR in narrower age groups. The empirical study also identified corporate social responsibility as mostly being perceived by female employees, so it would make sense to pay more attention to the causes of this phenomenon and to analyse the factors that ultimately determine the CSR that is perceived by men. As another direction for continuance of this study, the application of this scientific model in other areas of corporate activity could also be possible, provided that those companies that are analysed meet the only criterion - that of engaging in social responsibility.

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IMPROVEMENT OF APPROACHES TO THE STRATEGIC DEVELOPMENT MANAGEMENT OF ENTERPRISE

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Abstract. Strategic development management currently does not fully meet the needs of the enterprise. One of the reasons is that strategic development methods are not ideal and not developed from the standpoint of their practical application. As a consequence, the results of their application are unsatisfactory. The purpose of this article is to improve approaches to the strategic development management of the enterprise. The authors examine in detail the concept of strategic development of the enterprise. In the course of the study, a scheme of the strategy formation process was developed, which allows establishing the relationship of its main structural elements. It is revealed that the organization of service activities of enterprises is still focused on service, rather than the product itself. It is established that the lack of innovation, outdated range and the inability of enterprises to respond quickly to changes in the market environment are the main reasons for the fall in demand for products.

Keywords: management; strategic development; enterprise, product mix; products; demand

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1. Introduction

Each enterprise, when starting strategic management, hopes to achieve its goals. Most medium and large companies are trying to widely use strategic management methods in their activities. This category of enterprises, as a rule, is endowed with a solid set of appropriate funds (Lavrova, 2016; Melikhov & Ilyukhina, 2017; Pisaruk. 2019). However, as practice shows, not all undertakings end successfully. This problem is associated with the fact that enterprises, having strategic achievements, do not always give them a definite and conscious look. This situation is typical for many Russian enterprises.

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In general, the current state of strategic management does not fully meet the needs of the enterprise. One reason is that the methods of strategic management are not ideal and not developed from the standpoint of their practical application. As a consequence, the results of their application are unsatisfactory. Another reason is the inconsistency of the methods and tools used in the development of the strategic management that in turn is due to a lack of full understanding of the importance of relationships in the area under consideration. In this aspect, it is possible to consider in more detail the intrinsic content and importance of each of these elements.

In modern management practice, a specific role is given to the enterprise strategy development. The classical representation of the strategic management process by O.B. Dronova (2015) includes the consideration of it as a whole consisting of several elements, interrelated and interdependent with each other.

Shinkarenko V.G., and O.P. Levchenko (2015) define it as follows: "The strategy of the enterprise is one of the key components of strategic management. The choice of strategy and its implementation constitute the main part of strategic management.". At the same time, strategic management is understood as a management, which is based on human potential being the enterprise's basis, as well as focuses production activities on the needs of consumers, carries out flexible regulation, and timely changes in the enterprise, responding to the challenge from the environment, and allowing to achieve competitive advantages, which together allows the enterprise to survive and achieve its goal in the long term (Ponedelchuk, 2017).

Also, strategic management can be considered as a dynamic set of five interrelated management processes. These processes logically follow one from the other. However, there is stable feedback and, accordingly, the reverse effect of each process on the others and on their totality. Thus, before proceeding to the formation of an enterprise's strategy in the market, it is necessary to carry out some work to assess the external environment in which the enterprise operates, as well as to determine the mission of the enterprise and its goals. Then, based on information obtained from the analysis of the external environment, goals, and strategic potential available to the enterprise, it is necessary to choose the best of all possible alternative strategies, as well as to monitor its implementation and evaluate its effectiveness.

The novelty of the obtained results lies in the justification of methodological provisions and practical results, which together solve an important scientific task of improving the management efficiency of the enterprises' strategic development.

2. Methods

The formalization method was used as the main research method to conduct the structural justification of the components of the internal and external environment of enterprises and the course of forming a development strategy. The procedure included the formalization of the enterprise strategy that allowed strengthening and formulating a clear development plan, as well as creating a foundation for the development of detailed measures to achieve the strategic vision. The starting point of the strategy formalization is the goals set by the enterprise executive. More attention was paid to economic indicators as the main criterion for measuring the efficiency of the enterprise.

As a theoretical research subject, strategic management is based on strategic analysis, which includes the collection and processing of necessary information. The uncertainty of the external environment, its constant variability, and unpredictability, as well as the specificity of the internal environment of the enterprise, make the strategic analysis particularly important as an element of enterprises' strategic management. To use specific tooling in strategy development, the problems of information support and the choice of analytical information processing methods were solved.

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Empirical approaches included the integration mechanism of financial and nonfinancial characteristics, the strategic regulation system, which was based on detailed monitoring of efficiency on a set of optimally selected indicators, fully reflecting all aspects of the enterprise's activities. Therefore, the strategy will be effective if the points concerning different scopes of activity of the enterprise are taken into account. When formalizing the strategy based on a balanced scorecard, the company's activities will be considered within the framework of the following characteristics: financial component, customers, business processes, and training of employees.

3. Results and discussion

Based on research conducted, the authors proposed own vision of the strategic management structure, which is shown in Fig. 1.

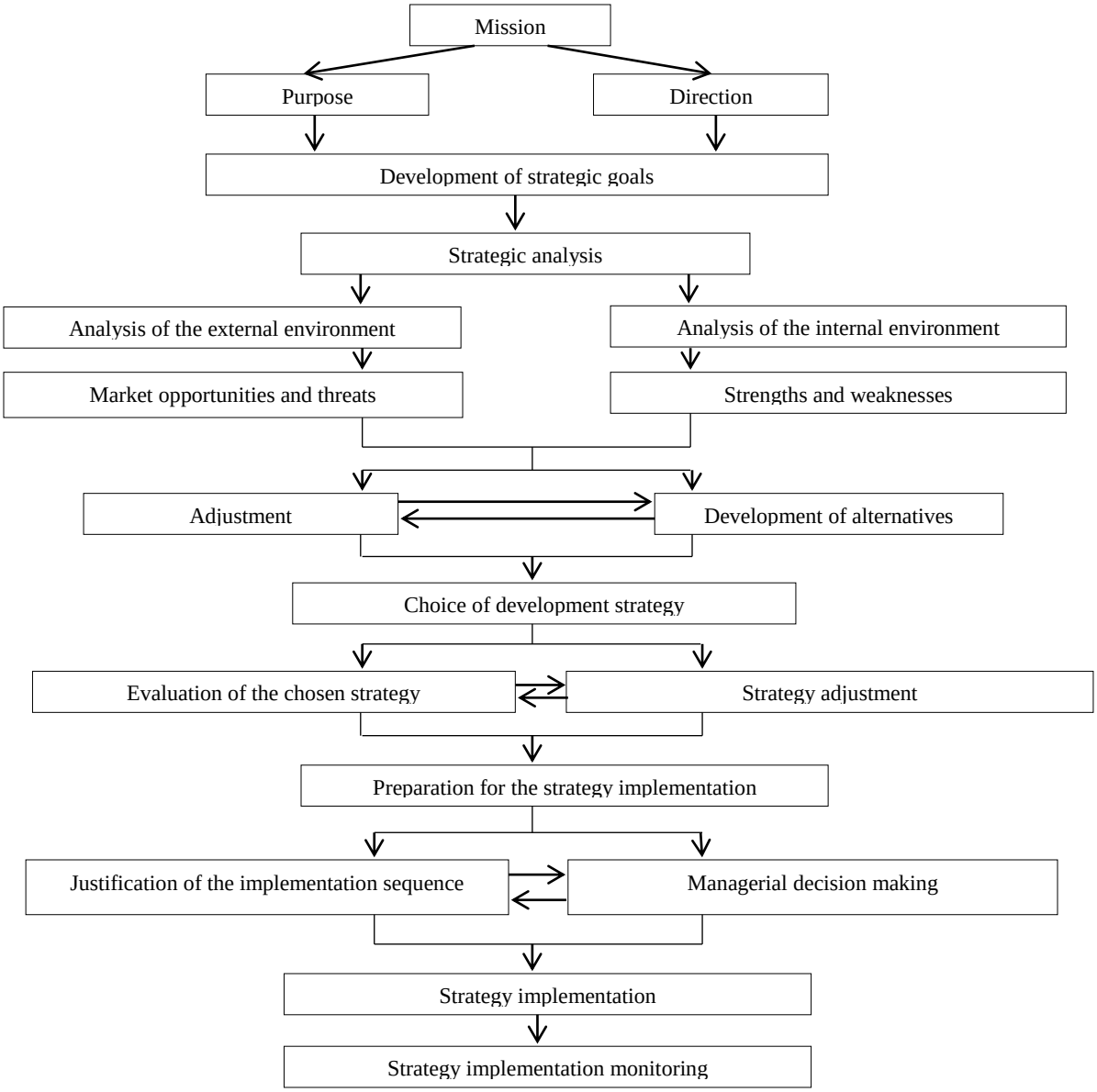

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Figure 1. The strategy formation process at the enterprise

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Therefore, information on internal and external factors affecting enterprise performance is extremely important when making strategic decisions.

While information about internal activities is available to strategic decision-makers, information about the external environment is often very limited. The underdevelopment of the information infrastructure of the Russian market is associated with many problems for enterprises. The lack of, for example, timely information on product prices causes significant fluctuations in these prices in different regions of the country and leads to higher prices of products at the end of the supply chain.

In addition, the unpreparedness of executives for economic changes appeared to be the cause of many internal problems in enterprises. Having passed a long way of market-institutional transformation and adaptation to new conditions, Russian enterprises are becoming increasingly aware of the need for quality information support (Geraskina. 2015; Lukinsky & Serova, 2018; Sytnik, 2013).

As a rule, external factors are divided into factors of macroeconomic impact and those of the immediate environment. At the same time, some studies offer the following classification of external factors: macroenvironment factors (international, political, economic, socio-demographic, legal, and environmental); regional infrastructure factors (market infrastructure, environmental monitoring, health care, and science); and microenvironment factors of the enterprise (suppliers, consumers, competitors, and contact audiences) (Danilkin, 2016; Nalesnaya, 2017; Agamirova, Agamirova, Lebedeva, Lebedev & Ilkevich, 2017).

It is proposed to combine the factors of macroeconomic impact into seven groups. These groups are the economy, politics, market, technology, competition, international situation, and social conditions. At the same time, the consideration of the immediate environment of the enterprise involves the study of the external environment components with which the enterprise contacts in the course of economic activity.

Given the complexity in a rapidly changing environment, an enterprise or its units must rely on more diverse information to make effective decisions concerning their internal factors. This makes decision-making a more complicated process. Therefore, it is necessary to directly pay attention to the analysis of the external environment of the enterprise. It is proposed to divide this analysis into several stages:

1. Choice of the scope of activity and goods. It is necessary to determine the market niche. For this purpose, sales volumes and satisfaction of demand should be studied, the market capacity should be determined, as well as the possibility of displacing other goods by these products.

2. Evaluation of competitors' actions. Opportunities for competitors for the occupation of this niche should be defined. To do this, it is necessary to study the activities of similar enterprises in the field of technology, research, product quality, costs, as well as product delivery and sale methods.

3. Analysis of the entrepreneurship scheme. The necessary resources and opportunities for obtaining them in the markets should be determined. It is necessary to study the features of production technologies, methods of providing raw materials, materials, equipment, working premises, personnel, and services.

4. Analysis of external conditions. At this stage, the importance of general external factors for the enterprise is determined. The current state of all components of external conditions should be analyzed, tendencies in changes of these components should be revealed, and the pattern of changes and their expectations should be defined.

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5. Assessment of the enterprise's capabilities or potential. The efficiency of the enterprise performance, the nature of changes, trends in sales, costs, and competition should be revealed.

For the successful performance of the enterprise, it is necessary to carry out study of the influence of the external environment on activity of the enterprise, as well as to develop the analytical apparatus which would allow understanding, analyzing, and adopting a set of factors and events. This is exactly one of the functions of a contemporary executive. At the same time, the need to adapt the enterprise to the external environment requires the development of a strategic management system that ensures its effective functioning in unstable and constantly changing environmental conditions. Such a system should be aimed at developing global and local strategies for the enterprise development and tactics of its behavior in these conditions.

In the course of the formation of market demand for products and services, enterprises begin to be created that are able to meet the requirements of customers, while being able to satisfy their own economic interests. However, the external environment in which the company operates provides broad opportunities and imposes significant restrictions that must be taken into account when developing a strategy. In order for external environmental factors to be properly taken into account and used in strategy development, it is necessary to systematize and evaluate them. There are several approaches to this assessment. In this case, the authors suggest using PEST-analysis, SWOT-analysis, and analysis of competitive forces.

When studying the internal structure of the enterprise, it is necessary to identify weaknesses and strengths in its performance. To take advantage of external opportunities, an enterprise must have a certain internal potential, which may include the following components: human resources, research, development and inventions, information resources, technical and technological potential, spatial resources, financial resources and capital, as well as resources of the organizational structure of the management system. Their influence on the formation of a strategic position is very significant since it is on these factors that the enterprise's strategic behavior in the market depends.

The analysis of internal potential reveals those internal opportunities on which the enterprise can count in the competitive struggle in the course of achievement of the set goals. The analysis of the resource strategic potential also allows better defining the goals of the enterprise and formulating the mission more clearly. At that, the internal potential of the enterprise is proposed to be analyzed in the following areas: enterprise personnel, their potential, qualifications, and interests; management organization; production, including organizational, operational, technical and technological characteristics, research and development; enterprise finance; marketing; and corporate culture.

The practice has shown that some enterprises depend on a continuous flow of material resources. Failure to supply the required volumes of resources can create significant difficulties for many enterprises. Therefore, the supply chain requires close interaction between the manufacturer and the interconnected suppliers. The enterprise may also face the challenge of finding suppliers or maintaining a significant amount of inventory. However, stocks tie up money which has to be spent on materials and storage, rather than on other needs.

For the growth and prosperity, the enterprise needs not only suppliers of materials but also the capital. There may be several potential investors: banks, loan programs, shareholders, and individual investors. As a rule, the better the enterprise's business is, the higher are its abilities to negotiate with suppliers on favorable terms and attract the necessary amount of funds.

Adequate provision of labor power of necessary specialties and qualifications is required to implement tasks related to the achievement of set goals, that is, for the effective building of the enterprise. Without people able to effectively use sophisticated technology, capital, and materials, all of the above has little chance for success.

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Therefore, the development of a number of industries is currently hampered by a shortage of specialists. In some industries, global competition has forced a number of companies to seek less expensive labor power in other countries (Kasperovich & Rogova, 2018; Bykova, Ermolaeva & Scraybin, 2018; Lebedev, Reznikova, Dimitrieva & Ametova. 2018).

At the same time, in the context of the formation of new economic mechanisms focused on the market economy, enterprises face the need to operate in a new way, using the market laws and requirements, mastering a new type of economic behavior, adapting all aspects of production activity to the changing situation. In this regard, the contribution of each employee to the final results of the enterprise increases.

One main task for enterprises of various forms of ownership is the search for effective ways to manage labor, which would ensure the activation of the human factor. Therefore, the selection and support of talented managers have become the main concern of the contemporary enterprise. Managers, using various methods and management tactics, contribute to the achievement of the company's goals. It should be noted that the methods of achieving goals can be different.

In addition, the management of the enterprise is a complicated work that cannot be done successfully, guided by simple formulas. The executive should combine an understanding of common truths and the importance of the number of variations due to which situations differ from one another. The executive should understand and study the critical factors or components of the enterprise (internal variables), as well as the forces affecting the enterprise from the outside (external variables), and take into account the impact of the enterprise on society.

Thus, the internal potential of the enterprise is the source of its vitality. It enables the enterprise to operate, and therefore to exist and survive while acting in accordance with the developed strategy that allows adapting to the external environment. At the same time, it is necessary to take into account the weaknesses which can exacerbate the external threat and danger, and if possible, try to neutralize them.

In recent years, it is the factors of intra-industrial nature that have come to the fore. Since the relative stabilization of the external environment, the survival and success of the enterprise began to depend on the majority on the ability to properly concentrate and use in-house economic resources. All this has led to the emergence of a significant number of integrated and diversified structures, and certain enterprises leading in various markets. The corporate sector of the economy has become more active.

According to the authors, to assess the internal weaknesses and strengths, it is better to highlight such aspects of the enterprise as financial, investment, organizational and technical, innovative and human. This interpretation is based on the resource approach and allows defining the enterprise's potential as its strategic options for integration, which occurs when the enterprise enters the market. If the market perceives the products, this results in an interpenetration of the internal and external environment.

As a result, the enterprise implements its potential. According to the authors, this approach brings to the content of the strategic management process the ability to actively influence the entire system of enterprise development. However, the process of an enterprise formation in the market should be characterized by setting goals, since each enterprise is created with known goals because the goal represents the desired state of the enterprise.

However, in the course of product manufacturing or rendering services, it is necessary to distinguish a multilevel structure of goals at the enterprise. In these circumstances, senior managers must set strategic goals that address large-scale problems. Middle-ranking managers should develop tactical goals that address the problems of the enterprise units and describe the results which are necessary to achieve the strategic goals of the organization.

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Lower-level managers are required to set operational goals related to current challenges and describe the results needed to achieve tactical and strategic goals.

At the same time, setting strategic goals must necessarily take into account the capabilities of the enterprise; otherwise, the goals will be unrealistic and unattainable. It should be noted that the strategic goals reflect the main development directions of the enterprise in the market for a certain period of time. However, the feasibility of the goals is established by comparing the desired goals and capabilities of the enterprise. At that, the rationality of actions to achieve the goals means that they are checked for the possibility and feasibility of achieving them.

When external conditions and the internal state of the enterprise indicate the failure of goal setting, then it is necessary to make adjustments in goal setting and give priority to other goals. Therefore, in order to develop strategic goals and appropriate means to achieve them, it is not enough to refer only material factors to the elements of the system. These elements need to be supplemented by a set of relevant information objects, both internal and external in nature, which are characteristic of the system itself.

When defining goals, it is necessary to consider the basic requirements that will help make a significant contribution to the success of the enterprise. It follows that strategic goals should be real, achievable, interrelated, logically constructed, not contradict each other, be motivated and worth it to strive to achieve them. When formulating goals, their description should reflect content (what to achieve), scope, i.e. goals should be measurable (how much to achieve), and timeframed (when to achieve). They can also be short-term, medium-term, and long-term (Fedulova, Medvedev, Kosinskiy, Kononova & Pobedash, 2016; Koroutchev, Acuña & Gómez, 2013).

In addition, the process of setting strategic goals means recognizing the state of affairs in the enterprise, which is not only desirable but also achievable. Such a process should include the following procedures:

1. Conducting analysis of the situation and developing a picture of the future state of the enterprise and the external environment. For this purpose, it is necessary to analyze development tendencies of the environment, market, competitors, as well as efficiency of the enterprise's performance.

2. Nominating possible goals and forming a list of independent, alternative, and subcontracting goals.

3. Determining feasibility to achieve the put forward goals in the intended picture of the future and ways of rational use of enterprise's resources.

4. Developing options to achieve goals in the projected changes, and determining the conditions to transit to the fallback strategy, as well as elaborating the basic prerequisites for the enterprise strategy development (Nikolskaya, Kovaleva, Uspenskaya, Makshakova, Lysoivanenko & Lebedev 2018; Suloeva & Gultceva, 2017; Yesmagulova, 2014).

In this case, strategic goals can serve two important functions: first, goals can be adopted in the course of finding development directions as a basis for decision-making; second, goals can be used as a measure to determine the degree of satisfaction from decision-making. Here goals are considered as a result of activity, and a measure of possible means.

Thus, the strategic goals of the enterprise should be based on hypotheses of development in the future. Hence, their justification depends on the quality of hypotheses development by the executives. Therefore, it can be concluded that the personality and its intellectual ability, creative thought, play a leading role in the course of goal formation, and are defined by both rationality of the goals and their successful achievement.

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The wrong choice of goals when creating a system leads to the fact that not the problems that should be solved are in fact addressed. This can lead to much more damage than using an inefficient system to achieve the chosen goals. Therefore, the development of the goal is completed by decision-making, and the goal formation process can be attributed to one of the varieties of the decision-making process.

Goals can also be considered as a necessary attribute of the enterprise performance, as an index to measure progress. At that, it is necessary to consider the goal itself and the adaptation time for which this goal will be achieved. Along with this, the choice of a strategic goal and its achievement involves the allocation of a certain set of resources possessed by the enterprise. Since these resources are always limited, the executives must identify the factors which have the greatest impact.

In the course of the study, the analysis of expert assessments of the significance level of external environmental factors was made, which has shown that a commodity and natural resource markets have the greatest influence, as well as contact audiences, i.e. factors of the microlevel of the external environment. Economic factors have the greatest impact on the macroenvironment. Based on the estimates of the importance of the factors, a model was developed to assess the level of influence of the external environment on the development of the enterprise, which has the following form:

$$VEE = \frac{\sum_{i=1}^{n} \alpha_i \times 3BC_i}{n} = B \quad (1)$$

where α_i is the coefficient of the factor's importance in accordance with the external environment of the enterprise; *VEE* is the value of the factor in accordance with the external environment of the enterprise; *n* is the number of factors under external environment of the enterprise; *B* is the total impact of the external environment of the enterprise. It should be noted that this approach allows determining the impact of both an individual factor in the composition of a certain level of the external environment, and the intensity of the impact of a particular level.

At the same time, the distribution of levels of significance between factors and the choice of the composition of factors, first of all, depends on the scope of the enterprise and the objectives of the analysis. In the present case, the two-level external environment for enterprises was analyzed in order to identify the level of the significance of individual components of the external environment and the degree of development of the enterprise. Since the indicators can have different measurement units and the desired trends of changes, the method of taxonomic analysis was applied to obtain the levels of development of individual groups of external environment factors.

Studies have shown that in the context of high dynamism of the external environment, special attention is paid to the strategic adaptation of the business entity to the parameters of both the macro- and microenvironment. The main condition for effective strategic adaptation of the enterprise is the foresight of future changes and their qualitative identification in order to provide information support for making adequate management decisions.

Therefore, the response of the enterprise to the influence of the external environment should take into account the intensity, duration, and scale of external influences. According to the authors, the strategic adaptation process is manifested not only in the deep transformation of the internal environment of the enterprise in accordance with significant irreversible changes in the external environment. It also provides for the possibility of adjusting these parameters in a favorable direction. As a rule, the enterprise does not have the ability to influence the external environment, that is, there are managed and unmanaged factors (Repnikova, Bykova, Skryabin, Morkovkin & Novak, 2019).

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The enterprise can also influence these parameters by choosing the market and competition strategy. Although some scientists (Shmanev, Shmaneva & Morkovkin, 2018; Tyukhtenko, Syniakova, & Havrenkova, 2018) refer suppliers, consumers, and competitors to the uncontrolled factors of the microenvironment, though, in the authors' opinion, enterprises still have tools at their disposal to influence these market actors, for example, by concluding more favorable deals with suppliers, conducting active work with consumers, and implementing an adequate competition strategy.

To solve the ways of responding to constantly changing external environment, it is also necessary to assess the environment, since it has direct impact on the conditions of enterprises performance. The main obstacle in determining the intensity and scale of the influence of these factors is the lack of available quantitative information which would characterize the influential power of suppliers, competitors, consumers, and other counterparties of the analyzed business entity.

Therefore, in this case, it is advisable to use the method of expert assessments to determine environmental factors. The determination of the influence of the external environment is also based on expert assessments, though with certain peculiarities. Since the enterprise forms independently its immediate environment (suppliers, buyers, and partners), the assessment of the impact of the environment in 2018 was carried out for each of the selected enterprises, and the choice was made within the enterprises of the tourism industry of the Moscow Region of the Russian Federation.

For this purpose, an expert sample was formed, which included 49 individuals, among whom there were the employees of the Federal Agency for Tourism of the Russian Federation (15 people), Committee for Tourism of the Moscow Region (7), and managers and employees of tourism enterprises of the Moscow Region (27). The authors considered this number of experts necessary and sufficient to ensure maximum reliability in determining a set of key opinions on this issue as well as prospects for strategic development.

The experts determined the influence of environmental factors on each enterprise estimating scores ranged from 0 to 1 depending on the following condition: the more negative influence the environment had on the business entity activities, the closer the score was to 1, and vice versa. Estimates, provided by experts on the impact of external environment factors on the development of enterprises in the tourism industry, can be considered significant since their variation does not exceed 25%.

Based on the conducted mathematical analysis, taking into account the distribution of initial data on the reduced Harrington scale (Dewangan, Godse & 2014; Ganapaian, 2016) (the first interval includes 28.5% of deviations of the actual value from the maximum, the second – 71.5%, and the third – 100%), the following gradation of the level of external environment influence on the activities of the tourist enterprise was obtained: from 0.000 to 0.090 – low level of influence; from 0.091 to 0.226 – average level of influence; and from 0.227 to 0.316 – high level of influence. The analysis of Table 1 has shown that external environment factors resulted in the emergence of decline conditions in Elite-Tour LLC and Intur LLC.

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Table 1. Assessment of the influence of external environment factors of tourism enterprises of the Moscow Region

No	Enterprises	Commodity market	Service market	Contact audiences	Economic factors	Scientific and technical factors	Social factors	Political and legal factors	Environmental factors	The general impact of external environment factors
1	Elite-Tour LLC	0.49	0.33	0.41	0.46	0.38	0.43	0.42	0.39	0.106
2	Natalie-Travel LLC	0.93	0.97	0.86	0.86	0.93	0.79	0.83	0.85	0.268
3	Intur LLC	0.90	0.80	0.92	0.73	0.65	0.77	0.84	0.89	0.243
4	Colors of the world LLC	0.51	0.45	0.66	0.56	0.47	0.62	0.59	0.54	0.131
5	Scarlet Sails LLC	0.22	0.46	0.37	0.49	0.44	0.36	0.46	0.39	0.096
6	Booking Tours LLC	0.73	0.75	0.87	0.69	0.65	0.84	0.78	0.73	0.201
7	Meridian-Tour LLC	0.51	0.62	0.72	0.60	0.66	0.69	0.57	0.54	0.156
Factor's importance		0.3202	0.28	0.1817	0.0664	0.0482	0.0506	0.0333	0.0153	x

Source: Compiled by authors

Unfavorable conditions are associated with negative trends in the dynamics of demand, competitive policy in the tourism industry, higher prices for tourist services, credit resources, a chain reaction of loss of financial stability and bankruptcy of partners, as well as low investment attractiveness due to predominantly high financial risks.

Thus, the external environment forms the performance conditions for the enterprises of the tourism industry in the market. In the period of economic recovery, there is an improvement in the main trends of socio-economic development of the state, the number of crisis-forming factors at the macrolevel decreases, that is, the macroenvironment has the industry-wide impact nature. At the same time, the conducted analysis of the macroenvironment indicates an increase in its favorability for such a tourist industry. But, since the tourist enterprise to a greater extent independently forms relations with the microenvironment, the nature of its impact can either strengthen the favorability of microfactors of the external environment or somewhat level it.

Conclusions

Summing up, it can be noted that being at the stage of market relations raises the issue of management effectiveness, which is carried out in an uncertain external environment. The constant desire of enterprises to address issues of long-term planning and sustainable development requires the application of methodologies, techniques, models, and tools for strategic management using market and resource approaches. Such approaches will help to better use strategic management tools.

The developed scheme of the strategy formation process at the enterprise allows establishing interrelations among its main structural elements. It is revealed that the organization of service activities of tourist enterprises is still focused on service, rather than on the product itself. It has been revealed that the main reasons for the falling demand for tourism services are the lack of innovative developments, outdated range of tourism products, the inability of tourism enterprises to respond quickly to changes in the market environment, lack of marketing support, and availability of enterprises able to promptly and adequately respond to changes in the market environment.

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TRIPLE BOTTOM LINE AND CORPORATE SOCIAL RESPONSIBILITY PERFORMANCE INDICATORS FOR RUSSIAN COMPANIES

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Abstract. This article analyses the relationship between Triple Bottom Line (TBL) and Corporate Social Responsibility (CSR) performance indicators: EBITDA, Emissions Score, Resource Use Score, Environmental, Social and Governance (ESG) Score, Environmental Innovation Score, Product Responsibility Score, CSR Strategy Score, Management Score, Shareholders Score. The paper develops the 3-overlapping-circles sustainability model in the context of CSR performance indicators. The data in this study represents scores of 34 major Russian companies, which operate domestically and abroad, in particular, in developing regions like Africa. The mathematical methods like regression has approved the link between environmental innovations and ESG level. It is the first empirical research using this approach for analysis of CSR performance indicators in Russia, because the same data was unavailable before. The paper suggests that environmental innovations and ESG level is linked to Russian largest companies. If business is stimulated towards environmental innovations and R&D. It gives more projects and make the ESG level higher. Paper proposes the concept of TBL in Russian companies for increasing level of ESG and business performance (EBITDA). Understanding how 3-overlapping-circles model implementation can improve CSR performance indicators is a significant question. In addition, we analyzed regression of CSR performance indicators in 2018 year for Russian large companies to find the optimal solution.

Keywords: score analysis; ESG; sustainability; innovations; management level; Russia; Africa

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1. Introduction

Expansion of production and development of new technologies has allowed large companies to operate in global markets. For instance, the business cooperation between the EU and its TNCs with African partners is developing gradually (Aleshin, 2018; Gjølberg, 2009; Blowfield, 2005).

The paper looks through 4 main hypothesizes:
1. The link between CSR and level of product responsibility;
2. The link between environment, social and corporate governance level and emissions;
3. The link between environmental innovations and environment, social and corporate governance level;
4. The link between environment, social and corporate governance level and management quality.

The aim of the article is to identify the relationship of sustainable development and social and ethical marketing. To analyse the practice of applying this concept in marketing activities of modern large business. The first part of the work reveals the essence and content of social and ethical marketing, the second part is devoted to the consideration of the concept of sustainable development as the basis of a strategy for belt companies. The final part of the article contains an analysis of the main tools of implementation for this approach and the practice of their application (Vlachos et al., 2009; Aguinis and Glavas, 2012).

2. Literature review

Management and entrepreneurship research continues to engage in important discussions about what is triple bottom line and corporate social responsibility recuperated (Blowfield, 2005; Gjølberg, 2009; Kim et al., 2012; Sen and Bhattacharya, 2001; Galbreath, 2010; Wildes, 2008; Jones, 2003; Moore, 2003).

Surveys are recognized as an effective source of alternative information on the behavior of the economic system at short-term time intervals, for example, in public transportation (Chiabaut and Barcet, 2019; Nguyen et al., 2019; Bešinović and Goverde, 2019; Enayatollahi et al., 2019; Mohri and Akbarzadeh, 2019; Sun and Apland, 2019; Jevinger and Persson, 2019; Czioska et al., 2019; Heyken Soares et al, 2019; Habib and Hasnine, 2019; Malucelli and Tresoldi, 2019; Downward et al., 2019; Candelieri et al., 2019).

In general, an advantage over the capabilities of traditional statistics is a more rapid identification of changes in business trends based on an analysis of the judgments and expectations of business entities regarding various aspects of their activities, including those that are not the objects of statistical observation (Sadler and Lloyd, 2009; Shamir, 2004; Carroll, 1979, 1991, 1999; Bowen, 1953; Friedman, 1970; Donaldson and Preston, 1995; Van Beurden and Gössling, 2008; Lindgreen and Swaen, 2010).

In international practice, based on surveys of corporate leaders, an index of entrepreneurial confidence, an index of economic sentiment and an index of the business climate are calculated, which characterize generalized ideas about expected entrepreneurial behavior in the economy (Devinney, 2009; Lee, 2008; Noland and Phillips, 2010; Nicolau (2009); Devinney (2009); Nikolaou et al., 2013; Owen, 2005; Godfrey, 2005; Sadler and Lloyd, 2009; Scherer and Palazzo, 2011; Brammer et al., 2012; Wood, 1991).

Such an approach is demonstrated by the companies from all over the world and Russian business is among them. The conglomerates like Rusal introduce various socially oriented programs domestically and abroad, partularly, in Africa (Aleshin, 2019; Van Marrewijk, 2003).

The development of the processes described above has led to the beginning of social and environmental goals (Vaaland et al., 2008; Siu et al. 2014; Leat, 2006; Luo and Bhattacharya, 2006; McWilliams and Siegel, 2000).

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The main concept of the environmental protection was observed in details in 1972, Stockholm, at the UN Conference, as the United Nations Environment Program (UNEP). Since ecological ill-being and the development of civilization cannot be considered separately (Jones et al., 2006; Godfrey et al., 2009; Fleming and Jones, 2012; Dibb et al., 2005; Carter and Jennings, 2004; Dawkins and Ngunjiri, 2008; Carroll and Shabana, 2010; Brown and Dacin, 1997; McWilliams and Siegel, 2000; Parguel et al., 2011; Podnar and Golob, 2007; Meynkhard, 2019a; Lopatin, 2019a; Denisova et al., 2019; Mikhaylov, 2018; Mikhaylov, 2015).

3. Methods

In the paper we use data about 34 Russian Large Capital Companies from official sites for 2018 year: EBITDA, Emissions Score, Resource Use Score, environment, social and corporate governance Score, Environmental Innovation Score, Product Responsibility Score, CSR Strategy Score, Management Score and Shareholders Score (Table 1).

Table 1. Russian companies that published non-financial reports in 2018

Company Name	EBITDA (FY0, Mln. USD)	Emissions Score (FY0)	Resource Use Score (FY0)	environment, social and corporate governance Score (FY0)	Environmental Innovation Score (FY0)	Product Responsibility Score (FY0)	CSR Strategy Score (FY0)	Management Score (FY0)	Shareholders Score (FY0)
NK Lukoil PAO	16 128,60	85,39	98,15	83,79	79,63	97,33	50,00	86,76	42,65
NK Rosneft' PAO	27 827,21	96,09	89,09	80,41	39,92	81,69	98,53	89,71	89,71
AFK Sistema PAO	3 820,32	57,27	60,91	72,93	64,55	96,36	79,41	95,59	25,00
Severstal' PAO	3 071,00	84,22	81,41	70,82	41,72	68,91	79,41	66,18	83,82
Gazprom Neft' PAO	9 072,80	56,48	95,34	68,98	79,96	50,61	79,41	69,12	80,88
Bank VTB PAO	4 685,71	69,16	67,23	68,75	84,38	94,28	92,65	39,71	67,65
Sberbank Rossii PAO	18 811,71	25,20	70,61	65,33	72,14	71,10	60,29	63,24	95,59
Novolipetsk Steel PAO	3 590,00	57,97	98,28	61,80	41,72	15,00	64,71	57,35	61,76
Novatek PAO	3 726,19	67,41	62,55	59,66	0,61	50,61	26,47	80,88	27,94
Transneft' PAO	6 318,37	97,97	84,15	59,22	36,99	4,47	48,53	51,47	98,53
Gruppa LSR PAO	392,81	83,70	64,57	58,45	96,30	17,17	48,53	25,00	77,94
GMKNN	5 590,70	67,03	55,78	57,51	41,72	93,13	79,41	33,82	36,76
Gazprom PAO	38 501,92	64,98	74,70	56,90	79,55	82,19	57,35	1,47	45,59
Mobil'nye Telesistemy PAO	3 169,02	42,02	53,68	56,74	21,17	54,60	36,76	98,53	19,12

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Magnitogorskiy Metallurgicheskiy Kombinat PAO	2 395,00	71,09	53,28	51,94	1,72	31,09	64,71	83,82	22,06
Tatneft' PAO	4 563,71	56,07	76,72	51,01	40,28	91,90	36,76	19,12	36,76
Inter RAO EES PAO	1 631,59	29,22	65,36	49,60	74,70	9,04	26,47	48,53	54,41
Rostelekom PAO	1 344,73	24,06	30,94	48,33	61,56	25,00	35,29	95,59	75,00
Trubnaya Metallurgicheskaya Kompaniya PAO	678,13	51,72	46,09	46,75	41,72	80,94	16,18	75,00	1,47
FSK YeES PAO	1 977,60	59,94	55,12	46,44	9,64	20,18	48,53	72,06	7,35
AK Alrosa PAO	2 342,16	58,91	72,34	45,67	41,72	15,00	48,53	16,18	72,06
Rossiyskiye Seti PAO	4 029,66	53,77	48,74	45,61	13,84	21,07	73,53	51,47	83,82
Polyus PAO	1 767,58	44,53	57,66	44,01	41,72	15,00	79,41	27,94	16,18
Mechel PAO	1 051,82	16,10	33,59	42,85	41,41	81,90	2,94	80,88	54,41
Vozrozhdenie Bank	-92,38	44,85	61,92	42,55	65,06	4,67	16,18	10,29	92,65
Uralkaliy PAO	1 336,54	43,92	52,76	42,49	4,70	3,87	73,53	54,41	95,59
Moskovskaya Birzha	394,49	20,05	47,28	42,19	27,48	9,41	10,29	48,53	60,29
PhosAgro PAO	1 088,42	8,01	48,34	38,96	9,12	9,39	95,59	30,88	11,76
Yunipro PAO	392,82	21,99	51,51	38,74	9,64	38,55	30,88	42,65	4,41
Surgutneftegaz PAO	7 278,90	67,81	59,72	38,70	40,28	12,55	16,18	36,76	42,65
MegaFon PAO	1 868,67	1,53	38,34	36,56	21,17	54,60	36,76	22,06	50,00
RusHydro PAO	1 651,65	41,82	50,00	33,71	41,82	9,43	52,94	1,47	7,35
Raspadskaya PAO	590,00	32,89	19,74	19,56	35,53	19,74	7,35	7,35	22,06
Magnit PAO	1 265,38	2,72	11,96	19,20	28,80	7,07	2,94	13,24	36,76

Source: Author calculation, Mathlab.

Non-financial reports have been constantly growing (Lopatin, 2019b). Minimization of regression results is in set of normal equations, which is solved by coefficients of estimators (Podnar and Golob, 2007).

$$SSR = \sum_{i=1}^{n} e_i^2. \tag{1}$$

We use the simple regression. The equilibrium for the least squares estimates are:

$$\widehat{\beta}_1 = \frac{\sum(x_i - \bar{x})(y_i - \bar{y})}{\sum(x_i - \bar{x})^2} \tag{2}$$

where $\bar{x}$ is the average of the x values and $\bar{y}$

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is the average of the y values.

We make the assumption that the population error term has a constant variance, the estimate of the variance is:

$$\hat{\sigma}_{\varepsilon}^{2} = \frac{SSR}{n-2}. \tag{3}$$

The formula of standard errors is below:

$$\hat{\sigma}_{\beta_1} = \hat{\sigma}_{\varepsilon}\sqrt{\frac{1}{\sum(x_i - \bar{x})^2}} \tag{4}$$

$$\hat{\sigma}_{\beta_0} = \hat{\sigma}_{\varepsilon}\sqrt{\frac{1}{n} + \frac{\bar{x}^2}{\sum(x_i - \bar{x})^2}} = \hat{\sigma}_{\beta_1}\sqrt{\frac{\sum x_i^2}{n}}. \tag{5}$$

The enviriment, social and goverment results of large corporations in Western Europe date back to the 1970s. By this time the importance of the three components of the organization's activities was established (Meynkhard, 2019b; Nyangarika et al., 2018).

In 1993, The Institute of Social and Ethical Accountability and United Nations Environmental Program - UNEP) adopted the document "Corporate Environmental Reporting: measuring the progress of business and industry towards sustainable development, guidance on environmental reporting (Nyangarika et al., 2019a), in which life needs are achieved for the current generation without depriving such an opportunity for future (Meynkhard, 2020).

The most important document in this area is the UN Global Compact. It included largest national enterprises such as Rosneft, Rusal, Lukoil, AFK Sistema, Russian Railways (Nyangarika et al., 2019b).

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4. Results

4.1. CSR and Product Responsibility

The hypothesis 1 is not confirmed, CC and R^2 are less than 0,60 (Table 2-3).

Table 2. Regression parameters of CSR Strategy Score and Product Responsibility Score

Correlation Coefficient	0,147312553
R^2	0,021700988
Normalized R^2	-0,005473984
Standard Error	28,68015671
N	38

Source: Author calculation, Mathlab.

Table 3. Regression summary of CSR Strategy Score and Product Responsibility Score

Parameter	df	SS	MS	F
Regression	1	656,8609	656,8609	0,798565
Balance	36	29611,85	822,5514	
Total	37	30268,71		

Source: Author calculation, Mathlab.

It leads to a deterioration in its economic situation, since partners and clients of the company prefer to work with firms whose policies are known and complies with accepted business conduct rules (Fig. 1).

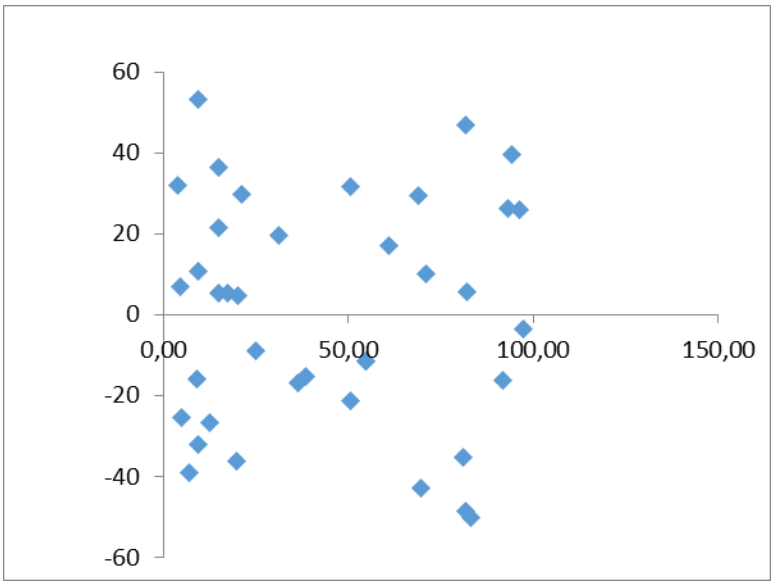

Figure 1. Regression of CSR Strategy Score and Product Responsibility Score

Source: Author calculation, Mathlab.

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4.2. Environment, social and corporate governance and Emission

The hypothesis 2 is confirmed, CC is 0,699204155, R^2 is 0,488886451. If CC is higher than 0,6, it is assumed that the approximation accuracy is sufficient but the model can be improved by introduction of new independent variables, taking into account nonlinearities (Table 4-5).

Table 4. Regression parameters of environment, social and corporate governance Score and Emission Score

Correlation Coefficient	0,699204155
R^2	0,488886451
Normalized R^2	0,472914152
Standard Error	18,63218104
N	33

Source: Author calculation, Mathlab.

Table 5. Regression summary of environment, social and corporate governance Score and Emission Score

Parameter	df	SS	MS	F
Regression	1	10625,95509	10625,95509	30,60839697
Balance	32	11109,06145	347,1581704	
Total	33	21735,01654		

Source: Author calculation, Mathlab.

There is a link between emissions to nature and environment, social and corporate governance level in Russian companies (Fig. 2).

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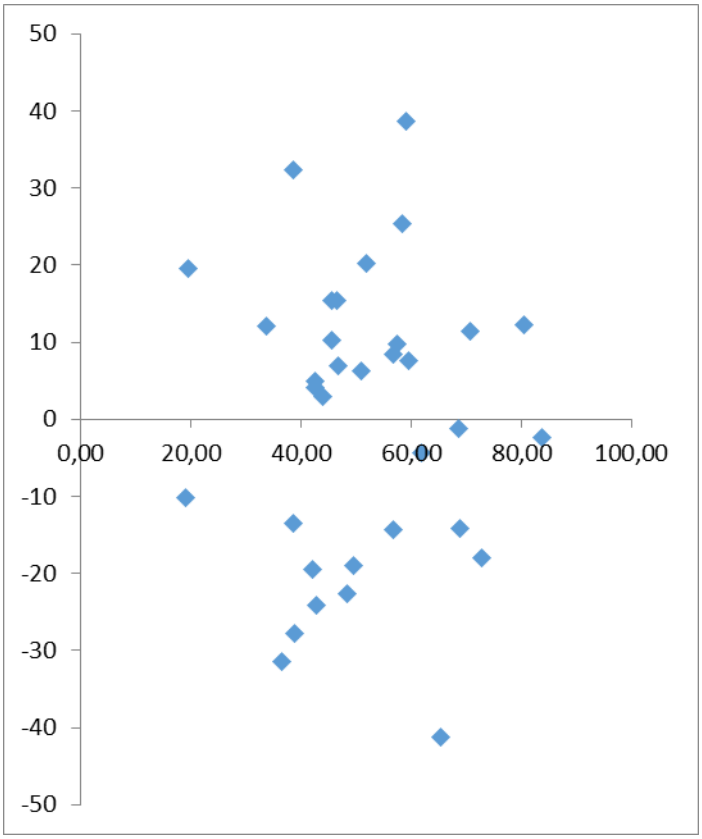

Figure 2. Regression of environment, social and corporate governance Score and Emission Score

Source: Author calculation, Mathlab

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4.3. Environment, social and corporate governance and Environment

The hypothesis 3 is confirmed well, CC is 0,8, R^2 is 0,488886451. If the R-square lies in the range from 0.8 to 0.95, it confirms a satisfactory approximation (the model as a whole fits adequately to the described phenomenon) (Table 6-7).

Table 6. Regression parameters of Environmental Innovation Score and environment, social and corporate governance Score

Correlation Coefficient	0,807471425
R^2	0,652010103
Normalized R^2	0,641135419
Standard Error	12,27079133
N	34

Source: Author calculation, Mathlab.

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Parameter	df	SS	MS	F
Regression	1	9027,818292	9027,818292	59,95669262
Balance	32	4818,314232	150,5723198	
Total	33	13846,13252		

Table 7. Regression summary of Environmental Innovation Score and environment, social and corporate governance Score

Parameter	df	SS	MS	F
Regression	1	9027,818292	9027,818292	59,95669262
Balance	32	4818,314232	150,5723198	
Total	33	13846,13252		

Source: Author calculation, Mathlab.

In Russian companies we found the link between environment and environment, social and corporate governance level (Fig. 3).

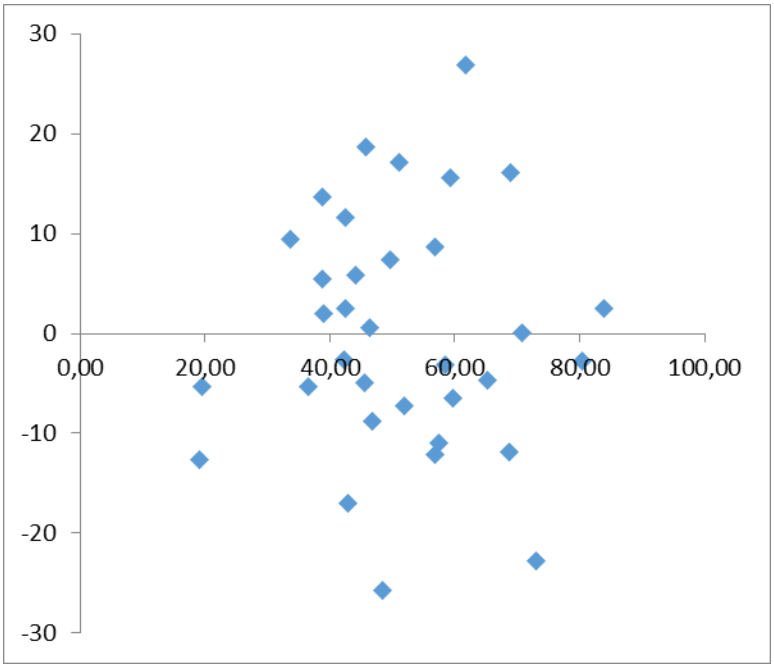

Figure 3. Regression of Environmental Innovation Score and environment, social and corporate governance Score

Source: Author calculation, Mathlab.

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4.4. Environment, social and corporate governance and Management

The National register of non-financial reports of Russian companies was created in 2002. At the beginning of 2018, 166 reports of organizations were registered, but only 34 reports are available in official sites. In table 8-9 there are regression parameters and summary, which reflect the link of environment, social and corporate governance and Management in Russia.
The hypothesis 4 is not confirmed at all (Table 8-9).

Table 8. Regression parameters of Management Score and environment, social and corporate governance Score

Correlation Coefficient	0,573707121
R^2	0,329139861
Normalized R^2	0,308175481
Standard Error	12,51824384
N	34

Source: Author calculation, Mathlab.

Table 9. Regression summary of Management Score and environment, social and corporate governance Score

Parameter	Df	SS	MS	F
Regression	1	2460,28424	2460,28424	15,6999573
Balance	32	5014,60572	156,7064288	
Total	33	7474,88996		

Source: Author calculation, Mathlab.

In Russian companies there is no link between management quality and environment, social and corporate governance level (Fig. 4).

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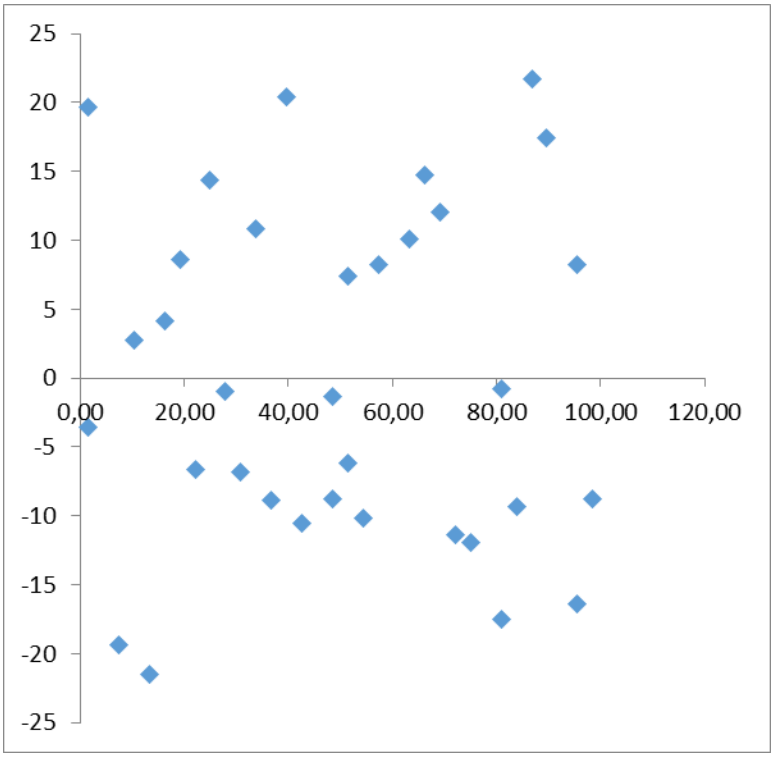

Figure 4. Regression of Management Score and environment, social and corporate governance Score

Source: Author calculation, Mathlab

The impact of social responsibility on the economic situation of organizations can be considered as the leading indicator of employment. Purchasing Managers Index (PMI) data are compiled by IHS Markit for more than 40 economies worldwide.

The strength of the global economy and future demand depend on manufacturers. Expectations of employment in the mining industry are at a high level, expectations in the manufacturing industry are not declining, expectations in the construction and services sectors have risen sharply.

5. Conclusion

The paper found that environmental innovations and environment, social and corporate governance level is linked to the largest Russian companies. If business is stimulated to focus on environmental innovations and R&D, it gives more projects and makes the environment, social and corporate governance level higher (Lisin, 2020a; Lisin, 2020b).

Paper proposes the implementation the concept of TBL in Russian companies for increasing level of environment, social and corporate governance and business performance (EBITDA) (Lopatin, 2020). Along with its home

country, Russian business aims to implement these standards in various geographies, for instance, in Africa, where it promotes best practices, especially in public transport sector (Aleshin, 2019; Szlosarek et al., 2019; Covic and Voss, 2019; Dorantes-Argandar et al., 2019; Iliopoulou et al., 2019; Huang et al., 2019; Hadiuzzaman et al., 2019; Jasti et al., 2019).

6. Contribution to the Body of knowledge

This research makes at least three important contributions to the body of knowledge. The first contribution is the using of regression method to optimize environmental innovations and environment, social and corporate governance level. The second contribution is, through empirical test, making a mediating role to empirically prove that the implementation the concept of TBL in Russian companies for increasing level of environment, social and corporate governance and business performance (EBITDA). Third, environmental innovations and environment, social and corporate governance level is linked for the largest Russian companies in this study serve to be the mediating variable.

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CAUSES OF EMPLOYEE FLUCTUATION AND THE NEED FOR STABILIZATION IN SLOVAK HOTELS*

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Abstract. The issue of fluctuation and personnel stabilization is a subject of discussion and study by several domestic and foreign authors. A typical situation in the Slovak labour market is a combination of factors for increasing demand for labour and a lack of qualified employees forcing hotel managers to internally change the perception of employees in terms of stability. The aim of the paper is to specify the causes of fluctuation and propose options for stabilizing the rate of turnover in the hospitality industry. A prerequisite for meeting the stated goal is to conduct a sociological inquiry in selected chains and independent hotels in Slovakia. This was achieved through a survey of hotels in 2018 highlighting the respondents' views on solving the challenges caused by increased fluctuation and the need for stability. The results identify the main reasons for employment turnover and helped formulate general conclusions and recommendations for the improvement of employee turnover.

Keywords: retention, turnover, hotel, establishing employment, hospitality industry

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1. Introduction

The development of the hotel industry depends on the ability of managers to recruit competent employees and create the right working environment and methods of performance evaluation. Although it is possible to replace human resources with information and communication technologies in several sectors of the economy, the personal approach to customers is very important in hotel services. For this reason, human resources have a significant position in the management of each hotel. A satisfied and motivated employee provides quality services and is a prerequisite for a hotel competitiveness. If employees feel they are not living up to the expectations of managers in terms of work performance, their motivation decreases. As a result of job dissatisfaction, the parting employee can negatively affect the hotel's economy and the quality of its services.

Due to the specifics and risks of working in hotels, it is necessary to focus human resources management primarily on the process of stabilizing and reducing staff turnover, thus creating conditions for efficient service. Finding and keeping quality employees in the hotel industry is challenging. Work in hotels is associated with the constant movement and change of domestic and foreign customers, which increases the requirements on the quality of service, including effective communication, hygiene compliance and personalized customer service. Hotel employees who are in direct contact with customers are asked, in addition to the general expertise of the hotel, to deliver discipline customer contact, satisfaction, and ensure their safety. Quality staffing of all hotel activities is a prerequisite for customer satisfaction. Employment turnover is a negative burden on financial cost especially with loss of customers, business partners, knowledge of the operation, and the potential leak of sensitive information and business secrets (Kuria et al. 2012; Armstrong, Taylor 2017). Our intention is to identify the reasons that positively or negatively affect employees' expectations of working in hotels and solutions that can contribute to higher job satisfaction and reducing employee turnover.

2. Theoretical framework

Tourism, as one of the fastest growing and most promising sectors of the world economy, with high potential for long-term growth, is a highly fragmented industry, geographically dispersed with many small specialist businesses contributing to an overall product experience (Chkalova et al. 2019).The hospitality industry is a broad category of fields within the service industry that includes lodging, event planning, theme parks, transportation, cruise line, and additional fields within the tourism industry (Chesser 2016). Chon et al. (2013) states the hospitality industry is perceived to be a part of a business sector that provides services, such as food, drink, and lodging to an individual or group of people outside of a private home. As an important part of hospitality industry, hotels can be a difficult and complex organism consisting of a whole range of activities and processes in which employees are the key to a hotel’s existence and development. The process of providing service is quite labour intensive. Employees are expected to show hospitality and a personal approach to customers, making the customer a guest (Gúčik et al. 2016). Employees with the ability to anticipate, know and meet the needs of guests are the hotel's biggest asset. The result of providing the service depends not only on the employees but also on the guests. For the same service, guests can have diverse requirements in time and space. The task of hotel managers and employees is to create conditions for the guest to feel comfortable and pleased (Baker et al. 2000). Every hotel is special and specific, but for their employees, there is a common rule of success being proportional to the quality of performance (Davidson et al. 2011). Hotels have a high share of manual and unskilled labour, above average fluctuation and low possibility for mechanization of the labour process. As such, the product provided is a combination of partial performance by several employees. The characteristic features of employment in the hospitality industry include a high proportion of temporary employees, offering first-time job experience for many young people and more women than men. In the overall economy, women represent 46.1% of total employment. This figure rises to 53.7% for the hospitality industry (HOTREC, 2019). Working with human resources is challenging and depends in many ways on the prosperity, progress and success of the hotel (Chibili 2017). At the

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same time, employees are willing to work if they know their work performance will be appreciated (Lorincová et al. 2019).

Hotels are demanding for human resources, called also the blood of the organization (Išoraitė 2013). Their success is proportional to the quality of employee performance that is influenced by corporate culture. Only the employees who directly contribute to the satisfaction of the customers can find personal satisfaction at work in a hotel (Lucas, Deery, 2004). The importance and the role of employees in the work process is being discussed in a variety of contexts, but clear evidence of their true value is the situation when the hotel lacks the right people. The situation becomes even more complicated, when the need for competent, loyal and efficient employees is more urgent. In any case, for hotel management, this is an impulse not only for reflection, but also for deepening and improving the system of working with people and examining each HRM process. The cause for employee incompetence may increase turnover and an underestimation of the recruitment process, and the acceptance of anyone interested in working at the hotel. Another cause is a non-transparent assessment and remuneration for work performance, lack of work motivation, career development and education, customer contact, work organization, poor working conditions, but also interpersonal relationships, management approach to employees and others. Examining employee satisfaction and identifying potential reasons for job change will not solve the problem, but hotel management will receive feedback on HRM, which is a prerequisite for managing the change in work with employees. Thomas et al., 2014 reviewed three decades of studies in the hospitality industry and identified four factors that impact job satisfaction: financial rewards, job training and career development, supervisor support and working conditions. The recruitment and stabilization of these core employees, not just senior managers, will become more sophisticated in the use of behavioural profiling and psychometric testing. Efficient managers understand that it is essential to support employment stabilization and performance (Matuson 2013).

Excessive fluctuation does not contribute to the growth of performance and the improvement of the quality of the provided services (Vasquez 2014; Holtom, Burch 2016; Saridakis, Cooper Cary 2016). Turnover of competent employees is a major problem that hotel managers face daily (Ferreira et al. 2017). Therefore, it is important, in every process of human resource management, to look for ways to increase employment stabilization and be willing to approach this task with constant self-improvement and development (Alonso, O'Neill 2009). Chalkiti (2012) adds that employee turnover is mainly instigated by factors that are beyond management control and departures of competent employees negatively affects service quality levels, costs and time related to staff recruiting and training. We are of the opinions as Riley (1996) and Su (2014) that it is far better and more cost effective to invest in current staff members rather than constantly hiring, adapting and training new people.

Several research studies are examining the causes (reasons) that positively or negatively affect the acquisition and retention of competent employees or the employee's decision to leave the enterprise. There are no fixed practices in the hotel industry that show how to retain employees and keep them committed because employers place different emphases on different variables, depending on the organizational fit (Mehta et al. 2014). An innovative approach to improving employability is presented by Maree (2017), it emphasizes the twin aims of enhancing a persons' career adaptability and helping them to become more employable, rather than linearly trying to find a job and remaining in one company for their entire career-lives. People need to acquire career resilience to achieve these aims, especially since the world of work no longer provides employees with lifelong careers for the duration of their lives.

An example of best practice to acquire and retain qualified employees is Kimpton Hotels in the US. The company maintains regular contact with customers and has created a corporate culture based on listening to its customers in order to create a guest-centric experience, which is seen in a level of customer satisfaction (Davidson et al. 2015). Customer incentives are becoming a motivating factor for employees to deliver a quality product and achieve performance that is adequately valued. The reputation of the hotel, its positive image in the eyes of the public and

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its employees is also being developed by Marriott International, which helps off-season employees find work in another business.

Research of authors Yam et al. (2018) is focused on the factors that contribute to retention. Content analysis of in-depth interviews indicates that community attachment, a dimension not generally explored in turnover research, may play a significant role in explaining employee's intention to stay with an employer. Coetzee and Stoltz (2015) concluded that career development, training and balance between work and private life contribute to satisfaction and staff retention. Malek et al. (2018) analysed the direct relationship between training at the management level and how this affects turnover. It was found that management training and management style had a significant inverse relationship with employee turnover intentions. If hotels invest in management training, then there will be a reduction in employee turnover intention.

The most important factors that positively influence personal stabilization are mainly job security and wages, but also work/family balance and working time (Clark 2001). According to Clegg et al. (2016) retention consists of the methods and approaches used to keep talented people in the organization in some way such as with awards, promotions, and remuneration. It also includes methods for enhancing, transforming, and better utilizing staff knowledge, skills, and capabilities through training, mentoring, and education. The result of literature study in the field of employee retention by Deery and Jago (2015) proved that employee attitude such as job and pay satisfaction or work overload will affect work-life balance (WLB) as well as levels of stress and possible substance abuse. If these work and life elements are not addressed through a well-developed and relevant training programs, the provision of promotional opportunities, and genuine interest by managers in the well-being of employees' family and personal lives, then staff turnover will be much higher than acceptable. This is particularly true among those staff who are more talented and have other career opportunities.

Davis and Haltiwanger (2014) investigated the impact of age and educational diversification on employee retirement and found that higher fluctuation rates are found among young and low-skilled employees, while gender differences are not so pronounced. Their research followed the OECD study (2009) than found that the aggregated level of mobility is higher among women, young adults and low-skilled workers. Similarly, Park and Gursoy (2012) study found a generational effect on the relationship between work engagement, satisfaction and turnover intentions and that engaging employees is critically more important to millennials than older employees. Managers should incorporate Millennials' work preferences such as meaningful and fulfilling jobs as well as their work values into human resources policies to retain younger employees.

Employees' internal and external mobility significantly reflects the content of work, working conditions, business activity, economic situation, market position or durability (Burgess et al. 2001). Baumgarten (2010) has a similar opinion, which points to a lower rate of fluctuation in foreign capital enterprises compared to service enterprises, in which there is less possibility of replacing human labour with mechanization. The hospitality industry is a part of the service generally characterized by a high turnover rate. According to the U.S. Bureau of Labour Statistics, there is an annualized employee turnover rate of 73.8% in the hotel industry or more than 6 percent of staff departing every single month. Moreover, every time someone leaves, someone new must be hired and trained.

Attracting and retaining a skilled workforce, daily confronted with differentiated customer requirements is the responsibility of managers of the hospitality industry. The seasonal nature of the job, long work hours, and related pressures, the turnover rates for employees remain high in the hospitality industry (Chen, Wu 2017). Hotels are demanding for human resources, and their success is proportional to the quality of employee performance that is influenced by corporate culture, adequate remuneration, effective communication, and increasing job satisfaction (Anvari et al. 2014). Wilton (2016) points out that over-emphasis on financial reward can generate an undesirable recognition of achievement, positive feedback and the provision of opportunities for personal development, rather than simply financial gain. One of the preconditions for personal stabilization (Mohanty, Mohanty 2014; Dilbag,

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Amandeep 2017) is to identify and meet the expectations of employees that are most important to them. According to Magnini and Simon (2016) guest satisfaction is the lifeblood of any hotel. Short-term profitability may not depend on guest satisfaction, but long-run hotel profitability and prosperity most certainly does. The positive word-of-mouth has long been a key determinant of success in the hospitality industry, and it carries even more influence today due to the proliferation of travel blogs. Keeping or losing the competent and talented employees can be critical to whether a hotel can maintain a competitive advantage and whether operations in the hotel run smoothly and efficiently (Carsen 2002). Employee retention is the ability of a hotel to retain its employees (Cardy, Lengnick-Hall 2011; Lee, Chihyung 2015). If the best employees are not retained, the hotel can be negatively affected from the operational to the strategic level.

3. Methodology

The tourism and hospitality industry are the world's largest generator of wealth and employment, which accounts for over 319 million jobs (10.4% of total employment in 2018) and over 10 per cent of global GDP (WTTC 2019). In 2018, the Tourism and Hospitality industry experienced a 3.9% growth, compared to the global economy (3.2%). The employment contribution of the hospitality sector is expected to rise at a rate of 2.4% for the next decade. While other industries are facing job cuts, the hospitality industry is set to keep offering more jobs.

The growth in the number of new jobs in the hospitality industry is accompanied by staff turnover and a lack of skilled labour. Based on prior scientific knowledge of foreign and domestic scientific studies, we confirm the negative consequences of fluctuation, which is reflected in a decrease in service quality, growth of employee recruitment costs, and increased customer dissatisfaction. We are of the opinion that recognizing the causes of fluctuation of skilled employees will help the managers find ways to retain a skilled labour force and at least partially prevent fluctuation. The verification of the axiom is the reason for conducting a survey of employee turnover and stabilization in the Slovak hospitality industry.

The aim of the research is to examine the current state of management and stabilization of employees in independent and chain hotels operating in Slovakia and to identify factors that significantly affect the decision of employees to stay at the hotel. The stated aim of the investigation is to verify the hypothesis that the current state of staff stabilization in hotels is not in line with the expectations of employees. Fulfilling the primary goal implies defining sub-goals that will contribute to exact results and recommendations:

G_1: Explore and compare the causes of employee turnover and reasons for job dissatisfaction in chain and independent hotels.
G_2: Identify factors that have the greatest impact on hotel staff stabilization.
G_3: Identify and assess the positives and negatives of currently used human resources stabilization tools in the hotels reviewed.
G_4: Suggest a personal stabilization system for hotels.

The stated goals were achieved by carrying out the following steps:

1. To find out the reasons for the voluntary departure of employees and work dissatisfaction in the surveyed hotels. The job fluctuation rate was compared in the survey results.
2. In determining the combination of factors that greatly affect personnel stabilization according to hotel representatives, we assumed that the heads of different hotel departments would provide an answer. Firstly, the top managers were surveyed about their perception of the processes that best meet the strategic goals of the hotel in terms of achieving job performance and quality of service. Secondly, after evaluating the survey

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results, we identify the human resource management processes that have the most significant influence on stabilization of hotel staff.

3. Based on the assumption that human resource development and career development contribute to employees' job satisfaction and reduce the level of fluctuation, we verify the link between career development and employee stabilization.
4. Human resources management processes with the greatest impact on staff stabilization will also be evaluated by independent experts with work experience in human resources management and hotel management using a focus group.

Confirming or not confirming the research assumption is based on results of the primary survey. Structured questionnaires were addressed to the management of different hotel departments in chain and independent hotels. We evaluated the obtained results by selected mathematical and statistical methods using Excel and SPSS (Statistical Package for Social Science). The choice of statistical methods is dependent on the nature of the characters being investigated and, above all, on the purpose of their analysis. We relied on the various types of statistical tests to verify the truth of the hypothesis. The existence of dependence between characters were verified by the Spearman's coefficient of sequence correlation, and we also used the Mann-Whitney test and descriptive statistics.

4. Results and discussion

Slovakia is a country with a developed tourism and hospitality industry. In 2018 (Slovak Statistic office 2019) number of visitors (361,487) increased in comparison to the previous year by 3.5%. Development of foreign visitors was more dynamic (+5.3%). 4007 accommodation establishments with 170.7 thousand beds is available to domestic and foreign visitors. Foreigners accounted for 40.3% of all accommodated guests (5,596,407). According to statistics, Slovakia has 651 registered hotels. We included three to five-star hotels as well as 480 general hotels. Independent hotels dominate property ownership (342), chain hotels 39 (8.13%). We have sent out questionnaires to available hotel addresses of all hotels and personally to hotel managers who we work closely with. 128 hotels showed willingness to cooperate. Each hotel is presented by one respondent who is in the position of senior hotel manager or chief of the hotel department. In the structure of 128 respondents, there are 48 top managers and 80 chiefs of different hotel operations departments. The return of the questionnaires was 19.7%. The questionnaire was designed for two groups of hotels, independent and chain. The basic identification data of the respondent research sample are in Table 1.

Chain hotels have shown greater willingness to cooperate. Out of 39 chain hotels, 32 were involved in the survey, which is 82.05%. Independent hotels have shown less willingness to cooperate. 96 hotels (21.77%) participated in the survey. The sample of 128 hotels is 75% independent hotels and 25% chain hotels. Nearly half of the respondents (47.66%) work in conference, 18.75% in wellness hotels, 15.63% in hotels with a castle character, 14.84% in mountain hotels and 3% in boutique hotels. The survey was attended by 82% of four-star respondents and 18% of three- and five-star hotels. The largest respondents were from Banská Bystrica region (26.56%), Bratislava (24.22%) and Žilina region (22.66%).

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Table 1. Research sample

Identification data		Absolute (count)			Relative (%)		
		Top managers	Chief of departments	Together	Top managers	Chief of departments	Together
Gender	Men	36	35	71	75	43.75	55.47
	Women	12	45	57	25	56.25	44.53
Age	18-25	0	15	15	0	18.75	11.72
	26-35	30	20	50	62.5	25.00	39.06
	36-45	6	25	31	12.5	31.25	24.22
	46-55	6	16	22	12.5	2.,00	17.19
	56 <	6	4	10	12.5	5.00	7.81
Education	Lower secondary	0	5	5	0	6.25	3.91
	Upper secondary	0	50	50	0	62.5	39.06
	Bc.	4	15	19	8.33	18.75	14.84
	Mgr./Ing.	40	10	50	83.33	12.5	39.06
	PhD.	4	0	4	8.33	0	3.13
Salary (gross)	550-800	0	20	20	0	25.0	15.6
	801-1000	8	45	53	17.0	56.25	41.4
	1001-1300	6	15	21	13.0	18.75	16.4
	1301-1600	16	0	16	33.0	0	12.5
	1601 <	18	0	18	38.0	0	14.1

Source: own research

The subject of questioning were factors influencing the termination of employment, which we divided into four groups, namely working, personal (professional), organizational (managing) and family. Respondents evaluated the significance of individual factors using the Likert scale. We used centre measures for evaluation. One of the most important work factors (Table 2) influencing employment departures of top managers is the unfavorable distribution of working time and labour intensity. In addition to these factors, the operation staff also indicated unsatisfactory working conditions and dissatisfaction.

Table 2. The most important working factors affecting leaving employment

Top managers								
	Hard work	Boring work	Poor workplace equipment	Unsatisfactory work conditions	Working time planning	Overtime	Dissatis-faction	Overstaffed
Arithmetic mean	2,67	2,00	1,67	2,25	3,50	2,50	2,83	1,58
Median	3,00	2,00	1,00	2,00	3,00	2,00	2,50	2,00
Modus	4,00	1,00	1,00	2,00	3,00	2,00	2,00	2,00
Chiefs of hotel departments								
Arithmetic mean	2,81	2,94	2,50	2,94	2,94	2,38	3,06	1,94
Median	3,00	3,00	2,00	3,00	3,00	2,00	3,00	2,00
Modus	3,00	2,00	2,00	3,00	4,00	2,00	3,00	2,00

Source: own research

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Of the personal (professional) factors (Table 3) that would have the greatest impact on the termination of employment, they provided a better offer from another company / hotel and the prospect of a better job abroad. On the other hand, employees of lower levels of management consider the most important personal factors to be preconditions for career development, the possibility of self-fulfillment, a better perspective abroad and a better offer from another hotel.

Table 3. The most significant professional factors affecting the leaving of employees from job

Top managers						
	Inability to use education	Impossibility of further education	Minimum career assumptions	Impossibility of self-realization	Perspective abroad	Better offer from another company
Arithmetic mean	2,17	2,25	2,75	2,58	3,33	4,00
Median	2,00	2,00	2,50	2,50	3,00	4,00
Modus	3,00	1,00	2,00	3,00	3,00	4,00
Chiefs of hotel departments						
Arithmetic mean	3,00	3,25	3,56	3,44	3,06	3,56
Median	3,00	3,00	4,00	3,00	3,00	3,50
Modus	3,00	2,00	2,00	3,00	4,00	3,00

Source: own research

Top hotels managers are most dissatisfied with wages and lack of the hotel owners' motivation. The important organizational factors that may influence their decision to change employment were also identified by poor interpersonal relationships, the way they manage and guide the owners, or the lack of feedback. Employees of lower organizational levels critically perceive non-transparent and unfair remuneration, low wages, lack of feedback on their performance and poor management by top managers (Table 4).

Table 4. The most important organizational (managing) factors affecting employment leaving

Top managers						
	Bad relationships	Bad management	Transparent remuneration	Job motivation	Low wages	Feedback
Arithmetic mean	2,92	2,92	2,75	3,00	3,08	2,75
Median	3,00	3,00	2,50	3,00	3,00	3,00
Modus	3,00	3,00	2,00	3,00	3,00	3,00
Heads of hotel departments						
Arithmetic mean	2,94	2,94	3,00	2,81	3,19	3,06
Median	3,00	3,00	3,00	3,00	3,00	3,00
Modus	2,00	4,00	2,00	3,00	3,00	2,00

Source: own research

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According to top managers and employees of lower organizational levels, health problems are the main cause of termination of family employment relationships (Table 5). Imbalance between private and working life, following a partner are other important factors for potential leaving from employment. Employees also react sensitively to workplace uncertainty.

Table 5. The most important family factors affecting retirement

Top managers				
	Following partner	Employment uncertainty	Health problems	Imbalance between work and private life
Arithmetic mean	2,92	2,42	3,00	3,42
Median	3,00	2,00	3,00	3,00
Modus	3,00	2,00	4,00	3,00
Chiefs of hotel departments				
Arithmetic mean	2,88	2,94	3,38	2,88
Median	3,00	3,00	3,00	3,00
Modus	3,00	3,00	3,00	3,00

Source: own research

The results of this examination found significant fluctuation in factors on job satisfaction. The main causes of this fluctuation that could be affected by hotel management include insufficient salary, style of management, inappropriate working time distribution, strenuous work, and bad interpersonal relationships. Differences in the opinions of managers and employees of lower organizational levels are mainly in the group of personal (professional) factors. Better career development prospects, self-fulfillment opportunities and prospects abroad attract mainly employees, while better jobs and prospects abroad mainly affect top managers. We were wondering if there were differences in the causes of fluctuations in chain and independent hotels. We used the Mann-Whitney test to verify this assumption. The test showed a significance level of less than 0.05 in three cases - work, personal, and family reasons. Higher job dissatisfaction caused by limited opportunities for self-realization and career development, labour intensity, work-life imbalance is in independent hotels.

Stabilization of managers and other employees is a prerequisite for achieving certain job security and hotel performance. We realize that even the stabilization rate has its limitations. Not all managers and employees benefit the hotel and its customers. The factors that most support the stabilization of employees and managers are in Table 6.

Differences in the investigated factors of managers and employees of lower organizational levels are minimal. Managers prefer a sense of recognition as being valuable, while employees prefer to raise wages during their careers. The dependence between personal stabilization and career development was verified using the Spearman coefficient. Management turnover is stabilized if they are rewarded, have opportunities for self-realization and a well-set corporate culture. The dependence between career development and stabilization has not been confirmed, the reason being the simultaneous presence at the top of the hotel's organizational hierarchy. The Spearman's coefficient confirmed the dependence of employee stabilization on career development options and employee self-fulfillment. The significance level reached was less than 0.01.

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Table 6. The most significant factors of employees' stabilization

	Transparent remuneration	Possibility of self -realization	Set business culture	More leaders than managers	Sense of recognition	Personal development and career	Wage increase during a career	Reassessment of the employee's job description	Engaging staff in management	Work on changing the organizational culture of the hotel	Measurement of employee satisfaction	Other
Top managers												
Arithmetic mean	4,17	3,33	4,25	3,75	4,33	3,92	3,92	2,83	3,00	2,83	3,33	0,42
Median	4,00	3,00	4,00	4,00	4,00	4,00	4,00	3,00	3,00	3,00	3,50	0,00
Modus	4,00	3,00	4,00	4,00	4,00	4,00	5,00	3,00	3,00	3,00	4,00	0,00
Chiefs of departments												
Arithmetic mean	4,19	3,63	3,88	3,38	4,38	4,19	4,63	3,50	3,44	3,00	3,44	0,00
Median	4,00	4,00	4,00	3,00	4,50	4,00	5,00	3,00	3,00	3,00	3,00	0,00
Modus	4,00	4,00	4,00	3,00	5,00	4,00	5,00	3,00	3,00	3,00	3,00	0,00

Source: own research

Experts expressed their agreement with the previously submitted claims in the Likert rating scale: 1 - I fully agree, 2 - agree, 3 - do not agree, 4 - totally disagree. We used the center, modus rates for the evaluation, the median value being decisive. From the calculated median it is clear, that the experts agree that the wage has the greatest impact on employee stabilization (median 1). The results of the investigation confirmed the initial assumption that the current situation of staff stabilization in hotels does not correspond to the expectations of employees (Table 7).

Table 7. Experts' opinions on the submitted statements

Experts	Mean	Median	Modus
If the employee can develop his / her career, he / she is a stable employee of the hotel.	1,92	2,00	2,00
Transparent remuneration of job results has the greatest impact on employee stabilization	1,50	1,00	1,00
Chain hotel staff are more satisfied with work than independent hotel staff.	2,00	2,00	2,00
The system of employee stabilization is more effective in chain hotels than in independent hotels.	1,50	1,50	1,00
Employees perceive the factors of their stabilization as processes that contribute to their development, job satisfaction and the decision to stay in the hotel.	1,67	2,00	2,00
Top managers perceive stabilization factors as processes that best meet the hotel's strategic goals in terms of achieving work performance and quality of service.	1,58	2,00	2,00

Source: own research

Conclusions

Research confirmed the initial claim that job satisfaction is closely linked to turnover and employee retention. Up to 75% of top hotel managers have said they are happy at work and do not consider changing work. A quarter of managers do not consider themselves stable and want to change jobs. Other employees of the examined hotels are considered less stabilized. Only 6% of employees are satisfied, 62% are almost satisfied and 30% would welcome a change in employment. The most stabilized professions include the positions of chef, sous-chef cook and all

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managerial positions in the financial, business and management departments. The problematic jobs in terms of high turnover include waiter positions, kitchen auxiliary forces, and house cleaners.

Job satisfaction revolves around the creation of an environment where each person is valued and respected. Determining the significance of the factors that increase staff stabilization in hotels was one of the main reasons to conduct a survey in selected hotels in Slovakia. In evaluation of unfulfilled expectations and work discontent dominated the working reasons, mainly hard-working conditions, but also minimum career development opportunities in independent hotels, non-transparent remuneration, low wages and lack of feedback from managers about the results of their job. Managers consider as the most important factors of personal stabilization, the feeling of valuation and recognition, the right setting of corporate culture and fair remuneration. Other employees would welcome a regular wage increase during their job career, transparent and fair remuneration. labour costs in Slovak hotel industry are often the highest cost item at a level of 40 - 50% of total costs. The survey showed that the gross monthly wage of employees ranges from 700 - 1000 EUR, the average wage of addressed managers is in the range of 1300 - 1600 EUR. It is imperative that employers communicate openly and transparently the wage possibilities during the entrance interview, and then motivate them according to the hotel's capabilities and staff performance. Ensuring transparent wage communication means that job descriptions need to be drawn up for each job in the hotels, and a wage scale is based on the range of staff assignments and competencies.

Employee stabilization is a major challenge for hotels that offer services 24 hours a day and are characterized by different employment patterns. Hotel managers, who want to solve the issue of fluctuation, should keep records of fluctuation, examine its causes, identify the expectations of an employee from the hotel industry, know the reasons for work dissatisfaction and do their best to stabilize people with development potential. The established system of stabilizing employees in network hotels, unlike the independent ones, is reflected in lower staff turnover. A high degree of stabilization can also include long-term low-performance employees. We agree with Branham's assertion (2005) that there is no universal guide or miraculous way to answer the question of keeping the right employees. We need to focus on the employees that the employer wants to keep the most. Stabilization practices follow the life cycle of employment: being an employer for whom people want to work (1), choosing the right people and giving them a good start (2), creating an optimal working environment (3), guiding them and rewarding them for their commitment. The conducted survey has shown that gradual improvement of the working environment and creating conditions that guarantee a sense of security and safety at the workplace; transparency in accepted procedures for managing human resources from employee recruitment to departure; linking job content and performance with remuneration can help to increase staff stabilization needed to achieve the hotel's fluent operation.

Hotel employee turnover is a global problem, not particular to Slovakia. The research results confirm the results of several scientific studies (Thomas et al. 2014; Coetzee, Stoltz 2015; Dilbag, Amandeep 2017 et al.). Quality employees are based on the hotel's precarious service to preserve their valuable employees, but due to the high turnover rates it offers, the challenging task for hotel managers is to attract and retain skilled workforce. Structured interviews with experts have shown that investing in employer branding is essential in human resource management. In the current industry, hotel offers a variety of jobs with employers in a position to find the right workforce. Hotel employers are in the labour market as competitors to attract and retain skilled and efficient employees. The choice and acceptance of the fittest is narrowing. A potential employee has many options, not just one employer. Building an employer brand means real upgrading of employee care (internal customers) to the level of external customer care. Part of building an employer brand is creating an employer value proposition that incorporates the hotel’s values and philosophy, salaries and benefits, a working environment and accepted corporate culture, the possibility of personal development and career, active communication with employees but also with potential employees.

In the survey of the investigation of the causes of fluctuation and the possibility of increasing the stabilization of competent employees, we focused mainly on identifying the factors that contribute most to job dissatisfaction. The result of the research is the identification of processes that can mitigate employee turnover and increase hotel stabilization. We will focus further research on determining the impact of employee age and educational divergence on employee turnover. We assume that there are differences between the younger and older generation in the case of retirement. The second starting point of the research is to verify the impact of employee education and its use in the industry to change jobs. A possible problem with the solution is the willingness of the practice to cooperate in research and obtain the necessary information. For this reason, we will engage in the research of human resources managers of selected network and independent hotels who are interested in solving the negative consequences of fluctuation on the performance and quality of provided services.

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SUSTAINABILITY TRENDS AND CONSUMER PERCEIVED RISKS TOWARDS PRIVATE LABELS

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Abstract. The present paper explores differences between perceiving consumer risk towards products under private labels (PPLs) versus products under manufacture brands (PMBs) on Russian metropolitan markets (St. Petersburg, namely). The research model (Model RFID) designed taking into account the direct and indirect influence on the said risks from a set of factors relevant to buying decisions. The theoretical and practical consistency of the model tested by relevant statistical tools. Some limitations of the research are presented, as well as recommendations for brand managers aimed at overcoming traditional and strong (though decreasing) PPL risks among Russian consumers. It has been hypothesized that as the private brand phenomenon continues to evolve, a further change in branding strategy should be greening private brands to make them more competitive. Directions and goals for future research concerning the relationship between private labels understood as sustainable brands formulated in brief.

Keywords: consumer perceived risk; FMCG, green brand; manufacturer brand; perceived value; private label; sustainable brand; retailer image

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1. Introduction

The rapid ramification of products under private labels (PPL) on fast-moving consumer goods (FMCG) markets inspires a growing interest in private labels all over the world. Nowadays the shares of PPLs in the total number of products sold by FMCG retailers show significant differences by countries. However, among many national differences, there is an appreciable general trend: permanently increasing numbers of PPLs in a permanently increasing number of countries. So, according to Nielsen/PLMA 2016 Year-book in such countries as Spain, United Kingdom, Portugal, and Germany the PPL market shares were 49%, 47%, 43%, and 41% respectively (PLMA, 2016). The Nielsen 2019 data (Private label…, 2019) demonstrated that market share for PPLs increased in 17 European countries' market share for private labels stands at 30% or more. Spain, Switzerland, and the United Kingdom lead the way with the highest market shares at above 50% of the 20 countries studied by Nielsen; the same indicator in Germany, Belgium, and Portugal is more than 40%. Even more inspirational figures concerning private label applications are now in the Russian market. In 2016, the total turnover of PPLs in Russia accounted for more than 10 bln. RUR, with a trend for further growth. Retailers operating in the Russian FMCG market have recognized the opportunity and started introducing their own private labels. This indicates that there is significant room for introducing additional PPLs on the Russian market where their share in retail sales is still much lower than in developed countries.

Previously, the focus of FMCG markets academic research was mainly on products under manufacturer brands – PMBs (Buck, 1993; Lambin et al., 2007; Turner, Grant, 2011). However, a significant change in the research focus took place in the last decade. Numerous papers on different aspects of the PPL phenomenon appeared (The private…, 2011; Manikandan, 2012; Trends…, 2015), including those on the Russian FMCG market. According to the study carried out by the Advanter Group (Private label…, 2018), 75% of the customers living in Russian cities having more than one million inhabitants preferred to buy PPLs (Moscow – 78%; Saint Petersburg - 88%). Despite the general economic recession and the corresponding decline of purchasing power in Russia (partly resulted from anti-Russian sanctions, partly by COVID-19 pandemic), there are signals of economic recovery but with the lower buying power of the population. Therefore, one may forecast competition growth between PMBs and PPLs in favor of the last in the near future.

The first reason to carry out the present research is a shortage of conceptual and empirical works on the subject whereas in practice an active development of Russian PPLs takes place. The way of PPL application in Russia usually follows the western one – in good conformity with the *lead-lag analysis* (Hollensen, 2014, p.180) – and thus ignores the need to take into account economic and psychological portrait of Russian consumers and their perceptions of PPLs, as well as the unique features of the post-Soviet Russian FMCG market. Up to 2002, the special and severe all-Russia standards inherited from the Soviet era (GOST standards) existed. They applied to FMCG products (especially to foodstuff category) and were obligatory to respect. Later the Federal law on technical regulation mainly replaced GOSTs standards by "technical rules" developed and approved at the manufacturer level, with a sort of rather weak federal/regional supervising. Such a weakening in state regulation led to the obvious deterioration of FMCG products' quality control. Russian media were overwhelmed with information on low quality and different falsifications in the FMCG market. As a result, Russian consumers had to look for a criterion (and a sign) of the quality/safety of FMCG products. For example, the contemporary worldwide popularity of halal products (Wilson, Liu, 2010) takes now a place also in Russia (Galiulina et al., 2016; Cherenkov, Mamedova, 2019; Chefenkov, Tanichev, 2020). It is noteworthy that these products are popular not only among Muslims. This can serve as an example of specific consumer behavior in search of guaranteed quality and safety, with the use of such non-government and formerly exotic symbols as halal and kosher. Such guarantees are very important in the times of the modernist economy when consumers have to choose not products but rather brands that factually are simulacra (Cherenkov et al., 2020).

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The second reason is a pursuit to show that consumers feel a difference in perceived risks associated with PPLs versus PMBs. It was definitely found (Glynn, Chen, 2009; Nenycz-Thiel, Romaniuk, 2011; Beneke, 2012) that this difference influences negatively the consumers' intention to buy PPLs (Glynn and Chen 2009; Walsh, Mitchell, 2010; Nenycz-Thiel, Romaniuk, 2011; Beneke et al., 2012). Despite the fact that retail chains invest heavily in improving the quality of PPLs, consumers count such products as «low-cost or tolerable products at a low price». This perception anchors rather deeply in the minds of many buyers (Valaskova et al., 2018). Therefore, buying such goods, as compared to purchasing well-known PMBs, implies a certain perceived risk for consumers (Lin et al., 2009; Dursun et al., 2011; Rubio et al., 2014). This stereotype of perceiving PPL quality (Cumar, Kothari, 2015) roots mainly in the fact that consumers are not sufficiently aware of benefits got as a result of purchasing these products. In some cases, they even have no idea that the products they prefer and purchase systematically belong to the PPL category. This lack of knowledge about PPLs and their attractive points is largely due to the cost-saving specificity in retailers' branding strategies. As a rule, there is no sufficient attention to media advertising costs that – along with the impact of other factors, such as saving logistics costs, gaining from active and lean sales promotion, – allow to reduce the PPLs' prices significantly (up to 25-30% in comparison with the prices for similar PMBs). Therefore, perceived consumer risk should be taken into account while developing a PPL branding strategy (Giovannini et al., 2017), and it should be appropriately managed.

Besides, there is a lack of research unveiling how to manage or manipulate the perceived consumer risk of buying PPLs. One of the approaches to managing perceived consumer risk regarding buying PPLs aims to explain what factors influence and how they influence the said risk, and thus to give understanding for private label managers in retail chains how to reduce this negative perception (Peter, Ryan, 1976; Arslan, 2013; Łukasik, Schivinsky, 2015). This topic attracts also the attention of Russian scholars (Starov, Kiriykov, 2016; Starov et al., 2020) but the number of papers is scarce. Therefore, the main goal of this paper is to develop a model including the factors defining the difference between consumer perceptions of risks towards PPLs versus PMBs, and explaining the influence of these factors.

Finally, as was said above, the green sign of halal plays a role as the guaranty of quality/safety but not only. Greening private labels (brands) make them stronger. Hence, some retailers take into account religious beliefs in their own brand politics by offering a range of halal food under their private label (Own brands…, 2010). One can say the same about kosher marked products (Kamins, Marks, 1991). However, the religious affiliation of private labels constitutes only a small part of what can increase the perceived private brand value by greening it and turning it into a sustainable brand. Target markets served by retailers that are owners of private brands are changing due to eco-seeking consumers or "Neo-Greens" (Lewis, Loker, 2010) that can be described as "eco-chic", "eco-radical" and "see-me" environmentalists. They are looking for visible signs of style and sustainability in the products they purchase. Taking one of the "sustainable brand building" recipes, namely "How to build a sustainable brand" (Fransen, 2020), we can reveal the following ingredients: (1) show distinctly how a private brand product fits into the sustainability space; (2) monitor advertently what the target audience is thinking about sustainable products; (3) search for sustainable suppliers; (4) include sustainability messages into retailer's integrated marketing communications; (5) permanently measure the building sustainable brand process effectiveness and efficiency. In principle, this is "the alphabet" of branding, but with an emphasis on the concept of sustainability.

The rest of the paper is organized as follows. Section 2 presents the theoretical background of the present research and comprises the literature review on the issues of consumer risk perception while purchasing PPLs as compared to PBLs, with the focus on applicable methods and research tools to be used during our empirical study. Section 3 is mainly concentrated on the consumer risks perception dissimilarities while purchasing PPLs versus PBLs. In Section 4, we discover and justify the method, the proposed research model including the factors influencing the difference between consumer risk perception while purchasing PPLs or PMBs (RFID-model), and provide

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research hypotheses. In Section 4, the analysis of research results and directions for future research concerning greening private labels presented. Finally, we point out research limitations and give final considerations on sustainability contribution in formatting the consumer's risk perception while purchasing PPLs.

2. Theoretical Background

The concept of perceived risk has been emerged and begun to quickly develop in the 1960s (Bauer, 1960; Łukasik. Schivinsky, 2015) and occupied a significant place in marketing. The concept is based on the suggestion that any buying action involves some risk. At first, consumers meet an uncertainty regarding purchasing subject; then, there may be unpleasant consequences that he or she can not exactly anticipate (Cunningam, 1967; Vo, Nguyen, 2015). There is some consumer discomfort in both these dimensions of the buying process because consumer is able to find out all the pluses and minuses of purchase only after transaction. Before purchase, consumers have to make their decision in the face of uncertainty (Mitchell, 1998). The concept of perceived risk is widely recognized because it mirrors, in good accordance with reality, what happens with a consumer's mood or wallet when he or she is not aware of the purchasing subject and doubts the consequences of this purchasing (Sheau-Fen et al., 2012).

Starting from the works of Sir John Maynard Keynes who inspired the research in the field by risk study in the probability theory (Gilies, 2003), the range of relevant definitions became very wide and varied. This is quite understandable since the concept of risk itself is very complex and has not only mathematical but also psychological dimension. One of the simplest definitions is the following: perceived risk is the expected negative utility associated with the purchase of a particular product or brand (Dunn et al., 1986; Manikandan, 2012). This lapidary definition is not much detailed but is a rather precise one. It contains a very simple and clear idea that perceived risk is not objective but is something that exists in the consumer mind and has a subjective nature. Based on the said definition, one can argue that: (1) different consumers could have different levels of perceived risk referred to the same object; (2) the real risk of purchase (if any) could be very different from the one in the consumer mind (to be higher or lower). However, the "real risk" is rather philosophical than economic or marketing notion; it cannot be assessed before the corresponding risky event occurs. Nevertheless, these considerations are important while analyzing how the perceived risk level can influence consumer behavior: consumers tend usually to be risk-averse when talking about buying any product or brand (Batra, Sinha, 2000; Glynn, Chen, 2009).

The only item adding a certain bias to the said definition is the term *utility* used mainly as a fundamental notion of orthodox (mostly neoclassical) economics. This term has a less psychological dimension than it should be for marketing purposes since there is no conventional metric for utility. However, the term *utility* is generally understood as a bundle of preferences supplying consumer satisfaction. In consumer behavior, the perceived risk is not the unique factor that influences consumer preferences (Havlena, DeSarbo, 1991); it is only one among the range of factors. Therefore, it is much more useful to understand *utility* as a consumer satisfaction level that can be got from purchase. Taking into account this semantic uncertainty of the utility notion, one can suggest the use of *perceived risk* as a peculiar "anti-substitute" for the *utility*. Although this paper focuses rather on perceived risk than on consumer choice, the above logic can be used to incorporate perceived risk into a utility/choice model. As Dowling and Staelin (1994) considered, the perceived risk consists of two components: (1) uncertainty and (2) adverse consequences. Taking into account this consideration, we propose to understand perceived risk as consumer risk representing uncertainty and expected negative consequences associated with the purchase of a particular product (brand). This definition has advantages of simplicity and is free from difficulties stemmed from a misunderstanding of the term *utility*.

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To define place for perceived risks in different risk classifications, it is necessary to construct firstly a short typology of risks relevant to consumer perception and consumer choice of brands. A number of academic research (Mitchell, 1998; Mitchell, 1999; Sheau-Fen et al., 2012) while conceptualizing perceived risk considered a mix of seven types of risk, representing this risk as a multidimensional phenomenon. Many relevant studies reveal the lack of conformity regarding the conceptualization and operationalization of perceived risk (Conchar et al., 2004; Ganzach et al., 2008; Burt and Sparks, 2016). As to conceptualization and operationalization of perceived consumer risks towards PPLs, it is necessary to say it is an even more sophisticated task. Branding in retail has a wider goal than simply show a "name on a product", especially when we are talking about the greening of PPLs. Names of retailers used as brands go beyond a simple "product label" by positioning the retailer (as PPL owner) for consumers and suppliers/manufacturers. Retailers as owners of private labels take responsibility for the quality and safety of PPLs. Hence, they have to control manufacturers/suppliers in accordance with their standards. Therefore, consumers receive new alternatives due to a new range of PPLs offered (The impact…, 2011). However, consumers might be confused by seeing on PPLs the retailers' names, not the manufacturers' ones. Such an alternative could lead to an increase in consumer perceived risk regarding PPLs due to uncertainty and expectation of negative consequences of buying them in comparison with buying well-known national brands (the PMBs). Ultimately, the multidimensionality of the phenomenon of consumer perceived purchasing risk towards PMBs versus PPLs complicates the task of this study. The main dimensions necessary to take into account while conceptualizing the perceived risk have been earlier defined as "financial, social, psychological, and last, physical" (Ross, 1975). In some later studies, only three dimensions were used (Glynn and Chen, 2009): financial, performance, and social ones. Besides, the integrated approach framework treated perceived risk as a single variable. On the way to conceptualize perceived risks, Mittchell (1999) proposed to make a distinction between inherent and handled risk. The inherent risk is the latent risk that a product category holds for a consumer, as the innate degree of conflict the product class arouses in the consumer mind. The handled risk is the amount of conflict a product class engendered when a buyer chooses a brand from that product category in the usual buying situation. Since the subject of the present study depends on the buyer choice, we are interested in his or her choice between PPLs and PMBs from a viewpoint of consumer perceived purchasing risk. Therefore, the handled risk should be in the focus along with different factors determining consumer choice between products under consideration.

3. Research methodology and research hypotheses

At first, it was necessary to justify an application of perceived risk concept to the case of choosing PPLs by customers (Rastogi, 2013). The idea that perceived risk can influence the PPL success introduced in the second half of the XX century. Thereafter many studies done in the field confirm the real and noticeable difference in the risk perception of buying PPLs versus PMBs. The comparison of the said risks has shown that the latter risk was lower (Richardson et al., 1996; Batra, Sinha, 2000; Erdem et al., 2004; Mieres et al., 2006; Glynn, Chen, 2009; Nenycz-Thie, Romaniuk, 2011; Beneke, 2012; Zain, Saidu, 2016).

Our previous study on the consumer perceived risk towards PPLs (Starov et al, 2016) leads to the conclusion that there are two main research questions to further investigate in the frame of present research:

→ Whether consumers perceive PBLs as riskier to buy in comparison with buying PMBs?
→ Whether higher perceived risk towards private labels inhibits consumer intention to buy PBLs?

A number of empirical studies (Mieres et al., 2006; Glynn, Chen, 2009; Chaniotakis et al., 2010; Nair, 2011; Wang, Lee, 2016) show that there are positive answers on both questions above. It turned out to be true even for the case of national innovative PMBs (Martos-Partal, 2012). Consumers feel the difference between the perceived risk towards PPLs versus PMBs, and this difference influences negatively the consumers' proneness to buy PPLs. This means that one should take into account perceived risks when developing branding strategies relied on launching PPLs and these strategies should be appropriately managed in order to develop PPLs successfully.

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There is a certain shortage of relevant studies concerning Russian FMCG markets devoted to investigating how to manage consumer perceived risks towards PPLs. One of the approaches to managing the said risks is to identify the most influential factors (Rastogi, 2013) and clarify how they influence consumer perceived risk (Lumpkin, Dunn, 1990). Such knowledge should give private label managers an understanding of how to reduce the said perceived risk. Therefore, to arrange the present research on Russian FMCG markets, the first step is to develop a research RFID model(fig. 1) describing the relationship between factors, influencing the difference in perceived risk towards PPLs versus PMBs. The basis for the model under consideration is borrowed from (Mierez et al., 2006) where the suitable prototype has been included under the title «Antecedents of the difference in perceived risk between store brands and national brands». We use the said model herein to define both direct and indirect effects caused by variables related to the purchasing behavior such as perceived quality, experience with the product category, familiarity with the store brands, specific self-confidence and reliance on the extrinsic product attributes. However, the relevant literature analysis shows that there is another factor to be included in the proposed RFID model (Fig. 1). Namely, "retailer brand image" (Vahie, Paswan, 2006) offered as an additional variable having, form our point of view, a significant impact on the difference in risk perception toward PPLs versus PMBs in Russia. We assume that this variable can substantially improve the model and better explain the said differences in consumer perception. It should become possible to find a strong correlation between the said additional variable and the country-of-origin effect expected to reveal in the case of comparing international and domestic brands (PPLs and PMBs comparing included). This "made in ..." effect, highly popular in international marketing, is a psychological effect defining consumers' attitudes, perceptions, and purchasing decisions that arise from the country-of-origin labeling.

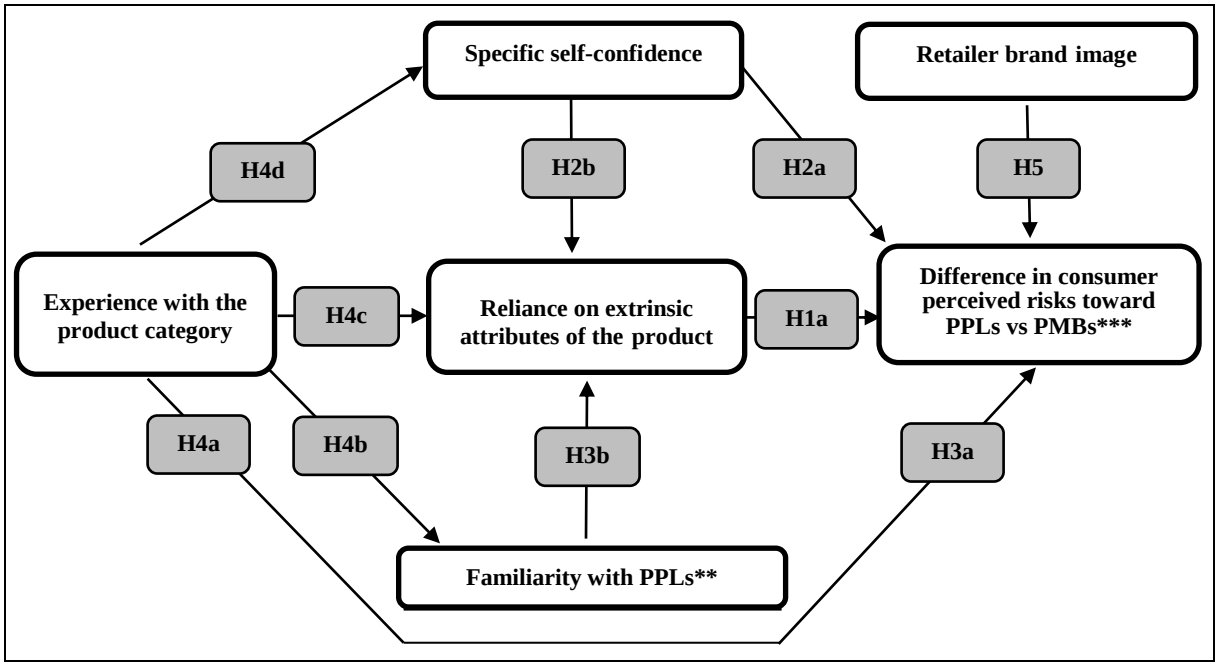

Figure 1. Research model of relationship between factors influencing the difference in risk perception towards private labels versus manufacturer brands (Model RFID)

Legend:
post reprehendo data, rates of path analysis are taken into account: **H1a** = +0,46*; **H2a** = -0,21;
H2b = -0,42*; **H3a** = -0,24*; **H3b** = -0,18*; **H4a** = -0,18; H**4b** = +0,58*; **H4c** = -0,18; **H4d** = +0,62*;
H5a = -0,19*;
* significance levels when p = 0,01%; ** PPLs - products under private labels; PMBs – products under manufacturer brands
Source: redesigned and computed by the authors on the basis of (Starov et al., 2016)

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To understand better a set of relationships in the said model explanatory descriptions are presented in Table 1.

Table 1. Explanatory description of the RFID model

Influence factors { Cronbach's α }	Items for Measurements	Elaborated research hypotheses	References
Reliance on the extrinsic attributes of a product (REAP) [extr_1,2,3] { 0,787 }	**1** – The more expensive the product, the better the quality (extr_1); **2** – The better-known the brand name, the better the quality (extr_2); **3** – The more attractive and appealing the packaging, the better the quality (extr_3)	**H1a** – while evaluating the product, the REAP has a positive and direct influence on a difference between perceived risks toward PPLs *vs* PMBs.	Richardson et al., 1996.
Specific self-confidence (SSC) [conf_1, 2, 3] { 0,795 }	**1** – I consider myself capable of choosing a good product (conf_1**); 2** – I feel quite satisfied with choosing my preferable brands (conf_2**); 3** – When deciding on a brand, I feel confident of my choice (conf_3).	**H2** – the SSC of a consumer has: **H2a** – a direct influence on a difference between perceived risk toward PPLs *vs* PMBs due to the REAs; **H2b** – the same but resulted in indirect influence.	Schaninger, Sciglimpaglia, 1981; Mierez et al., 2006.
Familiarity with private labels (FPL) PL_know_1,2,3] { 0,875 }	**1** – I know what the private label is (PL_know_1); **2** – I know several private labels of several retail chains (PL_know_2); **3** – I bought earlier or buy now private labels of several retailers (PL_know_3).	**H3** – the FPL has: **H3a** – a direct influence on a difference between perceived risk toward PPLs *vs* PMBs due to the REAP; **H3b** – the same as in the case of the **H3a** but resulted in an indirect influence.	Alba, Hutchinson, 1987; Richardson, et al., 1996; Jayasankaraprasad, Sakshi, 2017.
Experience with the product category (EPG) [categ_1,2,3] { 0,832 }	**1** – I am well-informed about products in this product category (categ_1); **2** – I know the different available brands well (categ_2); **3** – I often buy products from this product category (categ_3).	**H4** – the EPG has different influences on the difference between perceived risk toward PLs *vs* MBs: **H4a** – a direct one due to the REAP: **H4b** – a negative and indirect one resulted from the FPL; **H4c** – a negative and indirect one due to the REAP; **H4d** – a negative and indirect one due to the SSC.	Roselius. 1971; Delgado-Ballester, Munuera-Aleman, 2000; Mierez et al., 2006
Retailer (store) brand image (RBI) [image_1,2,3] { 0,820 }	**1** – I like shopping in *Auchan* / *Lenta* stores (image_1); **2** – There is a good assortment in *Auchan* / *Lenta* stores (image_2); **3** – There is a good price/quality ration in *Auchan* / *Lenta* stores (image_3).	**H5** – the RBI has a direct influence on the difference between perceived risk of PLs versus MBs.	Doyle, Fenwick, 1974; Lindquist, 1974; James et al., 1976; Marks, 1976; Bearden, 1977; Bloemer, De Ruyter, 1998; Collins-Dodd, Lindley, 2003; Semeijn, J. et al., 2004; Vahie, Paswan, 2006; Kremer, Viot, 2011.
Perceived risk toward PPL / PMB [risk_PL_1,2,3] / [risk_PB_1,2,3] { 0,853 } / { 0,753 }	**1 –** Are you suspicious of the PMB / PBL quality? **2 –** Are you worried that it is not worth the money spent for PPL / PMB? **3 –** Does it make you doubt whether you were right in buying PPL / PMB?	Perceived risk toward PPL / PMB = PR/PPL / PR/PMB	Mierez et al., 2006.

Source: developed by the authors

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The RFID model (Fig.1) and the hypotheses formulated for the study (Table 1) were useful to find out how and to what extent the set of independent variables in the model affects the desired dependent variable (the difference in the perceived risk of purchasing products marked by private label versus ones marked by manufactured brand). To unveil dissimilarities of perceived risks toward private labels versus ones of manufacturer brands, we selected for the field study four stores of two retail chains operating in Saint Petersburg. These were two stores of Auchan retail chain (assortment – up to 45,000 SKUs; 20% of items are sold under PPL) and two stores of Lenta retail chain (assortment – up to 14,000 SKUs; 8% of items are sold under PPL). In these stores, we conducted interviews with consumers at the end of 2017 and, partly, in early 2018. The age restriction of 18+ was applied to the sample. The sample size after excluding incomplete questionnaires was about 150 in each case (with a pair of spot-checks realized in early 2019). We used the Likert non-equal scales as a measuring instrument.
The choice of retail chains based on the following criteria:
(1) both retailers had a significant and approximately equal number of private labels in their portfolio;
(2) they had similar assortment profiles in terms of price levels, assortment width, and formats;
(3) their owners were from different countries to have a basis for a comparative study to understand the relationship between retailer image and consumer perceived risk (domestic retail chain versus foreign/international retail chain - a rather useful pair (Chuin, Mohamad, 2012) in case we need to evaluate the country-of-origin effect in consumer perceptions).

Criteria for choosing a product category to be under consideration were as following:
(1) the category is widely presented in both retail chains, not less than 5 brand items in each;
(2) the category belongs to those where PPLs are well-known for consumers;
(3) the category includes PPLs that should be developed with the help of the brand house strategy having retailer's labels on PPL packages;
(4) the category is asymmetrically popular in buying for two subsets of respondents interviewed to give a good variability between answers concerning the EPG variable;
(5) the PMB in the category is advertised both on TV and outdoors.

It turned out that a pair of packed butter items – the PPL *Beurre Moulé* and PMB *Valio* (Finnish brand) presented in *Auchan's* assortment and *Lenta's* assortment, respectively – well met this set of criteria. The dependent variable, as well as independent variables of research measurement, are latent ones and they are all measured (on the basis of 3 questions each compiled on experiences of previous works cited above – See table 1) using 5-point scales (the 7-point version was excluded to facilitate and truncate interviews with permanently impatient buyers in retail chain facilities).

4. Data analysis

The research primary data have been processed by using the SPSS.17 soft package. The RFID model (Fig. 1) and the set of hypotheses (Table 1) have been tested with the use of the structural equation modeling (Schreiber et al., 2006), confirmatory factor analysis (Arslan et al., 2013), and path analysis (Ha, 2002). An explanatory factor analysis (EFA) was necessary before the testing in order to get an initial idea of the dimension of the measurements. Then, the data have been checked for lack of data items and that all the variables had normal distribution. Finally, it was necessary to ensure that the sample size was at least 100. Since both the independent and dependent variables have been compiled from different previous studies, adapted, and integrated into the body of the RFID Model, it was necessary to check the reliability and validity of the model. The analysis has allowed us to conclude that the measuring questions (Table 1) could be applied to make necessary measurements due to the fact that Cronbach's alpha (α) was higher than minimum required value of 0,7 for all of the said items (namely, from 0,787 to 0,853).

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The RFID model has been tested for validity using the EFA allowing to confirm applications of latent variables due to the fact all the conditions of the said analysis (Janssens et al. 2008) were met. All the variables involved were sufficiently cross-correlated. Bartlett's test of sphericity has shown there was high enough correlation between at least a few of variables included; the paltry P-value (0,000 < 0,001) demanded to reject the null hypothesis (Ho: correlation matrix = identity matrix). Another criterion to justify an applicability of the said factor analysis was the KMO measure of sampling adequacy for a factor analysis (Cerny, Kaiser, 1977) that was equal to 0,799 in our case while the minimum required level should be more than 0,5. Different items belonged to seven dimensions and each dimension has been measured by 3 questions (table 1). The cumulative rotation sum of squared loadings was 76,34% that meant that 7 dimensions explained 76,34% of dispersion. The analysis of community gave the minimum extraction level of 0,579, therefore the conclusion could be made that all of the variables under consideration were relevant. Finally, the rotated component matrix showed that all 7 dimensions were defined, and for all these dimensions there were 3 items to assign to the specific factor (table 1). It turned out to be possible to show that these elements can be clearly assigned to the corresponding factors, because in the case of approximately 120 observations, the significant load of the factor was 0.5, and all products had a load of more than 0.5 for a single factor. The next step was measuring the dependable variable in the RFID model– "Difference between PR/PL and PR/PB" – to define a statistically significant difference. Assuming that the individual weights of the said risks are equal, the simple means were obtained: (1) PR/PPL = 1/3*(PL_risk_1 + PL_risk_2 + PL_risk_3); and (2) PR/PMB = 1/3*(PB_risk_1 + PB_risk_2 + PB_risk_3). Then, after having applied the t-test to differences between respondents' risk perceptions the null hypothesis meaning that the said means were equal was rejected. In other words, the 0,95 probability was received that the difference under consideration existed and three new items "Risk Diff 1", "Risk Diff 2", and "Risk Diff 3", – as metrics for "Difference in perceived risk toward PPL versus PMB" – were received. Further data processing was applying a special SPSS.17 module AMOS designed for the purposes of the structural equation modeling (SEM). The confirmatory factor analysis (CFA) and the path analysis with testing hypotheses were carried out. The main difference between EFA and CFA data was that with EFA data clarified whether particular items loaded effectively on a particular number of various factors – they showed explanatively they measure the known number of dimensions. Then, indicators/criteria of reliability (Janssens et al., 2008) for the RFID Model presented by features of one-dimensionality, convergent validity, reliability, and discriminant validity were checked (Table 2).

Table 2. Criteria for determining general quality of Model RFID

FIT METRICS	MODEL VALUES	THRESOLDS	COMMENTS
CMIN/DF	1,203 *1,178	< 2,000	*The value of chi-square/number of degrees of freedom (CMIN/DF)* – the CMIN confirms that the model under consideration fits to data and is assessed as a good quality one; the CMIN/DF also confirms the conclusion about good quality of the model.
GFI	**0,888** *0,883	> 0,9	*Goodness of Fit Index (GFI) and Adapted Goodness of Fit Index (AGFI)* – both indexes are slightly less their thresholds and analysis perhaps the analysis should continue.
AGFI	**0,845** *0,840	> 0,8	
TLI	0,979 *0,976	> 0,95	*Tucker-Lewis Index (TLI) and Comparative Fit Index (CFI)* – both indexes are considered as the most reliable for assessing the model; a good model fit has been got.
CFI	0,983 *0,980	> 0,95	
RMSEA	0,038 *0,041	< 0,05	*Root Mean Square Error of Approximation (RMSEA) and Root Mean Square Residual (RMSR)* – both indexes are well less their thresholds and this fact this fact indicates satisfactory conformity (overall fit) of the model.
RMSR	0,062 *0,062	< 0,08	

***Legend*:** *outputs resulted from the path analysis

Source: computed and compiled by the authors

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Then, to understand better what effect the factors included into the RFID model had on the difference in the perceived consumer risk towards PPLs versus PMBs, the path analysis (Janssens et al., 2008) was conducted related to SEM applied to analyzing direct and indirect relationships between directly observed and indirectly observed (latent) variables. The outputs of the path analysis carried out herein were taken into account and displayed in Fig. 1 and Table 2, respectively, as marked by asterisks (*).

Finally, with routine computing programs and proper checking, the said ten hypotheses displayed on the RFID model were tested. For this purpose, the path analysis was used – whether they all are statistically significant. The outputs of the procedures above are in Table 3. Therefore, the RFID model is in fairly good accordance with the data collected/measured and can be acceptable for practical use for explaining observed and structured data.

Table 3. **Outputs of assessing hypotheses concerning the relationships displayed on the RFID model**

HYPOTHESES	CONSIDERATIONS AND COMMENTS	FINAL DECISION
H1 – Reliance on the extrinsic attributes (REAs) of a product	The REAs influences positively the difference in the perceived risk toward PPLs versus PMBs	**accepted**
H2 – Specific self-confidence (SSC)	**H2a** – there is a statistically significant relationship between the SSC and a specific consumer choice could be done between PPLs and PMBs because his or her low self-confidence forced to be confident while making the said choice.	rejected
	H2b – the SSC influences the said difference that means that a consumer, being not sufficiently confident, relies on such attributes of a product as brand and price	**accepted**
H3 – Familiarity with private labels (FPL)	**H3a** – indeed, the FPL influences the said difference in the perceived risk negatively and directly	**accepted**
	H3b – there is no statistically significant relationship between the FPL and the said difference through the REA	rejected
H4 – Experience with the product category (EPG)	**H4a** – the EPG does not influence the difference in perceived risk toward PPLs versus PMBs negatively and directly due to the fact that without knowing certain private labels in this category (FPL) or increasing the consumer's SSC this factor cannot directly influence the independent variable	rejected
	H4b, H4d – indeed, the EPG influences negatively the dependent variable through the FPL and the SSC	**accepted**
	H4d – the EPG has not a statistically significant relationship with the REA	rejected
H5 – Retailer (store) brand image (RTI)	**H5** – there is a statistically significant relationship between the RBI and the said difference in perceived risks	**accepted**

Source: computed, compiled, and finally commented by the authors

The RFID model has explained the difference in consumer perception of risks towards PPLs versus PMBs formed due to the direct and indirect influence of the set of factors described and displayed above (Fig. 1). The path analysis performed shows that three of five factors really influenced directly the difference in perceived risks towards PPLs versus PMBs, and two factors influenced indirectly the independent variable. The authors have no doubt about the application of the RFID model (after necessary adjustments) in a future study regarding sustainable replicas of PPLs and PMBs.

5. Conclusions and future research

There is a set of limitations to be taken into account while analyzing our findings. Firstly, the risk under consideration is understood as an integrated or non-differentiated one. Secondly, a full set of brands in reality sold by retail chains is reduced to one brand in the only one product category. One of the important research conditions is a heterogeneous respondent awareness concerning the selected product category. This circumstance could affect the study results and should be taken into account in the future while comparing consumer risks towards PPLs versus

PMBs. Besides, in addition to a preference bias dependent on certain product categories, an influence of an overall decline in purchasing power of the Russian population after applying anti-Russia sanctions and measures to fight the COVID-19 pandemic could distort a buying behavior toward PPLs preference due to their lower price. In general, the results gained by the authors on the St. Petersburg FMCG market are mainly similar to the results of the predecessors. The worldwide stereotype of consumer attitude toward PPLs as low-quality products is alive also in Russia.

Based on many interviews conducted in 2017-2019, we can construct the portrait of a successful PL-manager. For this position, the following competencies are important: (1) ability to increase consumer awareness and knowledge concerning PPLs in product categories (our findings witness the weak saturation of retailers' websites with PPL information); (2) ability to familiarize consumers with benefits of PPLs (e.g., strengthening tasting and sampling, introducing small packaging); (3) ability to strengthen consumer confidence in making purchasing decisions (e.g., more spectacular display of PPLs, arranging displays with POS-materials); (4) ability to improve retailer brand image (identification of PPLs under a positive retailer's brand, including attributes of retailer's sustainability); (5) ability to enhance PPLs attractivity for customers (relevant packaging, place on shelves, PPL pointers and other marketing communication means).

The authors consider that the verification of the presented RFID model viability is a good step toward future research. Brand search attributes (brand name, design, and price) turned out to be the factors of the most powerful influence on consumer decisions towards PPLs. The Russian buyers' stereotypes are confirmed: "low price for low quality" and "imported PMBs have better quality". Nevertheless, confidence is obtained in the suitability of the RFID model for studying perceived risks and further developing practical solutions to reduce these risks and improve marketing strategies of retail chains on FMCG markets.

Among prospective paths for future research, we underline the study of opportunities to raise PPL competitiveness through their greening and using positive messages underlining sustainability issues in marketing communication campaigns. The retailers' decision to develop sustainable private brands seems to be correct from two points of view. Firstly, the decision to green the PPLs is in line with the general societal trend of the transition to sustainable development and enriches the retailers' branding with a new strategic tool. Thus, retailers embark on a common conceptual sustainability platform with well-known strong national and global brands. Secondly, it is expected greening private brands should maintain/increase customer loyalty to sustainable private brands, which ultimately should also lead to an increase in their contribution to retailers' income and competitiveness.

In this paper, the RFID model has been considered as a useful tool for assessing the perceived consumer risks towards PPLs vs PMBs. From our point of view, after some tuning, it can be used for comparative analysis (by analogy with the research presented herein) of the consumer perception of risks and benefits concerning sustainable brands created by retailers and manufacturers, respectively.

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ISSUES OF FINANCIAL LIQUIDITY OF SMALL AND MEDIUM-SIZED TRADING COMPANIES: A CASE STUDY FROM POLAND

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Abstract. Most often, the victims of financial crises are small and medium-sized enterprises. Very often, even short-term payment gridlocks can lead to their bankruptcy. All over the world, managers of such enterprises are trying to introduce solutions that will improve their financial security. Branch group purchasing organizations (GPOs) are a very popular method to improve the financial security and financial situation of small and medium enterprises. They are multi-stakeholder organizations using the effect of scale. It allows them to reduce costs, increase sales and gives many opportunities to build a policy of managing liquidity. The purpose of the article is to present the impact of branch GPOs on the financial liquidity of small and medium-sized enterprises. The research was conducted on a group of 96 Polish small and medium-sized commercial enterprises operating in the construction industry. The study showed that the analyzed units do not have problems with financial liquidity, due to the use of a strong scale effect.

Keywords: liquidity; SMEs; group purchasing organizations

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JEL Classifications: G32, G35, L22

1. Introduction

From the point of view of small and medium enterprises, their development depends on two factors of profit and financial security. In the area of corporate financial management, profits are the result of an appropriate revenue and cost management policy, while financial security is mainly equated with the results of financial liquidity ratios. In the case of financial liquidity management, basic components appear which create its size, such as receivables from customers, inventories, short-term investments or liabilities to suppliers. An important element strongly related to maintaining the financial security of enterprises is also profit. Entities whose financial result is a loss slowly lose financial liquidity and go bankrupt in the long run. In the case of small enterprises, competition with powerful enterprises in the area of costs, increasing the scale of sales, and credit policy of supply organization is very difficult. Therefore, among the many tools that can be used and which are a great opportunity for gradual and sustainable development and, above all, help maintain the financial liquidity of these smaller units, included in the group of small and medium-sized enterprises, is joint activities within the purchasing groups. Companies of various sizes operating in virtually every industry can take advantage of this opportunity.

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And the obtained benefits are highly likely to have a positive impact on financial liquidity, which is the basis for building an enterprise strategy based on sustainable development.

2. Literature review

The global economic crisis caused by the banking crisis in 2008 was a major event that particularly affected small and medium-sized enterprises. This is confirmed by insolvency statistics, where SMEs were the largest share. Managers of such units, learned by experience, must secure funds for their functioning, or create some financial reserves to alleviate future financial shortages (Bates et al., 2009; Palazzo, 2012, Simutin, 2010).

A very important element, which is often referred to as the basic factor leading to the fall, are shortcomings in the management of the company. Bad management, unskilled staff is an important factor often leading to bankruptcies of enterprises (Oooghe & De Pricker, 2008; Ma et al., 2014; Asem & Alam, 2014; , Özbayrak & Akgün, 2006, Cicea et al., 2019). Baldwin also confirms that weakness of management was the main reason for bankruptcies of enterprises in Canada (Baldwin, 1998).

A big problem in managing SMEs, especially when they have to compete with market leaders, is the lack of high purchasing power. The larger the scale of purchases, the better the price and other transaction conditions. A good solution to increase the purchasing power of small units is to cooperate and try to increase your purchasing power in order to increase your position in negotiations with the supplier. Such opportunities for small and medium-sized units give the activity within the framework of purchasing organizations.

Group purchasing organizations are multi-stakeholder organizations created in every industry. Group purchases are becoming increasingly popular in both the private and public sectors (Essig, 2000; Nollet & Beaulieu, 2003; Polychronakis & Syntetos, 2007; Tella & Virolainen, 2005, Schotanus et al., 2010). Group Buying (GB) is an evolving business model where companies receive reduced prices. This practice is observed in various product categories, from consumer electronics and furniture to dental services and museum visits (Edelman et al., 2016: Trana & Desiraju, 2017).

Purchasing groups are mainly for small and medium enterprises an opportunity to successfully compete with leaders and large enterprises on the market. A group purchasing organizations (GPO) can be defined as a group of enterprises from the same or another industry that combine to make joint purchases.(Schotanus & Telegen, 2007; Lambe et al., 2002) The group purchasing organizations is a group of cooperating enterprises that jointly controls and improves material, information and cash flows from suppliers to final recipients. Participants of such a system form a separate central unit, whose main task is to achieve the goals set by enterprises operating in a given system (Zimon, 2018a). Relationships between individual group participants have a great impact on its success, because enterprises should trust each other (Schotanus et al., 2010). The literature states that trust and cooperation between individuals in a group can be one of the most-discussed success factors (Nollet & Beaulieu, 2005; Quayle, 2002; Vangen & Huxham, 2003, Marvel & Yang, 2008). A purchasing group is an entity that uses collective purchasing power to obtain a discount (Yang et al., 2107).

A purchasing group is an organization consisting of enterprises and a group holder called an integrator. The integrator is a central unit that manages the entire organization, most often it is a specially created company by the companies forming the purchasing group (Zimon, 2018b). The strength of purchasing groups is the scale effect and close cooperation of group members. The consolidation of members of a given group, building purchasing power is the basis in negotiations with producers (Blair & Durrance, 2014; Chipty & Snyder, 1999). The purpose of purchasing groups is to defend individual companies against strong competition and to increase negotiating power. This is possible because joint operation and economies of scale gives companies many opportunities to improve their financial condition. There are many divisions of purchasing groups (Schontanus & Telegen, 2007), but one of the most important divisions is the division into industry and multi-branch (Zimon, 2018b). This

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division has the large impact on what is most important in the case of groups' activity on purchasing power and scale effect. If companies operate in branch group purchasing organizations, there are no additional divisions into different types of activities in the group. The ordered goods and materials are from a narrow group of suppliers, which facilitates the functioning of the central unit and allows obtaining high discounts and favorable trade credits, the purchasing power in such a group is large, which allows increasing the competitive position of small units on the market. In the case of multi-discipline, divisions appear in the group and not all enterprises purchase the same goods, materials. Several groups of suppliers appear, divided into groups of recipients. The scale effect is reduced, in addition, the central unit must be more powerful because it supports many manufacturers. These are additional costs and the benefits resulting from additional divisions within the purchasing group are smaller.

However, in both cases, working together within this type of organization brings benefits. The most frequently mentioned benefits are: cost reduction, sales increase and financial standing improvement as well as obtaining a favorable trade credid (Zimon & Zimon, 2019, Burns et al., 2008, Safaei et al., 2017).

When analyzing the functioning of purchasing groups, it is clear that they have the large impact on credit policy and financial results of enterprises. Figure 1 below presents a diagram showing the basic areas of enterprise finance with the largest share of the impact of purchasing groups.

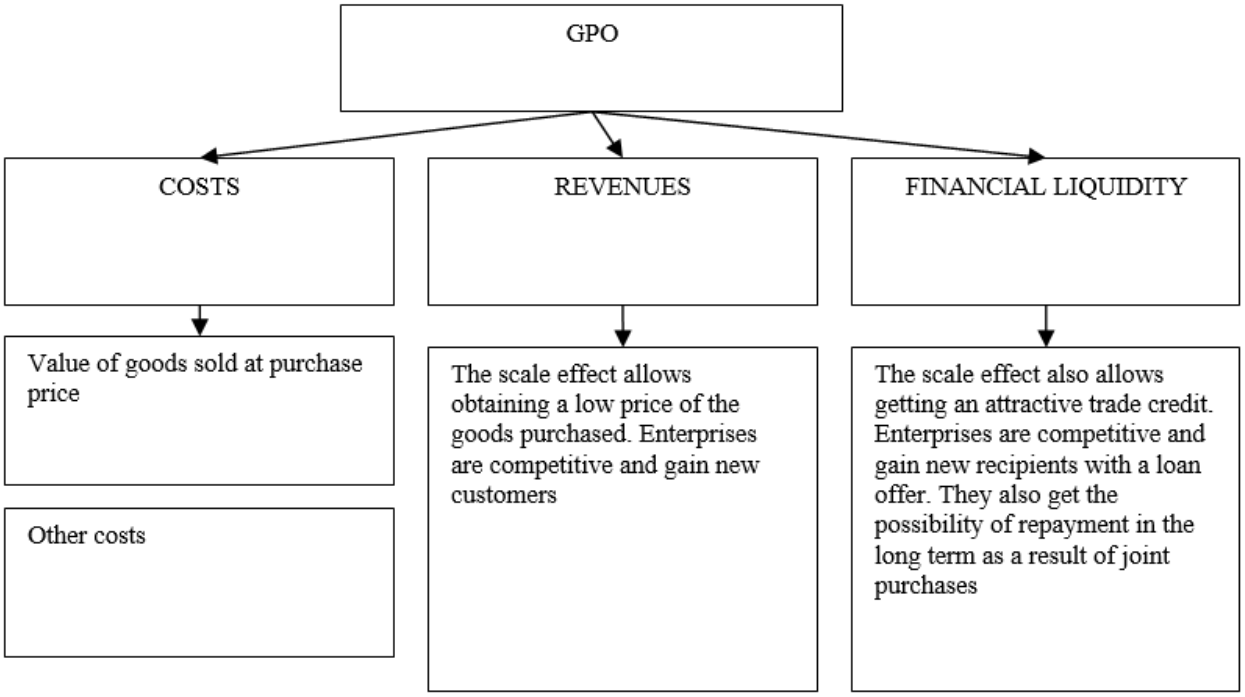

Fig. 1. Basic areas of the impact of purchasing groups on SME's finance

The figure presented shows how important the role of trade credit is. This is confirmed by recent years when small and medium-sized enterprises faced during the global financial crisis in the face of increased difficulties related to the use of bank loans, trade credit was often the only chance for them to finance their current operations (Degryse et al., 2018; Atanasova & Wilson, 2004). The role and importance of trade credit in company management is confirmed by numerous studies carried out all over the world (Wilner, 2000; Bougheasa et al.,

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2009, Kontus & Mihanovic, 2019) and its impact on financial liquidity is indisputable and largely depends on the strategy of managing receivables from customers. In the literature one can find many analyzes and explanations that the trade credit offer has an impact on financial security, quality of offered products, and behavior of recipients (Biais & Gollier, 1997; Mateut et al., 2006; Jain, 2001; Cunat, 2007; Frank & Maksimovic, 2005; Burkart & Ellingsen, 2004; Daripa & Nilsen, 2007). Many authors indicate that commercial credit has the direct impact on profitability and is an important criterion for selecting suppliers when it is difficult to decide from whom to buy products (Ukaegbu, 2014; Lazaridis & Tryfonidis, 2006; Sartoris & Hill, 1983). In general, it can be seen that cost reduction, sales increase and improvement in trade credit management policy are those elements that strongly affect the financial security of small and medium-sized enterprises.

Joint purchases within purchasing groups allow obtaining attractive prices of the goods purchased. This positively affects the costs of basic operating activities. Enterprises can offer attractive prices to attract new contractors, or offer extended payment periods. These activities allow to expand the sales market, as well as to keep existing customers. This should be confirmed by the increase in sales volume

3. Methodology

The literature on the subject presents a number of studies on financial liquidity management in SMEs or large units operating independently in the market (Huang & Mazouz, 2018). The article presents how economies of scale and interrelationships, cooperation of entities operating in purchasing groups allows improving the financial security of units and optimizing the level of financial liquidity of enterprises. The research was conducted on a group of 98 Polish trade enterprises operating in the construction industry. The units, which are referred to as trade gropu purchasing organizations, operate in multi-stakeholder entities, and they were selected for research because in recent years in Poland a large number of bankruptcies were recorded in this area. This was mainly due to the emergence of payment gridlocks, which very often led to a loss of financial liquidity in SMEs operating in the construction industry. Selected enterprises form purchasing groups whose task is to improve the financial results, management efficiency and financial security of individual group participants. In addition, they operate in trade purchasing groups, where strong economies of scale increase the competitive position of individual enterprises. In Poland, the first purchasing groups were created in the construction industry, and they currently have a very strong position in the Polish market and are an exemplary example of multi-entity organizations. At present, there are 5 industry purchasing groups of 112 enterprises operating inn the market related to the construction industry in Poland. The analysis was carried out on a group of 96 enterprises.

The research was conducted using appropriate statistical methods. The level of financial liquidity was assessed using appropriate financial measures derived from the ratio analysis and appropriate statistical methods.
In order to make the research more detailed, it was analyzed how the joint operation within the branch GPOs affects financial liquidity, on individual elements building financial liquidity. Based on the research, the following elements were identified that are significantly affected by the scale effect that appears in purchasing groups. The analysis was based on financial data for 2015-2017. In the article, the author tries to prove that acting within purchasing groups allows small and medium-sized enterprises to reduce costs, increase sales, improve the use of trade credit, which will positively affect the level of financial security of enterprises.

4. Results

In the case of enterprise management, it is most difficult to maintain a safe level of financial liquidity and high profitability. Generally, managers must decide whether to run a business safely or to conduct a high-profit, aggressive policy. Operating in groups, however, allows to a large extent maintain high financial liquidity and profitability. This is confirmed by the results presented in Tables 1 and 2.

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Table 1. Average results for current financial liquidity ratios

Current financial liquidity ratio	$\bar{x}$	Me	*s*	min	max
2015	3.26	1.70	2.90	0.95	15.0
2016	3.08	1.97	3.03	1.25	17.0
2017	3.69	2.05	3.90	1.00	18.0

Source: author's own research

It can be clearly seen that the analyzed enterprises have high financial liquidity and excess liquidity. From the cost point of view, this should be assessed negatively, it would be worth reducing the level of current assets. However, there are authors who believe that a company with a large excess of cash attracts customers (Huang & Mazouz, 2018, Huang et al., 2013). The units analyzed have such surpluses which is confirmed by the results of the second analyzed indicator, quick liquidity. The detailed results are presented in Table 2.

Table 2. Average results for quick liquidity ratios

Current financial liquidity ratio	$\bar{x}$	Me	*s*	min	max
2015	1.94	1.01	1.60	0,60	5.20
2016	2.00	1.00	2.95	0.80	4.40
2017	2.15	1.15	3.33	0.70	7.10

Source: author's own research

Generally, high liquidity is low profitability (El Kalak et al., 2017; Zimon, 2018b). In the case of the units analyzed, due to the effect of scale, enterprises obtain a low price of purchased goods. This is confirmed by the most important cost item in commercial enterprises, the value of goods sold at the purchase price. This item, thanks to additional discounts, is certainly lower than the value that would appear if the goods were purchased individually by the company. Thanks to this, units can realize a high commission, have free cash, which has a key impact on the implementation of the trade credit management policy. The average results for the return on sales ratio are presented in Table 3.

Table 3. Average results for sales profitability ratios

Sales profitability	$\bar{x}$	Me	*s*	min	max
2015	0.06	0.05	0.03	0,01	0.10
2016	0.06	0.04	0.03	0.01	0.12
2017	0.09	0.06	0.04	0.01	0.16

Source: author's own research

Free cash allows buildking an effective trade credit management policy. In this situation, trade credit becomes a very effective weapon in the fight against competition. This is confirmed by the results of the rotation of receivables from customers and liabilities to suppliers in days. In the analyzed enterprises, faster rotation in days appears in the case of receivables. So the money flows earlier compared to the repayment date. This is a very good strategy for companies, they can reduce the use of bank loans, which are expensive. Tables 4 and 5 present detailed results.

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Table 4. Average results for receivables turnover in days.

Receivables turnover in days	$\bar{x}$	Me	*s*	min	max
2015	57.9	61.0	17,0	30.1	90.6
2016	60.0	63.2	21,9	22.5	80.1
2017	62.4	64.8	20,3	24.6	77.2

Source: author's own research

Table 5. Average results for liability turnover in days.

Receivables turnover in days	$\bar{x}$	Me	*s*	min	max
2015	60.1	63.3	14,8	39.4	93.2
2016	62.8	65.1	19,5	41.6	100.7
2017	66.2	66.9	20,5	40.1	122.9

Source: author's own research

The results of liabilities turnover in days are at a low level, this is due to the fact that often the purchasing unit's central unit negotiates additional discounts with the producer for earlier payment. If enterprises have the means, they take advantage of such an offer and settle the obligation in advance, then they receive the goods at an even lower price. These are very profitable transactions for units operating in purchasing groups. However, they negatively affect the liabilities turnover in days, which is low. However, the low level of this indicator may build the image of a strong enterprise that regulates its liabilities quickly.

The analysis of correlations between individual indicators in 2015-2017.

The analysis was carried out for data from 2016-2017, determining the matrix of Spearman's rank correlation coefficients (R) between pairs of indicators. Below are the most important conclusions from the analysis:

• Financial liquidity is very strongly linked to the level of liabilities (R =-0.91), the negative sign of the first of the ratios results from the negative significance of the level of liabilities.
• There is also a strong correlation between the liability ratio and Quick ratio (R = 0.88).
• The receivables turnover ratio has little impact on the level of liquidity (R=0.62).
• The inventory ratio does not affect the level of liquidity.

When assessing the years analyzed, an increase in sales revenues was recorded in all enterprises. Comparing 2015 to 2017, only 3 enterprises recorded a decrease in revenues, but in their case a decrease in core operating costs was also recorded. Therefore, it was characterized by greater dynamics compared to revenues. In the case of cost management, the largest decrease in costs was recorded in the value of goods sold at purchase price item.

5. Conclusions

The analysis showed that for small commercial enterprises cooperation and functioning together within purchasing groups is a chance for sustainable development. The enterprises analyzed have a high level of financial liquidity, which is confirmed by the ratios of current financial liquidity and quick financial liquidity. In the units, some solutions should be sought to reduce the level of liquidity, because excess liquidity costs. However, this is difficult to implement in the case of purchasing groups because, to a large extent, the central unit of the group decides whether to accelerate the repayment date or not. This information allows building a policy of receivables management, if the deadline for payment of liabilities to producers is extended, then the companies

operating in the group can do the same with their customers. Enterprises manage their own receivables management policy. The central unit does not interfere in the internal arrangements of enterprises operating in purchasing groups.

The research confirmed that joint operation within trade purchasing groups allows improving financial security and reduces the risk of losing financial liquidity of entities forming such groups.

High financial liquidity in the analyzed enterprises is obtained due to the use of scale effect, which is strong in industry purchasing groups. Thanks to joint purchases, enterprises will receive a low price, which is confirmed by the costs of basic activity, and exactly in the item value of goods sold at the purchase price. In addition to reducing costs, a long trade credit allows extending the repayment deadline for suppliers. Repayment is accelerated only if there is a possibility of an additional discount for earlier payment. If several dozen enterprises are involved in the transaction, an additional discount can mean a serious price reduction. The decrease in operating expenses has a positive effect on profits and profitability. Faster receivables turnover in days compared to liabilities turnover in days is another element indicating a safe policy of managing liquidity in the units.

To sum up, today during the emerging financial crises, trade wars, the slowdown of the world economy, working together as part of multi-stakeholder organizations such as industry purchasing groups is an opportunity for small and medium-sized enterprises to survive on the market. The use of economies of scale allows you to create an optimal policy for managing sales, costs and financial liquidity. Effective actions in these areas are the key to the sustainable development of small and medium-sized enterprises.

The analysis conducted is an introduction to broader research related to financial liquidity management in multi-stakeholder organizations. The next step is to extend the research sample to include companies operating in other industries and functioning as part of classic purchasing groups and clusters.

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FRAUDULENT CONDUCT IN THE MANAGEMENT OF APARTMENT BUILDINGS - A CASE STUDY

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Abstract. Reflecting on the analysis of the criminal offence of law in terms of criminal law theory, the authors present this article, by which they advance on their previous conclusions and deepen their reflection on the issue of effective apartment buildings management and prevention of fraudulent behaviour. The authors concentrate on the analysis of owners´ obligations according to the Act on ownership of apartments and non-residential premises with special focus on the yearly settlement of overpayments and arrears. The previous theoretical approach is being applied on a case study - fraudulent behaviour in the process of division of common costs (expenditures) between the owners in the apartment building and subseqent settlement (in conditions of Slovak republic). The basis for the division of these costs is the proportionality of the use of the common parts and common facilities of the apartment building, which is expressed in the so called *person months* (metric unit for settlement). By not reporting the true number of personmonths to the administrator, an owner may gain material benefit (achieve higher overpayments and lower arrears) and this illegal financial benefit needs to be covered and compensated by other owners in the same apartment building. In terms of criminal law, the owner is committing fraud (a related offence to insolvency crimes). Subsequently the attention is paid to the efficiency of owners´ rights protection in relation to the insolvency of an owner and to the provision of recommendations *de lege ferenda*, which would bring a higher level of legal certainty, more effective way of apartment building management, settlement of arrears and overpayments, insolvency issues and sanctioning of perpetrators.

Keywords: apartment buildings management; fraud; criminal liability; insolvency; insolvency and related offences

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1. Introduction

Fraud is a frequently occuring criminal offence, which targets the property of others, that is subjected to the perpetrators attack with the aim of enrichment. It occurs in many forms, some of which are more latent than others, one of the latent forms is a fraud occuring in the processes of apartment building management. The owners need to bears the proportionate part of the common costs of living in an apartment building. The basis for the division of these costs is the proportionality of the use of the common parts and common facilities of the apartment building, which is expressed in the so called *person months* (metric unit for settlement). By not reporting the true number of personmonths to the administrator, an owner may gain material benefit (achieve higher overpayments and lower arrears) and this illegal financial benefit needs to be covered and compensated by

other owners in the same apartment building. The article provides an analysis of selected legal obligations of owners of apartments and is a legal reflection on a more effective system of owner´s rights protection, claims management, statutory lien enforcement and aspects relating to insolvency. By the gramatical, systematic and teleogical method of legal interpretation the relevant statutory provisions are being approached and after their analysis the authors reach a conclusion, that the legal regulation is uneffective and not fulfilling its purpose. The authors reflect previous research on the topic of fraudulent behaviour, property offences in general or other relevant issues (Čentéš, J., Mrva, M., Krajčovič, M., 2018; Strémy, T., 2010; Šamko, P., 2012; Šamko, P., 2016; Horváthová, Z., Křítková, S., Tcukanova, O., 2016; Strapáč, P., Ďurana, M., Sninčák, T., Sura, S., Takáč, J., Treščáková, D., Skorková, V. 2018). It needs to be emphasized, that sufficient previous attention has not been paid to the problematic of fraudulent behaviour occuring in the apartment buildings management (only to other forms of fraudulent behaviour or fraud in general terms).

2. On the management of apartment buildings and the ownership of apartments Introduction

An apartment building is a building where more than half of the floor space is intended for residential use, which contains more than three apartments, where the apartments and non-residential units are privately owned and where the common parts and facilities of the building are jointly owned by the owners. It is important to note that it is always one building and only the building as a whole can meet all the defining characteristics of an apartment building, even if remaining criteria would be satisfied by one of the entrances to the apartment building. All the owners are considered to share in ownership of the apartment building. The individual apartments are treated as separate assets for the purposes of private ownership and civil law relationships.

To encourage the effective management of apartment buildings (for the essential preservation and improvement of the apartment building), they are managed by a different entity than the owners – either an **apartment building administrator** (a business entity) or an **association of property owners** – that acts as the owners' legal representative. It is a duty of the owners to provide for the management of their apartment building. The administrator or the association of property owners carries out legal acts on behalf of the owners in matters relating to the apartment building, the common parts and facilities, accessories and land and can thus legally bind the owners. The present article will consider primarily the management of apartment buildings by administrators (natural and legal persons). The legal basis is Act No 182/1993 on the ownership of apartments and non-residential premises ("*act on apartment ownership*"). Duties related to management are specified in an obligatory contract on the management of the apartment building, which is a consumer contract. In the event of a conflict between the provisions of the management contract and the act on apartment ownership, the act on apartment ownership prevails (Section 25a(1) of the cited act).

The effective management of an apartment building requires that the owners pay regular contributions (on an ongoing basis) to cover costs for the use, maintenance and repair of the apartment building's common parts (corridors, roof, cellars…) and common facilities (lift, camera system…). The given costs are paid from common funds on the apartment buildings accounts in financial institutions, to which the owners are obliged to pay sums agreed in advance at regular intervals. This is a legal obligation based on Section 10(1) and (6) of the act on apartment ownership, which require owners to make advance payments to the operation, maintenance and repair fund and to make payments for services connected with the use of their apartment or non-residential unit.

The regular payment of funds to these accounts is intended to ensure the proper, stable and timely payment of costs associated with the management of the apartment building and the creation a reserve to cover unexpected costs usually resulting from an accident. The real costs for management of an apartment building cannot be foreseen in advance (only estimated); they are known after the end of the calendar year concerned. For this reason, the legislature stipulates an annual settlement of accounts in which overpayments and arrears of individual owners are settled based on the real costs incurred in the management of the apartment building.

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To return to the issue of unlawful conduct of owners, the act on apartment ownership stipulates that building management costs and payments should be allocated between owners and their advance payments should be set based on **the owners' level of use of the common areas and common facilities of the building**. Determining this level of use is a practical question affecting the fair distribution of common costs. In practice, the fair level for the settlement is based on "**person months**" representing the number of persons using an apartment (and the common parts and common facilities of the apartment building) in a given month of the relevant calendar year. This procedure satisfies the legal requirement that the settlement of payments for services should reflect the level of use of the common parts and facilities of the apartment building by the owners of the apartments and non-residential units (Section 7b(2); Section 10(6) of the act on apartment ownership). The owners should bear a fair (proportionate) share of these costs (burdens) based on the use of the apartment building's common parts and facilities by the owner or persons to whom the use right of their apartment was transferred. In practice, it is not unusual for owners motivated by selfishness to seek to avoid the above legal obligation by using various means to influence the allocation of the apartment building's management costs in their favour at the expense of the other owners. If owners engage in such unlawful conduct, it would be appropriate to hold them to account to protect the integrity of the other owners' property.

The question of whether it is appropriate to hold them to account only under private law or whether they also need to be held liable under administrative law or even criminal law is discussed below.

2.1. Selected duties in the management of an apartment building

Section 6(2) (a) to (e) of the act on apartment ownership defines the management of an apartment building as the procurement of goods and services that the administrator or association provides for the owners (1) the operation, maintenance, repair and upkeep of the common parts and facilities of the building, adjacent land and accessories, (2) services associated with the use of an apartment or a non-residential unit, (3) managing the building's bank account, (4) recovering damages, arrears for the operation, maintenance and repair fund and other arrears; (5) other activities directly related to the use of the building as a whole by owners. Where the text uses the word "*administrator*", it refers primarily to an apartment building administrator, but the ideas also apply mutatis mutandis to an association of property owners.

The duties of an owner are laid down in Section 8b(2) of the act on apartment ownership. The **main** duties are:

1. to manage the owners' property **with professional diligence** in accordance with the terms of the management contract,
2. to protect the rights of owners and to prioritise their interests over their own,
3. **to represent the owners in claims for damages incurred as a result of the activities of third parties or of the owner of an apartment or a non-residential unit in the building,**
4. to exercise rights over the owners' property only in the interest of the owners,
5. **to monitor payments for services and the payment of advances to the operation, maintenance and repair fund from owners and to recover outstanding arrears**,
6. **file to initiate enforcement proceedings**,
7. provide for all other activities necessary for the proper management of the building in accordance with the management contract and the act on apartment ownership,

The administrator is obliged to comply with the listed obligations and can be penalised if they breach them. In addition to liability under private law in the form of reparations to injured parties, they may also be held liable under criminal law, primarily for the crime of breach of obligations in the management of other people's property. Naturally, the breach of these obligations and the maintenance of a causal relationship must have caused damage in the set amount (depending on fault).

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The administrator's record-keeping duty is based on point (5) of the list and is linked to the recovery of arrears. The points that are most relevant to the allocation of the common costs of the apartment building (e.g. costs for waste removal and disposal, cleaning, electricity use in common areas and facilities, insurance costs for the apartment building, water supplies…) are points (1), (3), (5) and (6) of the list.
Regarding point (1), the management contract is an obligatory condition for the administrator to manage the owners' property. The management contract specifies the content of the contractual relationship between the administrator and the owners. The obligations arising from the concluded contract are enforceable. With respect to the performance of duties by the administrator, the asymmetric relationship between the administrator and the owners gives rise to the requirement that the management must be in accordance with professional diligence. Professional diligence can be defined as a requirement that the administrator act professionally in the management of other people's property, in accordance with the current state of their knowledge (especially in the technical and legal areas), with detailed knowledge of the area at issue and preserving the managed property in both a qualitative and quantitative sense. Point (3) obliges the administrator to represent the owners in claims for damages incurred as a result of the activities of third parties or of the owner of an apartment or a non-residential unit in the building. This concerns reparation for damage caused to the integrity of the owner's property. In line with the judicial interpretation, *damages* means an injury in the sphere of the injured party's property that is objectively expressible in pecuniary terms and can be remedied by the provision of financial assets, primarily money (see for example Judgement of the Supreme Court of the Slovak Republic 5 Cdo 126/2009). This is also consistent with the criminal law, which defines damages as harm to property or a real loss of property or rights of the injured party or any other harm caused to them in connection with a crime, regardless of whether the damages affect goods or rights. Damages also refer to benefits obtained in causal connection with a crime. While representation of the owners in claims for damages relates to representation in basic proceedings (as a stage in civil procedure), the administrator's obligations under point (6) relate to the protection of owners' rights in an enforcement procedure, the opening of which is governed by the principle that the subject-matter of proceedings is determined by the parties. Regardless of its form and the means for its implementation, an enforcement procedure involves the influence of public power on the legal situation of the obliged person.The enforced execution of a decision is the final stage in the exercise of the owners' right to judicial or other legal protection. The right to judicial protection guaranteed under Article 46 of the Constitution cannot end with the issuing of a final and enforceable decision of the court but must also include the possibility to enforce fulfilment of obligations laid down in such a decision if they are not fulfilled voluntarily (Finding of the Constitutional Court of the Slovak Republic, I. ÚS 5/2000). The administrator is thus obliged to file, on behalf of the owners, for enforcement proceedings against an obliged person (including persons obliged to pay compensation for damages) attaching a copy of the relevant instrument permitting enforcement.

2.2. Fraud in reporting numbers of person months to the administrator

As mentioned above, owners are obliged by law to share the common costs of their apartment building whose expenditure is necessary to provide proper care of the apartment building. Because of the unpredictability of these costs, payments are made according to an estimate based on comparison with the previous year and other relevant facts. A regular settlement must be carried out in which these payments are balanced against actual expenditure. The law stipulates that this settlement of accounts for use of the operation, maintenance and repair fund and for service payments is calculated for each apartment and non-residential unit in the apartment building on an annual basis. Every calendar year, the retrospective settlement for the previous year must be completed by 31 May of the respective year.

In general, the settlement of accounts for management of an apartment building involves distribution (allocation) of the total costs for the apartment building to individual apartments and the comparison of this amount with the owner's actual payments. A simple mathematical operation determines whether an owner has a debt or a claim based on the accounts.

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By influencing the variables that determine the distribution of costs and their settlement, an owner can influence the outcome of the settlement in their favour – thus obtaining a financial advantage. It is difficult for an owner to influence the amount of payments made, only by actual performance. For this reason, owners seeking a financial advantage **manipulate the variables relevant to the allocation of costs to individual owners**.

This is done by a fraudulent pretence of circumstances that reduce the owner's arrears or increase their overpayment in the relevant payments, or which turn arrears into an overpayment. In both ways the perpetrator is enriched at the expense of the other owners in the apartment building, causing damage to their property, because the other owners must share between them the cost of the perpetrator's enrichment. Either the other owners' (victims') overpayments are reduced or there is an increase in the arrears they must pay. The responsible owner often argues that another neighbour or other neighbours are doing the same thing and nobody punishes them for it, or that they are getting compensation for damages caused by other owners. Such arguments are irrelevant. The settlement is based on the level of use of the common parts and facilities of the apartment building (and necessary services),which is measured in practice in "person months". The method most frequently used to allocate costs in a settlement in practice is that a representative of the owners reports to the administrator the retrospective numbers of person months for the previous calendar year. The report states how many persons used an apartment in each month. The result is the total number of person months for each apartment.

The term *person month* is not defined in law and its content corresponds to the definition above. The act on apartment ownership only regulates the question of changes in the number of persons using an apartment – i.e. a change in the number of person months compared to the number recorded by the administrator. Section 11(9) of the act states that *the owner of an apartment must notify the administrator or the association without undue delay of changes in the number of persons using an apartment continuously for at least two months. If the owner is not using the apartment, they must notify the administrator or the association of their address and any change in it*.

Although it may appear that if changes in the number of persons using an apartment are not reported, the number of person months cannot be adjusted retroactively, the opposite is true because the legal norm cited above is imperfect (specifically a regulatory legal norm) and does not specify a sanction for breach of the above obligations. The situation may differ, however, if the owners define a sanction in this area in the management contract (private law may derogate from the act in this matter) and thus make it impossible to change person months retroactively. A separate issue is the verifiability of the data that the owners report to the administrator and the detection rate for incorrectly reported data.

Regarding the allocation of costs, it must be added that after the person months are determined for all apartments in the building, they are totalled and the annual costs for supplies and services are divided by the total number of person months (naturally, except in cases where a flat rate is paid per apartment). The result corresponds to the actual costs per person per month, i.e. how much it actually costs for one person to use an apartment (and common areas) for one month. This amount is then multiplied by the reported person months for the specific apartment, the result is subtracted from the amount paid by the owner under the schedule and the final result represents the difference between the settlement of the costs for the specific flat and the actual situation in the form of arrears or an overpayment.

What constitutes the fraud? The fraud involves concealing one or more persons using an apartment in the apartment building and thereby influencing a variable that is critical to the settlement that affects specific personal property rights for the owner. They thus mislead the administrator as to the level of use of common areas and cause an error in the settlement. The owner thus influences the multiplier (number of person months) that the uses in the settlement to multiply the monetary value of one person month (the multiplicand), the result of which is used to determine the final balance of the payments the owner has made to the common account. As a

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consequence, the settlement of accounts results in damage to the integrity of the other owners' property because **the fraudulent reporting of a smaller number of person months reduces the total number of person months for the apartment building, increasing the value of costs allocated to one person month while causing the settlement calculation for the offending owner (perpetrator) to be based on a smaller multiplier**.The other owners are thus unfairly forced to bear a larger share of the common costs than they would be if the owner had not cheated when reporting the data necessary for a proper settlement calculation. By reporting false information, an owner manipulates the variable that determines how the costs are allocated. It must once again be emphasised that such unlawful activity of owners is silent and difficult to detect.

The person with primary responsibility for the correctness of the settlement is the administrator (association of property owners) but it is crucial that they cooperate with the owners' representative, who should be a person familiar with the local conditions in the apartment building. This is without prejudice to the necessity of cooperation with the owners, which is important for transparency about apartment use by owners and other authorised persons. Knowledge of local conditions in an apartment building is important because the persons involved in its management (owners, the administrator, the owners' representative, entrance supervisors, owners and other authorised persons) should be aware of facts relevant to building management including information on persons living in the building (or individual entrances). Active participation in the management of an apartment building is crucial for protecting common rights and interests.

The owners' representative and, if present, entrance supervisors, play a key role in monitoring owners' interests and ensuring that the administrator receives truthful information regardless of relationships between neighbours. In this respect, the qualitative aspect of their independent operational activity in building management is critical. An unprofessional approach, resignation or a lack of interest on the part of these persons weakens the protection of rights. On the other hand, a responsible approach in this area can prevent inaccuracies in the settlement of accounts. In dealing with the unlawful conduct described above, the primary task is to satisfy the victims' claims through compensation for damages. The building management takes the first steps to recover damages such as a request for voluntary payment by the owner and only after the deadline for voluntary payment expires without result can it bring legal action for performance (ideally including an application for a payment order). In this way, methods based on persuasion are preferred over coercion. If this procedure is successful, the court will order the owner to pay a reparative penalty (an obligation to pay a specific sum of money) and such an enforceable decision is a lawful instrument permitting enforcement proceedings. The assignment of such claims is of course possible.

Alongside liability under private law, there may be reason to enforce liability under public law through repressive penalties. Whether a detected fraud by an owner ends "only" with the payment of compensation or also with a public law penalty depends on the aforementioned activity of the administrator and the owners in reporting such matters to the public authorities.

3. The qualification of the owners´ misconduct

With reference to the criminal law, the activities described above have the constituent elements of criminal fraud under Section 221 of the Criminal Code. A condition is that the deliberate actions of the perpetrator must have caused damage exceeding 266 Euros and the perpetrator's intent exists not only in relation to the damage but also in relation to all the legal elements of the offence. The perpetrator therefore faces a term of imprisonment of up to two years (if the damages are not higher than 2660,10 Euros or if the is no special qualification element given).

If an owner reports to the administrator (either directly or through the owners' representative) an untrue number of person months with the intention of reducing the share of the common costs that they will be required to bear, they are misleading the other owners and the administrator. As a party to the management agreement for their apartment building and the individual contracts for supplies of goods and services (in which the administrator acts

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as their legal representative), the owner must be aware of the conditions under which such services are supplied and also that a fraudulent reduction in the share of the apartment building's common costs that they are required to bear will inevitably cause damage to the other owners – damage to other people's property. The perpetrator's motive in such action is personal gain.

Although the owner obtains any financial gain from this conduct from funds in the apartment building's account in a financial institution (of which the owner is a co-owner), the paid out funds must be covered by the other owners' payments to this account in proportions based on their own settlement of accounts, which is less favourable for the integrity of their property as a result of the fraud (the sum of money corresponding to one person month is increased and this increase in the value of one person month, caused by the manipulation of the variable used to calculate it, relative to the real situation multiplied by the number of reported person months is the amount of the damage caused). The damage is ultimately only to the integrity of the other owners' property, even if the owner's benefit is paid from the common funds of the apartment building.

The perpetrator's actions may also have some of the special qualification elements under the special qualification conditions. The most common of these will be commission of an offence **with an aggravating factor** by committing the offence **for a longer period of time.** This special qualification is based on the cumulative consideration of the time factor (time aspect) and the intensity and number of the offences against legally protected interests.

If, however, the damage caused by the perpetrator misleading the administrator does not exceed 266 Euros and the perpetrator does not continue the offence, or if partial offences are not linked by a unifying intent, or if the damage of repeated partial offences still does not exceed 266 Euros, they must be prosecuted in proceedings on misdemeanour for an misdemeanour against property under Section 50 of the act on misdemeanour. The perpetrator can be fined up to 331 Euros or given a reprimand, which is appropriate for first offences or offences involving a low amount of damages.

The qualification therefore depends primarily on the amount of damage caused, which also depends, inter alia, on the duration of the offence and the number of persons whose use of the apartment was deliberately concealed from the administrator for personal gain. Another relevant factor is the size of the apartment building in terms of the number of apartments and non-residential units. Where the number of such owners is smaller, the share, or monetary value, of one person month is greater compared to larger apartment buildings. This factor also affects the amount of damages caused.

In order to calculate the damages caused or attempted by the perpetrator, one may follow the following equation:

Damages caused by an owner in a particular year = x - y

, where

$$x = \frac{Ct}{TPr} \times RP \quad ; \quad y = \frac{Ct}{TPf} \times FP$$

, where

Ct means the total annual costs of the management of apartment building (that are divided and settled)
TPr means the **total** real number of annual personmonths (cumulation of reported personmonths from owners)
RP means the real number of personmonths reported by an owner (without fraudulent behaviour)
TPf means the **total** fraudulent number of annual personmonths (lower than TPr due to the owner´s fraud)
FP means the fraudulent number of personmonths reported by an owner (by which the administrator is mislead)

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If a perpetrator engages in unlawful conduct on one occasion and does not intend to continue in it, or they continue such conduct but without a unifying intent, the perpetrator will usually only be liable for an **misdemeanour against property**. If there are multiple partial offences, the conduct will probably be qualified as **criminal fraud** (with basic or qualified constituent elements) and if the conditions described above are fulfilled, it will be classed as continuous criminal fraud. The threat of punishment is a much stronger means of deterrence (prevention) than in the case of administrative prosecution because of the range and severity of the penalties, which it is useful to emphasise both in personal communication with owners and in other forms of communication typically used in apartment buildings. Rational decision-making (consideration) may then ask whether the means of enrichment described above is worth the risk.

Another important consideration in the qualification of the conduct described above is the fact that a perpetrator can commit a partial offence only once per year – in the year-end reporting of numbers of person months to the administrator – or when transferring ownership of an apartment or non-residential unit within the apartment building. These numbers (and changes in them) may be reported at other times in the year but the determinative value is the number of person months reported at the year-end, when the administrator's records are confirmed or adjusted (since the legal norm under Section 11(9) is imperfect). . This limits the frequency with which this type of fraud can be committed. The long period between partial offences also reduces the probability that the perpetrator will be detected and held to account.

Regarding the low visibility of this form of fraud, it is important to note that even when it is detected, it is usually not reported to public authorities. Possible reasons for this include fear of damaging relationships between neighbours, fear of retaliation, irresponsibility or inactivity on the part of the administrator or lack of interest on the part of owners concerning events in the building, as described earlier. Confusion about the number of persons using a specific apartment can be significantly increased by the current situation in the real estate market, where low interest rates on bank mortgages (often without efficient consideration of the debtor´s creditworthiness) encourage the more frequent purchasing of apartments as investments. In this regard we point out, that by means of credit the individual legal and physical persons have an opportunity to meet their economic and personal needs by overcoming the limits of financial resources and thus credit may facilitate the economic potential of the society (as well as the potential of the legal and natural persons) (Caplinska, A., Tvaronavičiene, M., 2020). The extensive usage of credit in the economy thus results also in the increase of the proportion of investment apartments in apartment buildings, which is associated with significant fluctuations in the persons using the rented apartments (both legally and illegally - without fulfilling the tax and other obligations associated with renting apartments). The most problematic cases in this regard are short-term rentals. There have also been reports in the media where apartments are let in this way to third-country nationals who come for the sole purpose of doing dependent work. The current epidemiological situation and global recession are also relevant factors.

In the opinion of the authors, although the primary aim in the present case is compensation of the victims, liability under public law should not be dismissed out of hand. The imposition of repressive penalties would really motivate owners to refrain from such conduct in future, being aware of its economic disadvantage since the potential cost savings are out of proportion to the risks associated with fraud. Especially if such an offender were fined.

In our view, a fine is the most appropriate punishment for property crime because it impacts an area of the offender's life where their unlawful conduct had or was intended to have its effect – the integrity of the offender's property. The imposition of a fine punishes the offender in the correct area of their life, deprives them of the benefit gained by unlawful conduct and reminds them that the actual effect of unlawful conduct is the opposite of what was intended (instead of material gain, the perpetrator's property is reduced by at least the amount of the

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imposed fine). For more detail, see our previous research on this issue (ČENTÉŠ, J., MRVA, M., KRAJČOVIČ, M., 2018, s. 548-549).

4. Proposals de lege ferenda

4.1. On the method of common costs allocation

Our first recommendation is exact **specification and more exact allocation of the management costs of apartment buildings** between the owners in the management contract (given the imperfection of the provisions under Section 11(9) of the act on apartment ownership). We believe that it would be appropriate if the number of person months for each apartment were based on the residence records kept in the residence register by the competent municipal authorities. Monitoring would report the number of persons having permanent or temporary residence in a given apartment. If an owner wished to exclude such a person from the reported number of person months, they would have to properly demonstrate to the administrator that the person did not reside in the apartment or use it during the year (by presenting proof of work abroad, proof of an internship abroad etc.).

There should be a contractual penalty for failure to comply with these obligations, generally a fine, which would motivate owners to comply with the proposed obligations. The management contract would thus establish a rebuttable presumption that every person with registered permanent or temporary residence in a given apartment was also in fact using it for the full duration of their registration in the relevant residence register. It is also necessary to ensure that any fraudulent conduct is not only dealt with under private law but also reported to the public authorities. Holding the responsible owners to account would signal the economic disadvantage of fraud, which is a prerequisite for the offender to refrain from repeating their unlawful conduct in future.

With reference to the moral level of the issue under consideration, it also appear useful to place a notice about proven fraud by any of the owners in the apartment house in the place where notices are usually displayed in the apartment building (usually on a notice board). This would help to achieve an appropriate level of internal shaming and reintegration of the offender and strengthen the deterrent effect that prevents the offender from repeating the fraud in the future.

We agree with Strémy, who (drawing on Braithwaite's theory of reintegrative shaming) identifies balance in the process of reintegrative shaming (involving a reduction of the social status and human dignity of the offender) as the source of its effectiveness. Effective prevention thus requires zero tolerance for crime and a functional process of shaming (m. m. STRÉMY, T., 2010, s. 22 et seq.)

It would also be useful for the owners to incorporate into the management contract an agreement on professional legal representation by a trustworthy person and the authorisation of a lawyer to represent them in selected proceedings (proceedings for damages, criminal proceedings, insolvency proceedings and the like). Likewise, it is worth considering reducing the scope of the administrator's legal representation in the recovery of arrears and damages caused by owners or third parties.

An explicit contractual provision that owners' financial claims will be recovered from a debtor by a professional legal representative would provide effective protection for the owners as joint and several creditors of a specific owner or third party. Although administrators are obliged to comply with professional standards, their legal knowledge is usually not equal to that of a lawyer. Although there has been some improvement in the professional standards of administrators since the adoption of Act No 246/2015 *on apartment building administrators*, their professional accreditation is based on completion of additional vocational training in an accredited training programme lasting at least 90 hours, which, having regard for the content of their profession, can only cover the basic legislation on apartment building management.

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Although the costs of legal representation would be paid from common funds on the apartment building's accounts, the debtor would be obliged to reimburse them if they lost the litigation. Legal representation is also important for insolvency proceedings because it increases the protection for owners and strengthens their ability to exercise their rights (by lodging their claims) in insolvency proceedings.

Another change that would naturally be helpful in this area would be the amendment of the legal rule under Section 11(9) of the act on apartment ownership to make it a perfect norm – secured by a sanction. Incorporating a sanction for the breach of the reporting duty (on changes in the number of persons using an apartment), for example the prohibition of retroactive changes in the number of person months, would appear to be a rational and desirable measure (rather on the level of a rebuttable assumption than a legal fiction).

4.2. On owners' claims in insolvency proceedings

The following recommendations aim to eliminate or minimise violations of the law in connection with possible insolvency and strengthen the enforceability of owners' rights in such proceedings. Since the entry into force of Act No 377/2016 there has been an increase in the effectiveness of the collective settlement procedure for the property relations of natural persons who become insolvent, in which the insolvency debtor is relieved of a part of their debts that are an obstruction to the debtor's normal life and represent an economic burden that is often almost unsustainable for the debtor and also have a substantial impact on the debtor's family. The law introduced two alternative collective settlement procedures – insolvency (*fresh start*) or a payment schedule (*no fresh start*). The result of the debt relief proceedings is the extinction of claims (unenforceability of the creditor's subjective right) for a part of the creditors' receivables against such natural persons. Such proceedings can naturally also affect the other owners of an apartment building who are jointly and severally creditors of an owner with arrears for the previously mentioned management costs of apartment building and for damages caused by unlawful conduct.

Several types of claims are covered by a special regime in such proceedings due to their nature. The claims with a special regime can be divided into those that are untouched (or untouchable) claims and claims that are excluded from satisfaction.

In the case of the first group, the legislature recognises that it is inappropriate and undesirable that a certain group of receivables should become unenforceable through the collective settlement of an insolvent debtor's property relations. For the sake of legal certainty, an exhaustive list of these claims is laid down in Section 166c of the act on bankruptcy and restructuring and the continued enforceability of these claims does not prevent them from being exercised by an application in insolvency proceedings. The list includes:

- **a secured claim in the scope in which it is covered by the value of the subject-matter of the security interest,**
- **a claim resulting from liability for damage caused to health or caused by deliberate action, including the accessories of such a receivable,**

The legislation on debt relief is set up in favour owners and their claims, which can be viewed positively. The security of their claims will be considered in relation to damages caused to the owners (as a result of fraud in the influencing the allocation of costs in the apartment building) and in relation to damages caused by the administrator in the management of the apartment building. In the case of the damages, the owners are joint and several creditors in the resulting liability relationship. As a rule, the creditor side includes a large number of parties that have been negatively affected by the unlawful conduct and who are therefore entitled to compensation. This fact must be borne in mind when considering the position of these claims in proceedings under Part Four of the act on bankruptcy and restructuring and also when considering the substantive aspect of the unlawful conduct that caused the damage to the integrity of the owners' property. Depending on the size of the apartment house, there may be tens or hundreds of injured parties.

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The claims of owners arising from obligations are protected under the current law. Claims arising from the owner's **legal acts relating to the apartment building**, the common parts and facilities of the building and accessories and legal acts relating to the apartment or non-residential unit in the building are subject to a **statutory security interest** based on section 15 of the act on apartment ownership. They therefore enter into debt relief proceedings as untouched claims and their enforceability does not expire in the debt relief procedure. The full scope of the claims remains enforceable because they are fully covered by the value of the apartment or non-residential unit and the related share of the common parts and facilities of the apartment building, which is the subject-matter of the security interest. At this point, it is necessary to consider the owners' statutory security interest in more detail.

The statutory security interest in the context of the insolvency of an owner - insolvency debtor

In the case of claim resulting from legal acts relating to a building, the common parts or facilities of the building and its accessories, the claim is (as previously mentioned) secured by a statutory security interest for the benefit of the other owners based on Section 15 of the act on apartment ownership.

Although the purpose of this provision may appear clear at first sight as being intended to secure the obligations of the owner of an apartment or non-residential unit in a building, the language used for this purpose is more than problematic. The law states that the statutory security interest applies to **claims having their basis in legal acts**. The failure to comply with obligations related to payments connected with the use of an apartment is not, however, a legal act but (in terms of the differentiation of legal facts) unlawful conduct. Excluding unlawful conduct and unlawful states and the claims that they give rise to from the statutory security interest established by Section 15 of the act on apartment ownership would be illogical. On the other hand, their inclusion under this statutory security interest is manifestly contrary to the wording of the hypothesis of the legal norm as defined in the relevant legislative provision. A legal opinion according to which this statutory security interest covers not only claims arising under Section 9(2) of the act on apartment ownership but also claims arising from illegal acts, illegal situations and contractual and non-contractual liability can also be found in the professional literature (Strapáč, P., Ďurana, M., Snínčák, T., Sura, S., Takáč, J., Treščáková, D., Skorková, V., 2018, P. 318). This Interpretation Of The Act On Apartment Ownership Is, However, Very Extensive, Which Could, In Certain Circumstances, undermine the legal certainty of the addressees of the legislation and thus also reduce the effectiveness of the legislation (E.g. in the event of a dispute between the owner of an apartment or non-residential unit and the other owners). In the event of the insolvency of a debtor that is the owner of an apartment or a non-residential unit, this relative lack of clarity in legislation could lead to unnecessary delays in the proceedings as a result of the threat of litigation.

If other owners have claims (for the reasons set out above) and insolvency proceedings are opened relating to the debtor's assets, the creditor is entitled to lodge their claim in the insolvency proceedings regardless of whether the apartment owner against whom they have their claim is a natural person (by far the more common case) or a legal person. Since the owners' claim against a neighbour in insolvency proceedings is secured by a statutory security interest, they should always lodge the claim within 45 days from the opening of insolvency proceedings. Otherwise, although they would not be deprived, as a matter of law, of their entitlement to satisfaction of their claim(s), their position would be weaker because after this deadline, it is no longer possible to lodge a claim as a secured claim but only as a claim to be satisfied from the general estate of the insolvency debtor. This procedure is logical and provides for a more equal status of all the creditors with claims against the insolvency debtor.
Although this issue may seem clear at first sight, there are a number of issues in the application of the legislation regulating the satisfaction of owners' claim(s) against a debtor in insolvency proceedings that cause practical problems, namely:

1. by whom and by what means can a claim be lodged in insolvency proceedings relating to the debtor's assets and in what order should the claim be satisfied?

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2. given that a claim in insolvency proceedings does not expire but only becomes unenforceable, in the event of the incomplete satisfaction of the owners' claim, can the administrator or the chair of the association of property owners issue confirmation to the insolvency trustee for the auction of the apartment or non-residential unit stating that the owner of the apartment or non-residential unit in the building has no arrears for payments for services relating to the use of the apartment or non-residential unit in the building or for contributions to the operation, maintenance and repair fund? And is the issuing of such confirmation at all relevant and can the insolvency trustee transfer ownership of the apartment or non-residential unit in the building to a person who acquires it (usually through auction) in the insolvency proceedings even without such confirmation of the non-existence of arrears?

The answer to the first question is not at all simple even though it may appear banal at first sight. It is true that an association of property owners or an administrator is obliged, under the act on apartment ownership to monitor the debts of individual owners and to enforce their payment. Where the law is unclear is on the point of whether they do so in their own name and for the owners' account or in the owners' name and for their account. Section 9(7) of the act on apartment ownership stipulates that an association or administrator act in their own name and for the owners' account when representing the owners before courts and other public authorities.

Under Act No 8/2005 on trustees and amending certain acts, however, acting as a trustee in debt restructuring and insolvency proceedings is not acting as a public authority (as is the case in enforcement proceedings, for example).

The above means that the association of property owners or administrator should probably exercise claims against a debtor in insolvency proceedings in the owners' names and for their account and act only as their legal representative in accordance with the first sentence of Section 9(7) of the act on apartment ownership.

This conclusion unfortunately leads to clearly completely unnecessary complications because then the creditors lodging an application should be all the owners in whose name and for whose account the association of property owners or the administrator is acting, although it is the latter who submits the application to the insolvency trustee. This is an absolutely unnecessary complication that imposes an unreasonable burden on the association of property owners or the administrator and subsequently also on the insolvency trustee and even the court (which should always issue a decision whenever the person of one of the creditors changes, permitting the entry of a new creditor in place of the previous one, which is an occurrence that happens (by direct operation of law) whenever ownership of an apartment or non-residential unit in the building changes). Given that even the application form (specified by Decree of the Ministry of Justice of the Slovak Republic No 665/2005) does not permit the entry of all the owners, the procedure tends to be simplified in practice by only the association of property owners or the administrator appearing in a claim lodged in insolvency proceedings. This procedure, which insolvency trustees usually accept (thus not denying the lodged claims), is not lawful, however. Proceeding otherwise, however, would cause completely unnecessary complications that would have no effect on the practical outcome of the exercise of the rights associated with the claim lodged in the insolvency proceedings.

In what order should a claim lodged in this way be satisfied? The relevant statutory security interest is recorded in the real estate cadastre regardless of the real existence of a secured claim. It thus serves as security primarily for future obligations of the apartment owner. If another security interest is subsequently registered on the apartment (e.g. under a contract), the claims should be satisfied in the order of their origin.

After the association of property owners or the administrator lodges a claim in insolvency proceedings related to the assets of an insolvency debtor, the claim is satisfied in the insolvency proceedings. The insolvency trustee liquidates the apartment or non-residential unit owned by the debtor as part of the same proceedings using one of two variants.

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The first method, which is defined in Section 167n(1) of the act on bankruptcy and restructuring, applies only for the liquidation of an apartment with a smaller value, i.e. a value not exceeding 5,000 Euros as specified in Section 48b of Decree of the Ministry of Justice of the Slovak Republic No 665/2005, and cannot be used for an apartment to which the unenforceable value of the debtor's home has been applied. The method involves selling the apartment as a moveable asset by tender. When applying this liquidation procedure, as part of the drafting of the contract for transfer of ownership of the apartment or non-residential unit, the insolvency trustee must provide confirmation issued by the association of property owners or the administrator that the owner of the apartment or non-residential unit in the building has no arrears for payments for services related to the use of the apartment or non-residential unit in the building or for contributions to the operation, maintenance and repair fund. The law requires the association of property owners or the administrator to issue confirmation that they cannot issue because a claim is not extinguished by the bankruptcy of the debtor. Since only the claim's enforceability expires, the administrator or the chair of the association of property owners cannot issue confirmation to the insolvency trustee for the transfer of ownership of the apartment or non-residential unit stating that the owner of the apartment or non-residential unit in the building has no arrears for payments for services relating to the use of the apartment or non-residential unit in the building or for contributions to the operation, maintenance and repair fund. Such confirmation would be evidently untruthful and therefore impossible to issue, and if it were issued it would automatically constitute reason to suppose that the administrator had committed a crime (or been a participant in a crime). It must be added that "*the absence of such confirmation is not an obstacle to the authorisation of the registration of ownership of an apartment or non-residential unit in the real estate cadastre, nor is registration of the transfer of ownership of an apartment in the real estate cadastre blocked by confirmation that the owner of an apartment has arrears*". (SOPKO, H., 2020) It must however be noted that potential apartment buyers are not interested in buying apartments where there is a risk that the association of property owners or the administrator will seek to make them pay the arrears of a previous owner who has been declared bankrupt and against whom the claim is unenforceable even though it still exists. It is difficult to imagine a person interested in buying an apartment or non-residential unit who (unless they were a complete speculator) would buy such an asset under such conditions.

The second method for liquidating an apartment or non-residential unit in insolvency proceedings related to the property of a natural person (and the method that is much more frequently used) is sale by auction making use, mutatis mutandis, of Act No 527/2002 on voluntary auctions. It must be applied for the liquidation of an apartment or non-residential unit of larger value, or for the liquidation of an apartment that is the debtor's home under Sections 167n and 167o of the act on bankruptcy and restructuring. When an apartment or non-residential unit is auctioned, as a rule, a notarial deed is made on the auction, to which is attached, as a rule, a confirmation identical to that mentioned previously that is issued by the association of property owners or the administrator stating that the owner of the apartment or non-residential unit in the building has no arrears for payments for services related to the use of the apartment or non-residential unit in the building or for contributions to the operation, maintenance and repair fund. This is a logical course of action because the successful bidder might not be interested in acquiring an apartment or non-residential unit to which liabilities of the previous owner are attached. This issue not only raises uncertainty as to whether the administrator or the association will subsequently seek to recover the claim from the new owner on behalf of the other owners (which ought not to be possible after claims against the insolvent debtor become unenforceable) but has particularly important consequences for the subsequent disposition of the acquired apartment or non-residential unit.

Regardless of the unenforceability of the claim against an insolvent debtor, the claims continue to exist. If the acquirer wants to transfer the apartment or non-residential unit to another person, they must have confirmation issued by the association of property owners or the administrator that the owner of the apartment or non-residential unit in the building has no arrears for payments for services relating to the use of the apartment or non-residential unit in the building or for contributions to the operation, maintenance and repair fund, and such

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confirmation will not be issued or else confirmation will be issued from which it is clear that the premises are linked to arrears, in which case the premises will be difficult to sell in the real estate market.

In such cases, the association or administrator often proceed incorrectly by appearing to link the debts of individual owners to the ownership of an apartment or non-residential unit (the assets) and not to the person of the specific owner that caused the debt by breaching their legal obligations, and by this incorrect procedure they effectively force owners (regardless of whether they are the insolvent debtor or a person who acquires an apartment from an insolvent debtor) to pay debts for other persons (previous owners who were declared bankrupt). Such behaviour of administrators or associations is incorrect and unlawful but relatively common. It is not limited to claims that become unenforceable as a result of insolvency proceedings. It can also occur when enforceability expires due to possible limitation periods. "*An administrator often only declares a debt without being willing to prove and document it, which is contrary to good morals. If the administrator treats a purchaser at auction as a guarantor (from whom to claim payment of a debt), they are obliged to prove, on request, the amount and structure of the secured claim as they see it. The same applies if the purchaser at auction is regarded as a bond obligor. The refusal to present the accounts for a debt and concurrent claims to enforce a security interest are frequent practices of administrators that are contrary to good morals and professional standards and turn the exercise of a security interest into a form of coercion and bullying.*" (SOPKO, H., 2020).

It is thus evident that an insolvency trustee may sell an apartment or non-residential unit to a third party as part of the liquidation of an insolvency debtor's property even if the insolvency debtor had arrears as the owner of an apartment, which may result in the non-issuing of confirmation that the owner of the apartment or non-residential unit in the building has no arrears for payments for services relating to the use of the apartment or non-residential unit in the building or for contributions to the operation, maintenance and repair fund, or the issuing of a confirmation indicating the existence of such arrears. This procedure is, however, often linked to incorrect conduct on the part of administrators and associations of property owners, who subsequently seek payment of the debts of previous owners from the acquirer (despite this being against the law) using arguments appealing to the statutory security interest established by Section 15(1) of the act on apartment ownership.

In relation to the problems described earlier, it would be reasonable to amend the current provisions of the act on apartment ownership to state that associations and administrators **represent owners in their own name and for the owners' account in all matters related to the exercise of their claims against other owners**. This step would rationalise and clarify the procedure of associations and administrators, who have already been acting in this way for some time even though such action is evidently not in accordance with the current law of the Slovak Republic (even though this procedure is already accepted by the majority of trustees because proceeding otherwise would create an unreasonable administrative burden while producing exactly the same result). As regards the problem of the unenforceability of claims lodged in insolvency proceedings that have not been fully satisfied (or not fully satisfied before the sale of the apartment or non-residential unit in the insolvency proceedings) which nevertheless remain in existence despite their unenforceability, it would be useful to consider amending the act on bankruptcy and restructuring to state that after the completion of the debtor's insolvency proceedings, such debt would not remain as a natural obligation but would be extinguished. Their continued existence as a natural obligation has no practical significance because it hard to imagine a debtor who, after their discharge from bankruptcy, would start paying their creditors' unenforceable claims. Another step that it would be useful to consider would be to amend Section 15 of the act on apartment ownership, so that the statutory security interest would not *expressisverbis*secure only claims resulting from legal acts relating to a building, the common parts or facilities of the building and its accessories, but also claims resulting from a breach of obligations by a the owner of an apartment or non-residential unit in their building, etc.

Notwithstanding the last recommendation of amendments of the law, it must be noted that damages caused through an offence, including the fraudulent conduct described in the present article, is an untouched claim for its

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full amount if the insolvent debtor is a natural person. The law requires that the claim must result from liability for damage caused by deliberate unlawful conduct.In our view, a disadvantage of this provision from the viewpoint of protection of the rights and legally protected interests of owners is that it does not extend untouchability to the claims resulting from liability for damage caused by negligent conduct. Amendment of the list of untouched claims to add damage caused by culpable negligence (or a separate item making untouchable all claims related to the management of apartment buildings) would extend the legal protection of owners legal protection in debt relief proceedings to less serious unlawful conduct where intent is sometimes impossible to prove objectively. It is vital to recall that all such damages are initially covered from the common funds of the apartment building. The provision of increased protection of such claims would be justified by the number of injured parties and the effects of the unenforceability of such claims.

Their unenforceability would negatively affect the management of the apartment building because the purpose of its funds are to provide for the proper renovation and maintenance of the apartment building and to pay the claims of the suppliers of various goods and services necessary for the proper use of the apartments and the apartment building. If these receivables are unenforceable, it may affect the required monthly payments of the owners (since it will be necessary to increase advance payments to the maintenance and repair fund).

We therefore recommend that culpable negligence should be added to the grounds for an untouched claim for liability, which would mean that protection would be provided to claims for all culpably caused damages.

Conclusions

The present article has been concerned with the issue of the fraudulent conduct of certain owners in apartment buildings involving the infringement of the legal obligation to bear a proportionate share of the common costs of the apartment building. This issue has not previously received enough attention. In order to minimise expenses, many apartment owners do not properly report to the administrator or association of property owners for their apartment building the true number of persons using the apartment. Such conduct enables them to save a part of their costs by manipulating the mathematical formula used in the settlement of accounts. The authors' main focus were the practical issues related to the qualification and consequences of such fraudulent conduct including reflection on how the issue affects insolvency proceedings and the rights and standing of owners in proceedings where the insolvency debtor is the owner of a flat or non-residential unit in their apartment building.

The authors draft several proposals de lege ferenda to improve and streamline current Slovak legislation. One of the potentially most important changes would be to link the residence records kept by municipal authorities to the records kept by the administrators of apartment buildings and associations of property owners, but it would also be useful to strengthen contractual and other penalties for breaches of reporting obligations that infringe the rights of other owners. The proposed legislative changes could establish a truly effective regime for the prosecution of the perpetrators of such antisocial activities and the protection of owners' property with regard to the insolvency of an owner..

Additionally, the authors consider the enforcement of owners' claims against persons who have not properly fulfilled their obligations and not paid the set contributions to the account of the administrator or the association of property owners for use of an apartment in the apartment building, when such persons enter into debt relief proceedings (as a insolvency proceeding). An analysis of current law reveals several practical problems resulting from inconsistencies in the act on apartment ownership. The authors present several proposals for changes to the law that could improve the protection of the rights and legitimate interests of owners who properly fulfil their obligations related to apartment ownership.

The reader should consider this article in relation to the article *Fraudulent conduct in the management of apartment buildings - a legal perspective* (Krajčovič, M., Čentéš, J., Mrva, M., 2020) published in the *Security and Sustainability Issues journal*, as it contains the legal theory applied to this particular case study.

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SUSTAINABLE FUNCTIONING OF EDUCATIONAL INSTITUTIONS BASED ON THE RISK-MANAGEMENT IMPLEMENTATION MECHANISM

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Abstract. The article considers the assessment of the effectiveness of the educational institution on the basis of the risk management implementation mechanism. Educational institutions have the right to independently establish the paths of their development, the methods and goals of their achievement, which has made them full-fledged subjects of a market economy. Increasing the freedom and independence of educational institutions has led to an increase in their responsibility for the results of their activities. Risk-oriented thinking enables the head of the educational institution to timely and competently detect risks, express their goals for managing them, establish ways to minimize them and build work to prevent them. The management process is effective if it meets the logic of the actual course of development, if the decisions made by the management entity are operational and meet the problem being solved, if the heads of educational institutions have the ability to assess the situation, predict risks and manage them.

Keywords: risk management; functioning; educational institutions; management strategy; prevention of managerial risks

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JEL Classifications: Q16, Q18

1. Introduction

Risk management is a rather complicated process, and when it is introduced into the work of the organization of the educational sphere, it is faced with the need to review the roles and responsibilities of managers and employees. Risk management is perceived as a linear process, not a system. When implementing risk management in an organization, clear, consistent commitments should be made, since this process is an integral part of management decisions and should not be separated from them (Garro, 2020).

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The success of the implementation and development of risk management in educational institutions directly depends on senior management. The risk management strategy is being developed depending on the directions of the enterprise's activity (Khizhnyak, 2017). Realization requires reliable information; therefore, it is important to establish its exchange and include the process of collecting information about risks. Exchange of information with external stakeholders will give conclusions in terms of their perception of this risk. The point of view of the values, needs, problems of the organization may differ from internal understanding (Hoffmann, 2020; Korableva et al., 2018). This may provide new information that management had not previously suspected.

The determination of the necessary resources, powers and responsibilities should begin with the definition of the activities of processes, functions, services. After this, by determining the relationship between specific processes, activities, projects and activities, processes in the educational institution, it is also necessary to determine the methodology for assessing the importance of risk, as well as the criteria established at the beginning of the process and which will be reviewed on an ongoing basis after. It is also necessary to determine the sources of risk, the area of impact, events, causes and their consequences (Abounoori and Zabol, 2020; Akhmetshin et al., 2019; Yemelyanov et al., 2018; Girdzijauskaite et al., 2019).

During the implementation of the risk management system, it is necessary to determine: the types and nature of the causes and consequences that may appear, and methods for measuring them; a method for determining the possibility (or probability); time limits of opportunity and its consequences; method of finding the magnitude of the risk; level of acceptable risk; the possibility of multiple risks and their combinations.

2. Methods

In order for the work of the risk management system to be successful, it is important to establish effective communications within the team on the separation of powers and responsibilities related to risk management, analysis skills, the ability to accurately measure benefits and costs. There are important differences between modern risk management and “traditional” risk management methods (Mitrofanov, 2018).

Firstly, this is the management system itself. The “traditional” approach does not have integrity: management is carried out in any single unit according to the functions performed by it. There is no consistency between units in this matter. The risk management system is characterized by avoiding fragmentation and replacing it with integration. Each employee is involved in the process, and the organization’s management, which refers to risk management as part of everyday work, manages the system itself.

Secondly, it is scale. The “traditional” approach focuses narrowly on a certain segment of risks, for example, financial. The risk management system, on the contrary, covers absolutely all types of educational organization activities.

Thirdly, the frequency of risk management. The “traditional” approach carries out risk management from time to time, from time to time, while the risk management system works continuously.

The following advantages of risk management can be distinguished in comparison with “traditional” methods of risk management:

- increase in the quality of information for making management decisions;

- elimination of the uncertainty factor in the implementation of educational and research activities;

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- control over negative impacts, timely implementation of measures to reduce the likelihood of their occurrence and negative impact;
- improved planning, which allows timely use of favorable prospects, reduce negative impacts;

- saving resources;

- improving the relations between the parties involved in the process;

- support of the founders;

- growth of ratings and business image;

- control of production processes and the implementation of investment projects.

The implementation of risk management in educational institutions is hindered by the fact that they do not develop the necessary regulations and documents of an organizational and administrative nature, which complicates the analysis and control of risks. The head of the organization needs to prepare all the necessary documents to ensure reporting in a standardized form, as well as recommendations for its preparation (Zubachev, 2018). The main regulatory documents of the risk management of the educational organization should include:

- "Declaration of risk management";

- "Guide to risk management";

- "Risk Management Program".

The main barriers that interfere with effective risk assessment in educational institutions are:

- lack of planning: often enough, the head of the organization makes decisions in a hurry, which makes the risk assessment inaccurate and incomplete due to the lack of necessary information and the impracticability of anticipating future problems;

- the use of short planning horizons: the leaders of educational organizations traditionally pay more attention to current planning, during which only existing risks can be identified;

- lack of high-quality (structured and ordered) relevant information;

- lack of qualified personnel, experience and methodological support (equipment and tools of analysis);

- difficulties in accurately assessing opportunities and risks, finding an appropriate balance between them, weighing, for example, financial and other risks;

- discomfort (in some cases due to the need to openly acknowledge the risk) when implementing risk management;

- the specifics of the management of educational institutions.

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Part of the policy of the educational system, which is determined by a set of regulatory requirements, ways of fulfilling these requirements for members of the educational organization's team, should be the prevention of managerial risks. The goal is to minimize probable losses and losses.

Two different approaches are distinguished to the process of prevention of managerial risks, consisting in the development of tactics or programs to minimize managerial risk: information and integrative. The essence of the information approach is to orient the head of the educational organization on the cognitive nature of managerial decision-making. Awareness of the head of the educational organization should be based on the totality of information coming from both the external and internal environment (observation, surveys, interviews, questionnaires) of the organization and timely informing the person who makes the risky decision. The essence of the integrative approach is the inclusion of diverse approaches in the process of developing and making managerial decisions, and implementing the program (Dodgson, 2020; Hill, 2020).

The system of prevention of managerial risks in educational institutions may include:

- provision of the head of the educational organization with timely information;

- a steady increase in the competence of the leader through self-education and self-knowledge;

- creating a team that is able to solve problems professionally and constructively;

- the presence of a staff motivation system, that is, the creation of conditions for stimulating the activity and interest of members of the teaching staff in focusing on the necessary areas of development, in accordance with the goals of the educational organization;

- the presence of measures aimed at exercising control, which makes it possible to evaluate the effectiveness of management.

Prevention of managerial risk in the activities of a manager, in addition to his awareness of risk management processes, consists in a continuous increase in managerial competencies. That is why the management risk management system should be a continuous process of growth for the manager's qualifications and combined with diagnostics and forecasting, which ultimately not only minimizes management risks, but also significantly increases the effectiveness of management activities.

In educational institutions, it is important to consider hygiene conditions and other factors that influence the preservation of health and the development of a harmonious personality. An educational institution should take care of reducing the intensity of noise, bring color regulation, lighting to normal, review the layout of furniture, etc. It is important to create a favorable psychological climate in the team, you should also monitor the comfort of finding students in an educational institution (Domańska-Szaruga, 2020).

An example of health-saving technologies in education is the "technology of the liberated development of children", which was developed by physiologist V.F. Bazaar, when used, the indicators of child morbidity are reduced, the psychological climate in pedagogical and children's groups is improved, the public is actively involved in work to promote health, etc.

An example of the technology of psychological support of the study group is the methodology of M.Yu. Gromova and N.K. Smirnova, built on the principles of pedagogical psychotherapy and psychology of health (Smirnov, 2009). Its foundations include the active participation of the psychologist in the educational process, the

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transformation of the psychologist into an important figure in the educational process, which is based on the principles of health conservation.

Thus, the specificity of educational activities makes significant adjustments to the organization of risk management in educational activities (Hilkevics and Semakina, 2019). This suggests that of the large number of risk identification, ranking and risk assessment procedures that exist today, not all can be used in the field of education, so they should be substantially redesigned for the needs of educational organizations. At the same time, those that can be implemented, in most cases, educational institutions use only in certain areas, and then fragmentary.

3. Results

The weak development of the risk management system in educational organizations, observed today, leads to an inadequate assessment of possible risks in the implementation of educational projects, which negatively affects not only the financial performance of the activities of an individual educational organization, but also the development of the entire educational sphere. Ignoring or fragmenting the use of risk management leads to such results that do not correspond to the amount of budget funds spent on improving the conditions for the provision of educational services. For educational institutions today there is a serious task of improving risk indicators, developing methods for collecting data, calculating risk indicators, assessing, and developing a methodology for eliminating (reducing). The indicators need to be linked with the identified risks, define limit values that will signal the need for measures to eliminate the emerging threats, develop a risk map / matrix and outline ways to optimize the risks in the institution. The risk management system should work on a regular basis, therefore, it is necessary to create regulatory documents to determine the main areas of activity of the risk management system, to appoint persons responsible for its implementation, to determine the controlling bodies and their powers. All this will increase the efficiency of educational institutions.

Table 1. Assessment of the risk level of educational institutions

No pp	Index	Code	Unit of measurement
1	Risk of budget deficit	Rfb	fraction of units
2	Weight coefficient	A	fraction of units
3	Risk of lack of other sources of funding	Rfr	fraction of units
4	Weight coefficient	B	fraction of units
5	Financial risk	Pf	fraction of units
6	Inadequately qualified faculty	Niqp	pieces
7	The total number of faculty	Np	pieces
8	Risk of lack of qualified personnel	Riqr	fraction of units
9	The number of missing high-speed access channels to information resources	Nnkd	pieces
10	The required number of high-speed channels of access to information resources	Ntkd	pieces
11	Weight coefficient	C	fraction of units
12	The number of missing literature	Nn	pieces
13	Required Literature	Nt	pieces
14	Weight coefficient	D	fraction of units
15	Inadequate Information Risk	Ririp	fraction of units
16	Number of missing equipment	Nno	pieces
17	Number of equipment needed	Nto	pieces
18	Weight coefficient	E	fraction of units
19	The amount of missing space for the educational process and research work	Nns	square meters
20	The amount of space required for the educational process and research work	Nts	square meters
21	Weight coefficient	F	fraction of units
22	Risk of lack of material and technical base	Rimtb	fraction of units

Source: Authors' research

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The risk assessment (table 1) is perhaps best described as a disciplined common sense used in everyday life. With regard to educational institutions, we need to step back a bit and think about risk assessment and safety management in more detail, since we often deal with groups of adults and young people in situations that we do not encounter every day. Thus, a structured approach simplifies the task and helps us identify all potential risks.

Any risk assessment, which is a simple written exercise, is useless if the information is not used in the future. The important thing is that appropriate measures should be taken to identify problems. In some cases, the activity in the original format may need to be changed or stopped, and there should be no fear of moving forward. Stepping back and looking at what the organization is trying to achieve in the future, everything could be done differently.

This may be a change in the route, venue, additional training, an increase in the number of trained or properly trained employees. The score record should be in a format that is easy to read. Long, verbose risk prevention recommendations (Table 2) can be just as dangerous as not having a risk assessment. It is not easy to calculate the effectiveness of measures in connection with the problem of comparing costs and results in assessing economic efficiency, since the calculations are probabilistic in nature.

Table 2. Recommendations for reducing the risk level of educational organizations

Financial risk reduction	Reducing the risk of a lack of qualified personnel	Reduced risk associated with insufficient information resources	Reducing the risk of insufficient material resources
1. Increased budgetary funding for research	1. Increase in the number and duration of external internships and professional retraining of faculty	1. Purchase of the latest computers, IT and software	1. Purchase of new laboratory equipment
2. Introduction of new directions and training profiles	2. Growth in the number of intra-university seminars and training courses	2. The acquisition of new literature for the educational process and research work	2. Free receipt of additional production facilities for the educational process and research work
3. The increase in the cost of training	3. Transition to annual employment contracts with faculty	3. Writing outdated educational and scientific literature	3. Internal university renovation / reconstruction of production facilities for the educational process and research work
4. The increase in the number of budget places	4.Increasing the share of practicing teachers and / or leading specialists in business structures	4. The increase in the number of copyright electronic textbooks and scientific literature	
5. The increase in the number of students accepted on a paid basis		5. Providing access to leading Russian and foreign distance education bases	

Source: Authors' research

Given that the number of students increases as demand increases, the economic effect is not an absolute value. After all, one cannot say that students, for example, will always be stable.

Ideally, a decision on the outcome of future profits and non-transparent risks can be decided on the basis that it is rational for the firm as a whole (Gelai, 2019). But, one way or another, when analyzing the calculations of economic efficiency, we can conclude that these innovations are economic and their implementation is beneficial for the organization.

4. Discussion

The study showed that the introduction of a risk management system in the practice of an educational organization will ensure the unchanged development, increase the degree of soundness of managerial decisions in risk situations. For this, it is important to overcome the difficulties that are associated today with systemic gaps in the field of risk management of educational systems.

The specificity of educational activities makes significant adjustments to the organization of risk management in educational activities. Ignoring or fragmenting the use of risk management leads to such results that do not correspond to the amount of budget funds spent on improving the conditions for the provision of educational services.

The development of clear procedures to ensure proper risk management is necessary, as institutions bear responsibility for the quality of their services. The analysis of legislative changes in the field of the need to introduce a risk-based approach into the control and supervision mechanisms showed the importance of developing a methodological framework for managing the risks of implementing projects in education. The paper discusses the fundamental principles that can provide the features of such projects.

Conclusion

The study of the risk management system of educational institutions of higher education showed that the most significant risk of educational activity lies in the probability of deviation from the goal, the discrepancy between the actual result and the intended result, which is due to the conditions of the educational environment that exist objectively. These risks can be managed using the model proposed in the work, which will lead to an increase in the efficiency of the educational institution.

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STRUCTURAL CHANGES IN THE AGRICULTURAL MICROBUSINESS SECTOR

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Abstract. The article is devoted to the substantiation and development of practical recommendations for structural changes in the agricultural microbusiness sector. The scientific substantiation of the system prerequisites for the need for structural transformations of the economic space of agricultural microbusiness in the region is provided. The authors proposes a method for determining the level of state support for agricultural microbusiness taking into account the climatic and economic conditions of the region, based on the use of correction coefficients that take into account the influence of natural and climatic factors and the territorial location of farms, the cost of purchasing material resources and the volume of gross product output.

Keywords: economy of agriculture; agricultural microbusiness; structural changes

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JEL Classifications: Q16, Q18

1. Introduction

The effectiveness of the agro-industrial complex depends on the correct organization and combination of its structural elements while reducing the number of agricultural organizations requires the development of new approaches to the structural organization of agricultural microbusiness mainly focused on the production of potatoes and vegetables, wool and honey, as well as half of the total production of milk.

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Small businesses engaged in agricultural production play a huge social and economic role in the development of the village and the country as a whole (Small and Medium-sized Enterprise Basic Act, KMU-Definition des IfM Bonn, Brock and Evans, 1989; Kowo et al. 2019; Eddelani et al., 2019; Caurkubule et al., 2020).

However, in Russia, representatives of small businesses operate within different frameworks of the existing Russian legislation, which leads to the distortion of actual data and the formation of a "shadow" sector of agricultural microbusiness. The current situation requires the development of approaches to the division of households into subsistence and commercial ones, which will contribute to their further transformation into farms and will also allow an optimal approach to the taxation of such farms with the self-employed tax (Bykanova and Akhmadeev, 2019).

An effective system of the agro-industrial complex of any state is impossible without the development of a proper system of its state support (Holtz-Eakin and Rosen, 2013). However, the existing measures of state support usually consider only the productivity level, with no differentiated approach to state support for producers located in various conditions, including those determined by the prevailing climatic conditions of a particular territory, which also requires the development of new methods (United Nations Economic Commissions for Europe, 2013; The Small Business Economy, 2015; Sullivan *et al.*, 2015; Report from the Commission..., 2009).

In this regard, the correct structure of the agricultural microbusiness space from a socio-economic point of view, taking into account both environmental factors and administrative, legal, economic, and socio-cultural conditions of a particular territory, is the basis for meeting the needs of the state, business, and population (Korableva et al., 2018).

2. Literature review

The agricultural production sector of the territorial socio-economic space should be considered as a single system that has a goal and objectives and consists of a set of elements and processes, functioning in a certain macro- and micro-environment. According to statistical data (Russian Statistical Yearbook, 2018), in Russia from 2000 to 2017, despite the downward trend in several main types of agricultural products, their main production was concentrated in private farms, primarily in the production of potatoes – more than 68%, vegetables – more than 55%, milk – more than 40%, wool – more than 47%, honey – 94%. At the same time, the state does not pay due attention to this sector of the economy, which is a separate element of the economic space of any territory and requires appropriate approaches to management (Voronkova et al., 2020; Panfilova et al., 2020). External factors that affect the structure of the territorial socio-economic space in addition to natural and climatic conditions also include the market environment and state policy. The state creates various institutions (Gritsenko, 2014) that form and regulate commodity markets, demand dynamics, macroeconomic policies that have a direct impact on currency volatility, the dynamics of inflationary processes, and the creation of tax and credit conditions (Gritsenko, 2007) for the business activities of economic entities. The scope of activities of these institutions also includes the processes of pricing of products, the formation of agricultural legislation and infrastructure for small business (State Program for the Development of Agriculture..., 2007; State Program of Development of Agriculture ... for 2013-2020; Land Code of the Russian Federation; On State Regulation of Ensuring the Fertility of Lands...; On the Development of Agriculture...; National Project "Small and Medium Entrepreneurship and Support for Individual Business Initiative").

Agriculture is supported through established institutions and government programs ("On the Distribution and Granting Subsidies from the Federal Budget..., 2009; "On the Federal Target Program "Sustainable Development of Rural Territories for 2014-2017 and the Period up to 2020"; "On Conditions and Order of Granting of Means of the Federal Budget..."; List of Innovative Regional Clusters), based on which regional authorities develop their departmental target programs, considering the needs of the population in the products of a particular industry, as

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well as existing agricultural resources. The planned business projects are implemented based on public-private partnerships, i.e., co-financing of these projects by entrepreneurs, federal and regional budgets (Ermakova et al., 2016).

The most important role is played by the legal regulation of small business activities in the process of production and sale of agricultural products. The low level of development of small business in Russia, including personal subsidiary plots (PSPs), is associated, primarily, with the absence in the legislation of the Russian Federation of the notion of a commercial PSP, the division of PSPs, which today are recognized as a form of non-entrepreneurial activity for the production and processing of agricultural products (On a Personal Subsidiary Plot, 2003), into subsistence farms, manufacturing products for the personal consumption of the family, and commercial farms, sending large parties of their products to stores and processing plants with multi-million ruble turnover and high sustainable marketability, i.e., aimed at income generation and not the satisfaction of personal needs, and related to family-operated farms (FOFs) on the lee of the PSP status. So, in practice (Plotnikov, 2010), some PSPs manage on their own, while others attract workers from outside. About 1 million 200 thousand farms, called "personal subsidiary farms", use hired labor. The number of employees attracted is 2 million 400 thousand people, and on average, there are two employees per PSP. Some farms employ dozens of employees. For comparison, in the farming sector, the number of employees on average is 1.4 people per FOF. The observation shows that at least 1 million 200 thousand farms have gone beyond personal farmsteads in this indicator alone.

At the same time, the market for certain types of agricultural products of commercial PSP can become one of the promising directions in the development of agriculture and the consumer market of Russia and its regions (Prokhorova et al., 2016; Yemelyanov et al., 2018).

Market institutions that have a direct impact on the small business activities include the availability of markets for agricultural products, the price of sales, the availability and level of development of sales infrastructure (Fuller and Moran, 2014). Representatives of agricultural small and micro-businesses can influence the market environment through cooperation by joining forces to perform a function or solve a specific problem (Small and Medium Enterprises, Small Business) (Prodanova et al., 2019; Trofimova et al., 2019; Sycheva et al., 2018).

Modern production associations are created mainly in the form of vertical intersectoral structures. Agricultural cooperation in all Western European countries has vertically integrated forms that are fundamentally different from private or joint-stock activities (Gritsenko, 2014, No. 10, P. 23-30). As a result of combining economic entities in the form of integrated structures, the necessary conditions are created for the rational consolidation of productive forces and means of producers, which increases the potential of the production system created through cooperation.

It is necessary to develop cooperative principles in the field of agricultural small business and microbusiness, including that of cluster type, to form a unified price, supply, sales, and trade policy and improve the material and technical support for production in small business. This approach will encourage the development of the material and technical base of agricultural production, the formation of stable economic relationships with other agricultural producers, and the creation of supply and marketing infrastructure. To increase the PSP marketability and encourage the transition of commercial PSPs to FOFs, cooperative stores should organize transport and marketing infrastructure, which allow villagers to have confidence in the possibility of selling their products and, in turn, contribute to increasing the number of livestock in farmsteads, including breeding, providing them with feed, etc.

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3. Theoretical background

The Siberian Federal District (SFD) is one of the largest regions of Russia with developed agricultural production and, along with the Central and Volga Federal Districts, is one of the three leading regions in a number of indicators. The area and population of this administrative-territorial region, including the average annual number of employed, are among the largest in the country. In terms of gross output, the agriculture of the SFD occupies the 4th place among the subjects of the Russian Federation (Table 1).

Table 1. Production of main types of agricultural products in peasant farms, thousand tons

	2013	2014	2015	2016	2017	2017 in % to 2013	Subject share, %
Grain (in weight after completion)							
Russian Federation	22796,6	26653	27605,1	33474,3	39498,8	173,3	100
Central Federal District	3763,3	4791,1	4734,7	5198,9	6152,3	163,5	15,6
Northwestern Federal District	56,6	70,3	92,1	71,9	67,5	119,3	0,2
Southern Federal District	6394,9	8347,9	8792,6	10583,4	12069,4	188,7	30,6
North Caucasus Federal District	2402,3	2575,6	2784,4	3358,1	3573,8	148,8	9,0
Volga Federal District	4148,7	5431,9	4733,3	6991,3	9422,4	227,1	23,9
Ural federal district	1073,5	1131,9	1569,1	1767,2	2250,9	209,7	5,7
Siberian Federal District	4887,3	4133,2	4773,7	5355,3	5806,4	118,8	14,7
Far Eastern Federal District	70	171,2	125,2	148,2	156	222,9	0,4
Livestock and poultry for slaughter (carcass weight)							
Russian Federation	237,2	264	282,6	292,2	305,3	128,7	100
Central Federal District	21,0	21,7	24,4	26,1	26,4	125,7	8,6
Northwestern Federal District	4,0	4,2	5,7	5,8	5,7	142,5	1,9
Southern Federal District	46,2	52,4	56	60,2	67,4	145,9	22,1
North Caucasus Federal District	50,6	64,2	71,2	67,6	70	138,3	22,9
Volga Federal District	51,7	55	58,8	60,3	59,7	115,5	19,6
Ural federal district	13,0	15,2	15,3	16,3	17,2	132,3	5,6
Siberian Federal District	39,4	40,1	40,4	44,3	47,9	121,6	15,7
Far Eastern Federal District	11,3	11,2	10,7	11,3	11	97,3	3,6
Milk							
Russian Federation	1787,3	1902	2010,9	2174	2375,4	132,9	100
Central Federal District	242,8	251,8	275,5	304,2	322,5	132,8	13,6
Northwestern Federal District	58,0	62,1	68,9	79,1	87,8	151,4	3,7
Southern Federal District	254,8	252,4	248,4	261,5	291,2	114,3	12,3
North Caucasus Federal District	329,9	361,9	365	386	404,1	122,5	17,0
Volga Federal District	529,0	581,3	634,5	677,1	738,3	139,6	31,1
Ural federal district	85,8	91,6	92,3	94,1	102,1	119,0	4,3
Siberian Federal District	201,1	213,7	232,4	272,6	322,7	160,5	13,6
Far Eastern Federal District	85,8	87	93,9	99,3	106,7	124,4	4,5

Source: Russian Statistical Yearbook, 2018

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Thus, it can be noted that almost 13% of the all-Russian number of FOFs are located in the SFD; their area accounts for more than 23% of the total cultivated area of farms in the country (Table 1). At the same time, the district's FOFs exceed the average indicators for the Russian Federation in almost all indicators. Thus, they are characterized by the largest crop production area and the total land area (191.2% and 157.9% of the Russian Federation, respectively), and on average, one FOF in the SFD accounts for a greater number of workers, tractors and combines, cattle and milking units.

In the agricultural production of both the country as a whole and the SFD, a significant role is played by FOFs and PSPs. In these farms, the production of potatoes and vegetables, wool and honey is mainly concentrated, and half of the total production of milk. The availability of agricultural machinery in agricultural organizations and farms in the district correlates with the specialization of their production. The presence of tractors and milking machines is noted in the farms of the population, which can be considered as an indirect confirmation of their commercial orientation, rather than a subsidiary one.

The current situation requires the structuring of the agricultural microbusiness sector as an independent sector of a multi-layered agricultural economy, taking into account the influence of natural and socio-cultural resources, as well as the existing organizational and economic mechanisms, the territorial organization of agricultural production entities, and is caused by economic, social and political factors. The Krasnoyarsk Territory is of the greatest interest for research in the SFD due to its economic, geographical and geopolitical position and prospects for development, including external economic relations with the BRICS and Asia-Pacific Economic Cooperation member countries, the diversity of existing natural and climatic conditions, culture and lifestyle of the population.

4. Data analysis

Structurally, agricultural production in the Krasnoyarsk Territory is concentrated in agricultural organizations, the share of which, with constant growth, reached 54.4% in the reporting year. However, the largest increase in the share of agricultural production is observed in FOFs, the share of which has increased by 45.2% over 5 years (Table 2).

Table 2. Structure of agricultural products by category of farms (in actual prices; as a percentage)

	2013	2014	2015	2016	2017	2017 in % to 2013
Farms of all categories	100	100	100	100	100	x
agriculture organizations	46,6	40,4	49,9	52,3	54,4	116,7
households	49,2	56,0	45,1	41,3	39,5	80,3
peasant farms	4,2	3,7	5,0	6,4	6,1	145,2

Source: Krasnoyarsk Regional Statistical Yearbook, 2018

The decrease in the share of households can be attributed to the migration of rural population to urban districts and partial transition to FOFs in the framework of state support for regional authorities. Agricultural organizations and households have a livestock focus. Agricultural farms are characterized by crop specialization; the share of products in this industry exceeds 76% of the total production of farms. At the same time, in the analyzed period, there was an increase in the volume of livestock production, both in agricultural organizations and in FOFs at an even faster pace. Besides, there was an increase in the volume of production and crop production in regional FOFs by 33.7%, which generally indicates positive trends in the development of agricultural microbusiness in the region and the interest of the region's executive management in improving food security and rural development.

The development of the agro-industrial complex of the Krasnoyarsk Territory is primarily determined by such spatial elements as the natural conditions and resources of the territory, which are the basis for building the structure of the settlement and exert a direct impact on the structure and efficiency of functioning, including the

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functioning of agricultural microbusiness. The Krasnoyarsk Territory as a whole does not currently meet the needs of the population with its agricultural products in full; for example, there is a shortage of providing vegetables and milk. At the same time, the food supply, both in the context of macro-districts and in their constituent municipalities, varies quite significantly. The leading territories in the production and provision of the population with their agricultural products are the Southern, Western, Eastern, and Central macro-districts, which have the largest share of participation of the microbusiness sector in the production of certain types of products. PSPs of the population provide the residents of the region with vegetables and potatoes. Regional PSPs also play a significant role in providing the population with livestock products – milk and meat.

The spatial dispersion of the population and transport infrastructure, along with the distributed nature of agricultural production, developed due to climatic factors, determines a large distance between the centers of production and consumption of products and various levels of provision of agricultural products to the population of macro-districts. This situation requires the activation of inter-municipal interaction to preserve the framework of settlement by developing economic ties of territories, attracting food resources of neighboring municipalities-leaders to scarce territories. An important element of inter-municipal cooperation should be the coordinated development of the agricultural sector of neighboring territories, the leaders of production, including support and development of the agricultural microbusiness sector of the region, its active participation in consumer cooperation, which ensures employment in rural areas and food supply to the population. For all macro-districts, it is important to create an effective system for purchasing products from FOFs and private farms. Measures are required to create a single technological chain "production – processing – sale of agricultural products".

Small businesses have a significant share in the total volume of gross agricultural production in the region. The largest volume of production in the region's FOFs is accounted for by growing grain crops and raising cattle (Figure 1). The largest areas of crop cultivation in the region's FOFs are inherent in the Eastern, Western, and Southern macro-districts, which also determines the corresponding production volumes. Open-ground vegetable growing and potato growing are most developed in the Central and Southern macro-district FOFs. Raising livestock and poultry for meat is typical for farms in all macro-districts of the region; the leaders of production are farms in the Eastern and Central macro-districts. The greatest positive dynamics of livestock farms growth is inherent in the Southern macro-district FOFs. Animal husbandry in FOFs of the Priangarsky macro-district is poorly developed, while reindeer husbandry is actively developing in the Northern macro-district (figure 1).

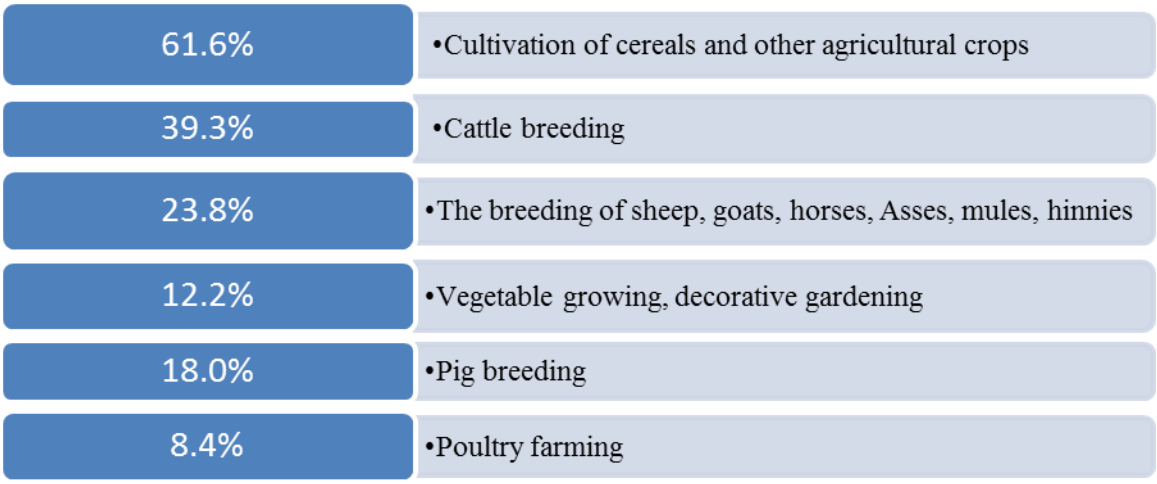

Figure 1. Types of FOF agricultural activities in the Krasnoyarsk Territory
Source: the authors' research

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The most significant items of expenditure in the region's FOFs are expenditures on the purchase of material resources, which is typical for all macro-districts, while in their composition, the largest share is accounted for by oil products, seeds, planting material, and feed. In the structure of expenditures for the purchase of production goods in the region's FOFs, about 60-70% is accounted for by the purchase of machinery and equipment, i.e., significant expenses for the purchase of breeding and productive animals. The main FOF income is from the sale of agricultural products of their production and products of their primary and industrial processing. The farms of the Western and Eastern macro-districts were consistently profitable, despite a slight decrease in the profit indicators and profitability of production. A negative issue is a loss-making activity in several years of FOFs in the Central and Southern macro-districts, which are the leading territories in the production of such types of agricultural products as potatoes, vegetables, milk, and eggs in the region. This state of affairs indicates that the relevant institutions and mechanisms for their interaction are not sufficiently developed and require measures to improve the conditions for the agricultural microbusiness sector in macro-districts and the region as a whole.

State grant support, development of consumer cooperation, integration with market trade in cities, and large and medium-sized market entities in the region will contribute to the transformation of part of PSPs into peasant farms and their further development as a form of small business in agriculture (Fomin, 2018). The largest development of cooperation was in the Southern macro-district, with 98% of the macro-district members' cooperatives represented by PSPs, which is 2,455 farms. This fact, taking into account the favorable natural and climatic conditions and existing infrastructure conditions, allows concluding that this macro-district can act as a territory with the most developed PSPs, which are as close as possible to the concept of "commercial PSPs". A large percentage of PSP involvement in Agricultural Consumer Cooperative (ACS) activities is also noted in the Western and Eastern macro-districts of the Krasnoyarsk Territory, 84.5% and 76.7%, respectively.

At the same time, state support for small businesses should be differentiated, taking into account the existing economic conditions, including natural-climatic and infrastructure factors of economic activity by small business entities. All this requires approaches to dividing the PSP of macro-districts into subsistence and commercial types, which will contribute to the structuring of the region's small business – the transition of PSPs to FOFs, and the possibility of compliance of FOFs with the criteria of an agricultural enterprise.

5. Results

The structuring of the elements of the socio-economic space of the region for agricultural production can be represented as ways to combine agricultural business entities, taking into account the forms and types of activities, their number, and size, the order of their location and interaction with each other and with other elements in the socio-economic space, forming a set of internal and external relations due to the external and internal features of a particular region.

System prerequisites of the structure of territorial socio-economic space include a reduction in the number of economic entities of the agricultural sector, as agricultural enterprises and FOFs, the need to change the approach to the organization of the agribusiness structure, including at the micro-level concerning the natural-resource potential of the territory, and the task of ensuring food security under the Food Security Doctrine of the Russian Federation, the need for the development of small agribusiness in the rural areas and improving the standard of living of the rural population. At the same time, the main direction of the implementation of these tasks is the development of small forms of business in this sector.

The most important role is played by the legal regulation of small business activities in the process of production and sale of agricultural products. The low level of development of small business in Russia, including PSPs, is associated, primarily, with the absence in the legislation of the Russian Federation of the notion of a commercial

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PSP, the division of PSPs into subsistence farms, manufacturing products for the personal consumption of the family, and commercial farms, aimed at generating income and not the satisfaction of personal needs and related to FOFs on the lee of PSP. The market for certain agricultural products of commercial PSPs can become one of the promising directions in the development of agriculture and the consumer market of Russia and its regions (Prokhorova et al., 2016; Ziyadin, 2012).

Small businesses engaged in agricultural production play a huge social and economic role in the development of the village and the country as a whole, while their representatives operate within various frameworks of the existing Russian legislation, which leads to the distortion of actual data and the formation of a "shadow" sector of an agricultural microbusiness. The informal economy can be interpreted as a reaction of the population to the strict regulation of the state, which once again indicates the need for structuring economic entities at the micro-level, the allocation of subsistence and commercial types of PSP at the legislative level, and the definition of cost and natural criteria for separation. At the same time, in several cases, there is an "unhealthy" tendency to terminate the economic activities of FOFs that have received grant support after the 5 years of their mandatory operation established by law. The capital accumulated at the expense of state funds and established economic ties continues to be used and is transferred to the informal sector of the economy. Such a FOF does not disappear as an economic entity, but continues its activities, the volume of which is expanded at the expense of budget funds, on the lee of PSP. To determine the status of a PSP, the main natural criteria, in addition to the plot area, may be the number of agricultural animals in conventional livestock, the volume of products sold, the level of mechanization of agriculture, etc.

Within the framework of the federal project "Improving Business Conditions", it is planned to work out the key measures in 4 regions of the Russian Federation, followed by the legislative consolidation of its operation throughout the territory of the Russian Federation. It is not possible to transfer all PSPs mechanically under the special tax regime for self-employed citizens. In this case, the division of PSPs into subsistence and commercial ones will make it possible to optimally approach the situation, neutralize the negative consequences and contribute to the further transformation of commercial PSPs into FOFs, which in turn will strengthen the structuring of the agricultural microbusiness sector.

6. Discussion

Since most FOFs have a livestock-oriented economic activity, the author considers it appropriate to use the number of livestock of agricultural animals as the criterion under consideration, since it is these data on PSPs that can be tracked through local authorities. Besides, when appropriate changes are made to the legislation, it is possible to obtain information about the volume of products delivered/sold from the PSP for processing through requests in the ACS. Therefore, the volume of products sold, in particular, livestock and vegetable production, can also be considered as criteria for FOF classification (Table 3).

Table 3. Classification of FOFs in the Krasnoyarsk Territory

Macro-district, municipal district	Normalized index of FOF typology, point		The values of the FOF criteria (min/max)	
	in the macro-district	in the Krasnoyarsk Territory	in the macro-district	in the Krasnoyarsk Territory
Central macro-district	x	x	x	x
Berezovsky	71,7	76		
Bolshemurtinsky	67,9	66		
Emelyanovsky	100,0	100	max	max
Mansky	63,2	81		
Sukhobuzimsky	19,3	19	min	

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Western macro-district	x	x	x	x
Achinsky	88,7	70		
Balakhtinsky	61,7	45		
Birilyussky	63,4	45		
Bogotolsky	100,0	61	max	
Bolsheuluisky	43,6	33		
Kozulsky	47,6	33		
Nazarovsky	42,5	30		
Novoselovsky	30,3	19	min	
Tyukhtetsky	54,4	34		
Uzhursky	38,3	24		
Sharypovsky	91,6	64		
Eastern macro-district	x	x	x	x
Abansky	100,0	99	max	
Dzerzhinsky	5,1	5		
Ilansky	25,7	26		
Irbeysky	38,0	17		
Kansky	2,3	3	min	min
Nizhneingashsky	75,8	40		
Partizansky	33,1	20		
Rybinsky	38,2	21		
Sayansky	81,4	66		
Taseevsky	17,5	8		
Uyarsky	4,3	6		
Southern macro-district	x	x	x	x
Yermakovsky	100,0	71	max	
Idrinsky	35,2	24		
Karatuzsky	50,9	31		
Krasnoturansky	29,1	24	min	
Kuraginsky	40,3	26		
Minusinsky	97,0	42		
Shushensky	68,8	47		

Source: calculated by the author based on FOF accounting statements

Thus, the minimum size of the considered criteria for FOF classification in the region is characteristic for households of the Kansky District, where the average number of livestock amounts to 3 heads, the annual volumes of cattle meat – up to 4 centners, milk – up to 33 centners. Starting from the obtained region FOF classification results in the Krasnoyarsk Territory in general and in the context of macro-districts, it is possible to assume that for PSPs close to the minimum values of the considered FOF classification criteria, it is advisable to switch to FOFs, characterized by the commercial orientation of business activities. It is also advisable to switch to earned income tax for such PSPs.

For FOFs of the Emelyanovsky, Abansky, Ermakovsky, Mansky, and Achinsky Districts, in which the values of the considered criteria are close to the maximum, the transition to a different legal form, for example, to LLC, etc., is possible.

Thus, there is significant differentiation between the Krasnoyarsk Territory regions and the FOFs located in them in terms of the level of development of FOF agricultural activities and the size of production in their totality, both in individual macro-districts and in the Krasnoyarsk Territory as a whole. Starting from the obtained region FOF classification results in the Krasnoyarsk Territory in general and in the context of macro-districts, it is possible to assume that for PSPs close to the minimum values of the considered FOF classification criteria it is advisable to switch to FOFs, characterized by the commercial orientation of business activities. It is also advisable to switch to earned income tax for such PSPs.

The analysis confirms the need for a differentiated approach to measures of state support for the agricultural microbusiness sector, taking into account natural and climatic factors and territorial location.

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There is significant differentiation in natural and climatic conditions between the regions of the Krasnoyarsk Territory and the agricultural microbusiness entities located in them, including within macro-districts. When considering the selected set of factors, the most advantageous position was found in the regions located as close as possible to the regional center – the Krasnoyarsk agglomeration, while despite somewhat worse natural and climatic conditions compared to the southern regions, they are characterized by a more developed transport network, logistics infrastructure and access to markets. FOFs in some areas of the Eastern and Western macro-districts were in the most unfavorable conditions due to the remoteness from consumers, poorly developed road infrastructure, and worse natural and climatic management conditions.

To determine the impact of the climatic, territorial and economic conditions of the area on FOF expenditures on the acquisition of material resources, and present a quantitative characteristic of this relationship for the set of municipal districts (34 districts), the author built a regression model of the following form: $y = a_0 + a_1x_1 + a_2x_2 + a_3x_3 + \ldots + a_nx_n$,
where y is the effective attribute (expenses for purchasing material resources, thousand rubles);
a_0 – free member;
$a_1, a_2, a_3, \ldots, a_n$ – regression coefficients;
x_1 – road density coefficient (Engel coefficient);
x_2 – sum of positive temperatures above 10 °C;
x_3 – road density coefficient for production (Vasilevsky coefficient);
x_4 – hydrothermal coefficient (HTC);
x_5 – distance from the center of the municipal district to Krasnoyarsk, km;
x_6 – humus content, %;
x_7 – population size, thousand people
The multiple regression model has the following form:

$$y = 231{,}758+86{,}482.3\cdot x1–62.1574\cdot x2–278{,}672\cdot x3–82{,}500.3\cdot x4+78.9872\cdot x5–3{,}383.75\cdot x6+1{,}578.84\cdot x7$$

The coefficient of determination is equal to 47.7688%; therefore, the variation of the resulting attribute by 47.7688% is explained by the variation of factor features included in the model. Thus, the formation of FOF expenditures in the Krasnoyarsk Territory for the purchase of material resources by 47.77% is determined by the natural-climatic and resource conditions.

To determine the impact of the climatic conditions of the region on the volumes of FOF gross agricultural products and its quantitative characteristics, the author built a regression model on a set of districts (34 districts) of the following form:

$$y = a0 + a1x1 + a2x2 + a3x3 + \ldots + anxn,$$

where y is the effective indicator (gross output per 1 FOF, tons);
a0 – free member;
a1, a2, a3,...,an – regression coefficients;
x_1 – road density coefficient (Engel coefficient);
x_2 – sum of positive temperatures above 10 °C;
x_3 – road density coefficient for production (Vasilevsky coefficient);
x_4 – hydrothermal coefficient (HTC);
x_5 – distance from the center of the municipal district to Krasnoyarsk, km;
x_6 – humus content, %;
x_7 – population size, thousand people
The multiple regression model has the following form:

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$$y = 17{,}211.99+7{,}991.276\cdot x1–7.98192\cdot x2–25{,}859.3\cdot x3-684.069\cdot x4+5.986521\cdot x5–74.9009\cdot x6+137.3565\cdot x7$$

The coefficient of determination is equal to 44.2824%; therefore, the variation of the resulting attribute by 44.2824% is explained by the variation of factor features included in the model. Thus, the volume of FOF gross output in the Krasnoyarsk Territory by 44.28% is determined by the natural-climatic and resource conditions of FOF management, which cannot be ignored when developing measures for state support.
According to the author, it is necessary to additionally introduce in the current methodology for allocating budget funds for FOFs correction coefficients based on the proposed grouping of municipal districts and FOFs located in their territory, taking into account the points of influence of natural-climatic and resource conditions of the territory on the economic and natural results of their activities.
As a result, the total coefficient (Ctot) of the amount of state support for the FOF will be determined by the average value of the sum of the correction coefficients of the points level, the level of expenditures and the gross output level: Ctot = (Cs + Ce + Cgo)/3, where
- Cs – coefficient of the influence of the natural and climatic factors and the territorial location of the FOF, points;
- Ce – coefficient of the amount of expenses for the purchase of material resources for 1 FOF, thousand rubles;
- Cgo – coefficient of gross output per 1 FOF, tons.

Comparing the values of the general correction coefficient in the context of three groups, it can be noted that for FOFs located in areas with the most favorable natural and territorial conditions belonging to the first group, there is a decreasing correction coefficient – 0.72. At the same time, for FOFs of the second and third groups, in addition to the current method, the application of the general correction coefficient 1.03 and 1.18, respectively, will allow financing FOFs more fully with the highest levels of expenditure and gross output. According to the author, from an economic point of view, this is justified, since these groups include the majority of FOFs in the region that provide development of the corresponding rural territories and employment of the rural population.

7. Conclusion

Small entrepreneurship in the region is represented primarily by micro-businesses; there is also growing informal employment in small businesses, in cases when an unregistered FOF or individual entrepreneur in fact functions on the lee of a PSP. The development of approaches to the division of PSPs, which today are recognized as a form of non-entrepreneurial activity for the production and processing of agricultural products, into subsistence farms, manufacturing products for the personal consumption of the family, and commercial farms, aimed at obtaining income from the sale of their products and not the satisfaction of personal needs, will promote the formation of a "white" market of agricultural micro-businesses in the region and will outline the PSPs subject to the system of earned income taxation under Federal Law No. 422-FZ "On the Experiment of Establishing a Special Tax Regime "Earned Income Tax".

All measures of state support for agricultural producers in the region, including FOFs, are aimed at reimbursing or compensating part of the costs, taking into account the level of productivity. At the same time, there is no differentiated approach to measures of state support for producers located in different economic conditions, which are also determined by the prevailing natural and climatic conditions of a particular territory. The formation of expenditures for the purchase of material resources and the volume of gross output in the FOFs of the Krasnoyarsk Territory by 47.77% and 44.28%, respectively, is determined by the natural climate and resource conditions of management, which cannot be ignored when developing measures for state support.

When considering the selected set of factors, the most advantageous position was found in the regions located as close as possible to the regional center – the Krasnoyarsk agglomeration, while despite somewhat worse natural and climatic conditions compared to the southern regions, they are characterized by a more developed transport

network, logistics infrastructure and access to markets. FOFs in some areas of the Eastern and Western macro-districts were in the most unfavorable conditions, which is due to the remoteness from consumers, poorly developed road infrastructure, and worse natural and climatic management conditions.

The author considers it appropriate to use correction coefficients for the distribution of state support, in particular, for FOFs:

- according to the number of points of influence of the natural and climatic factors and the territorial location of the FOF, – coefficients of the level of points (Cs);
- according to the number of expenses for the purchase of material resources for 1 FOF, thousand rubles – coefficients of the level of expenses (Ce);
- according to the gross output per 1 FOF, tons – coefficients of the level of gross output (Cgo).

The use of these correction coefficients allows linking the amount of state support provided to FOFs with the natural and climatic conditions of management and the volume of production and restoring the stimulating function of state support. The calculation of correction coefficients is carried out within three groups of Krasnoyarsk Territory regions, allocated by the level of points of influence of the natural-climatic and resource conditions of the territory. The total coefficient (Ctot) of the amount of state support for a farm is determined by calculating the average value of the sum of correction coefficients for the level of points, the level of expenditures, and the level of gross output.

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THE IMPACT OF RESERVE REQUIREMENTS OF CENTRAL BANKS ON MACROECONOMIC INDICATORS

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Abstract. This article explores the central banks' awareness of the potential and application of reserve requirements for stimulating economic growth. The authors examined the differences in the impact of reserve requirements of central banks on the economic indicators in five countries, namely: Japan, Norway, South Africa, Brazil, and China. These countries have different levels of economic development and different banking systems and required reserve systems, which determined their inclusion in the study. The article assesses the possible impact of central banks on GDP and GNI through changes in reserve ratios. Thus, this research contributed to the discussion about the role of reserve requirements of central banks in the development of a country's economy and industry. The results were obtained with a new mathematical apparatus that analyzed and assessed various aspects of the impact of monetary policy tools on macroeconomic indicators that are not considered in classical econometric models. The authors made an assumption that the reserve requirements of the central banks should not be considered as the controlling factor in the changes in the economic indicators of the countries under study or as a tool that can operate independently of other instruments.

Keywords: monetary policy tool; reserve requirements; obligatory reservation system; required reserve ratio; gross domestic product; gross national product

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1. Introduction

Reserve requirements allow central banks to influence the active part of the balance sheet of banks, thereby forcing the banking sector to make certain types of investments. The changes in reserve requirements are most often driven by the changes in reserve ratios. Depending on a country, there are different approaches to the use of reserve ratio as an element of monetary policy, namely, the amount of required reserves (Malhasyan, 2013; Barmuta *et al.*, 2019). There are two main reasons why banks have reserves. First, in most countries, banks have

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to keep a certain amount of cash as a reserve for various types of deposits (required reserve ratios). Second, banks use excess reserves to settle payments, for example, on overnight loans. In this paper, we analyzed the monetary policy of six countries and the impact of changes in the required reserve ratio on major economic indicators.

2. Literature review

According to A. K. Kashyap, J. C. Stein (1995), and C. E. Walsh (2010), a contractionary monetary policy may lead to a decrease in bank deposits if the central bank increases the volume of required reserves or manipulates the multiplier. In addition, B. S. Bernanke (2007) and P. Disyatat (2011) claim that attracting deposits and market financing becomes more complicated and expensive due to a contractionary monetary policy. F. S. Mishkin (1995) believes that monetary policy influences the economy and the price level through various instruments: setting interest rates, asset prices, exchange rates, the impact on expectations, accepting risks, checking the balance sheet, and refinancing lending institutions.

D. H. Dutkowsky and D. D. VanHoose (2017) assume that under the conditions that have developed since 2008 and considering the interest in reserves, the adopted monetary policy can lead to regime changes. The latter brings about quantitatively and even qualitatively different reactions to external changes in bank balances, as well as the outcomes in the loan market and deposits. In contrast to the view that the structural change that took place in 2008 was non-recurrent, it is likely that there will be a switch among several different modes depending on the settings of the reserve ratio, federal funds rate, and reserve interest rate. Dutkowsky, D. H, VanHoose, D. D. (2018) considers the impact of the Federal Reserve Service payments of various interest rates on required and excess reserves. The transition of the Federal Reserve Service mode to banks with positive excess reserves and minimal interbank lending enhances the effect on the bank loan of the current main policy tool of the interest rate on excess reserves compared to the effect of its previous main instrument, the federal funds rate. This mode also mitigates the impact of deposit supply shocks on the volatility of bank credit, while also enhancing the impact of demand shocks on loans. Dutkowsky, D. H, VanHoose, D. D. (2018 a) revealed that a change in the Federal Reserve Services policy of paying interest on reserves at a rate significantly higher than the federal funds rate has led to a shift in the banking environment with a large volume of wholesale loans to financial institutions and almost zero excess reserves by one in which wholesale lending has become minimal, and excess reserves substantial.

Tatom A. John (2014) concludes that the U.S. Congress could improve reserve management by outlawing the payment of interest on excess reserves, discontinuing the existing subsidy to banks to hold required reserves, and setting the discount rate on mandatory reserves to a level slightly lower than the treasury rate bills and rates on federal funds.

S. Dressler, E. Kersting (2015) noted that excess reserves act as an extensive bank-lending margin that is inactive in traditional limited participation models, where banks assume minimal reserves. Their study showed that this extensive bank-lending margin could weaken and even reverse the standard effect of liquidity on cash reduction. When the liquidity effect is canceled, the contraction of the money supply leads to an increase in output. In addition, changes in the interest rate paid on reserves can give large short-term answers.

Cochrane H. John (2014) explores the regime for calculating interest on reserves, in which reserves always pay market interest and the balance remains large. S. D. Williamson (2015) argues that changes in central bank balances and changes in reserve interest rates can have a similar influence on nominal interest rates, but have very different effects on economic welfare. An increase in the balance sheet of the central bank may lead to a decrease in wealth due to book costs of holding reserves in the retail-banking sector.

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J. R. Hendrickson (2017) claims that paying an interest rate on excess reserves that exceeded comparable short-term rates, the Federal Reserve probably discouraged Bernanke's portfolio rebalancing channel. For instance, the payment of interest on reserves increased the efficiency of payment processing, possibly by limiting the influence of monetary policy on economic activity.

W. Whitesell (2006) evaluates reserve regimes in comparison with interest rate corridors, which have become a competing factor in the implementation of monetary policy. The system of voluntary weighted average reserve obligations can be equally beneficial for smoothening the rate. If central banks created symmetrical opportunity costs associated with meeting weighted average reserve requirements (or obligations) or failure to fulfill them, they could maintain a single fluctuation stock on the settlement day.
D. D. VanHoose (1986) assesses the potential role of interest in required reserves as an instrument of monetary control. It has been established that an increase in the interest rate on reserves held in the Federal Reserve has a counteracting effect on the volatility of money supply. Therefore, there is an optimal interest rate on required reserves, which theoretically can include or lie somewhere between extreme cases of the absence or highest possible interest payment.

A. Hoffmann and A. Loffler (2014) emphasize the relationship between interest rate policies in large advanced economies and international financing and reserve currencies (the United States and the Eurozone) and the application of reserve requirements in emerging markets. Having analyzed the data on the reserve requirements in 28 emerging markets from 1998 to 2012, they prove that central banks in emerging markets tend to increase reserve requirements when interest rates in international finance markets decrease or financial flows accelerate, which most likely contributes to maintaining financial stability. On the contrary, when global liquidity risk increases and the financing of large advanced economies go down, emerging markets reduce reserve requirements.

D. H. Dutkowsky and D. D VanHoose (2019) point out to the fact that from the second half of 2018, the federal funds rate was equal to or almost equal to the interest rate on excess reserves (IOER). Consequently, the Federal Reserve System (the Fed) wanted to increase interbank lending within the target range at the federal funds rate. The authors consider these actions within the bank behavior model and argue that the resulting spread between the federal funds rate and the IOER over this period forced banks to switch to the third regime. The latter differs from the regime of zero excess reserves of the time before October 2008 or the regime of zero wholesale loans after October 2008 and up to the period described above. Having compared the statics of general equilibrium decisions, one can see that during this third regime, in which banks choose a positive amount of excess reserves and wholesale loans, they have the strongest reaction to changes in the rate of federal funds and IOER when granting loans to individuals. In addition, the authors give an outline of how the Fed can strategically use monetary policy to stabilize the macroeconomy during the next recession.

Some previous works have argued that interest rates on mandatory and excess reserves should not be equal. For example, Friedman M. (1960) encourages banks to earn interest on required reserves, but not necessarily on the excess. Taylor J. (2016a, 2016b, 2016c) and Selgin G. (2017) argue that establishing an IOER equal to IORR is not necessary to ensure the effectiveness of the monetary policy, especially after 2008. Sun Rongrong (2020), using an event-study approach, claims that interest rates response to announced changes in the regulated retail interest rate and reserve requirements are positive and significant for all interest rate maturities, but less at the long end of the yield curve. In contrast, market interest rates barely respond to quality statements about the position of monetary policy.

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3. Research methods

3.1. Mathematical model

To analyze the effectiveness of monetary policy tools aimed at controlling macroeconomic factors, we used the model implemented in (Maslennikov, Korovin, Afanasyeva, 2019). Regression analysis is often used to determine the dependence of factors. However, in our case, we considered not the dependence of factors, but the efficiency of control over the dynamics of macroeconomic factors with a monetary policy tool, i.e. how effective the tool is in achieving the set indicators. The concept of "dependency" in classical regression and econometric models originates from the classical theory of probability and formally means that random events A and B are independent if the condition is met

$$P(AB)=P(A)P(B)$$

In our case, one of the events is not random (the value of the parameters of the monetary policy tools is determined by the government). Thus, this dependence, acting as the basis for all the theorems that determine the accuracy and significance of conclusions, cannot be used to analyze "controllability". The classical approach, based on an econometric approach, in the opinion of the authors, has a number of limitations at the stage of using the found dependencies for factor management. Indeed, the determination of the values of the coefficients in the econometric equation can be interpreted

$$y_t = c_1 y_{t-1} + \cdots + a_1 x_{1t} + a_2 x_{2t} + \cdots + a_n x_{nt} + a_0$$

as the force and direction of influence on the value y_t. However, the fact that the determination of these coefficients is based on time series, the implementation period of which covers the moments of multidirectional changes in the directive factors xi (which researchers often consider random to fulfill the conditions of the Gauss-Markov theorem), indicates that we are forced to take into account other factors the external environment. The economic environment is changing, and on a one-time interval, the results of the significance of the coefficients and their values can be interpreted in one way, on another time interval, otherwise. For adjustment, it is necessary to introduce a parameter of the influencing factor (new variable xj) to explain the change in this interpretation. Therefore, the real effects of exposure are blurred and averaged. For example, the mathematical relation that defines the Taylor rule is represented as follows

$$y_t = i_t + a \cdot (i_t - i^*) + b \cdot x_t + y^*,$$

where y_t is the nominal short-term interest rate set by the Central Bank; i_t is the current inflation on an annualized basis; i^* is the annual inflation target; x_t is the percentage deviation of real GDP from potential in percentage terms; y^* is the long-term equilibrium value of the real interest rate; a and b are the coefficients responsible for the behavior of the Central Bank - response to shocks. However, in different economic conditions (which cannot be indexed by only two parameters i_t and x_t), the behavior of economic agents will be different, and as will be shown later, even in different directions. The construction of this model over a long time will lead

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to incorrect control. Thus, we can recognize the econometric approach as successful only for stable periods of economic development.

Our algorithm does not require the use of significant periods to draw conclusions, even if in the considered period there is a change in the reaction to the control action, then the presented algorithm will demonstrate the emerging error by changing the indicator. Let's discuss the algorithm in more detail. Let us assume that factor A controls the values of factor B if a change in the values of the indicator characterizing A entails a uniquely determined change in the indicators of factor B (with an error level admissible in advance). Let $\{X_k\}$ and $\{Y_k\}$ be two time series. If the exponent ρ calculated as a correlation function of this series modulo is equal to 1, then there is a linear function connecting the values of these series as

$$Y_k=a_1X_k+a_0$$

If we assume that X_k is the values of the control factor, and Y_k is the result of the reaction to this control, then in the case $|\rho|=1$, we can claim that there is control over a given period of time. At the same time, a significant deviation from 1 (or from -1) does not indicate the presence or absence of control. Let us consider sequences $\{X_{k+s}\}$ and $\{Y_{k+s}\}$. They differ from the previous ones due to the exclusion of s of the oldest elements and the inclusion of s of new elements at the next s points in time. If ρ is still $|\rho|=1$, but its sign has changed for the opposite, this indicates that there is no control over the time interval containing all the values of the sequences. We used this principle to draw conclusions about the effectiveness of management. Let us build a function

$$F(\{X\},\{Y\},s,t) = \frac{\sum_{k=0}^{n-1} x_k(t) y_{k+s}(t) - \sum_{k=0}^{n-1} x_k(t) \sum_{k=0}^{n-1} y_{k+s}(t)}{D(\{X\},t) D(\{Y\},s,t)},$$

Where

$$D(\{X\},t) = \sqrt{\sum_{k=0}^{n-1} x_k^2(t) - \left(\sum_{k=0}^{n-1} x_k(t)\right)^2},$$

$$D(\{Y\},s,t) = \sqrt{\sum_{k=0}^{n-1} y_{k+s}^2(t) - \left(\sum_{k=0}^{n-1} y_{k+s}(t)\right)^2},$$

$x_k(t)$ is the values of the control parameter at time t+wk (the monetary policy tool), $y_{k+s}(t)$ is the values of the controlled parameter at time t+w(k+s) (the macroeconomic indicator), w is the time interval determining the discreteness of time series, s is the time lag parameter selected so that the time lag of the control delay is equal to sw. Time points t are estimated at w intervals.

Obviously, the function built, which is essentially the operation of calculating the correlation coefficient for two sequences x_k (t) and $y_{k+s}(t)$, has the same characteristics as indicated above and at the same time is the function of discrete-time t. Studying it as a function of the variable t makes it possible to determine the effectiveness of control.

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At the same time, we do not declare the variables as random variables, but consider them as some "mechanical" system in multidimensional space. In this case, we interpret the proximity of objects as the cosine of the angle between two vectors. If on a certain interval t the function is close to 1 or -1 (its trajectory lies in the neighborhood of 1 or -1), then this means that on this time interval the use of the control determining the values of x_k is effective for the action on indicator y_{k+s}. If the trajectory oscillates, then we can assume that control is ineffective at a given time interval.

If the trajectory of the function takes the form of "steps", then we can conclude that there is another control element. A "step" (the values of function F, which is "almost" constant for some time) means that the control parameters were in agreement for some time (did not change together), and the departure from the "step" was determined by a different combination of control parameters.

If the behavior of the indicator under study changes, and there is no change in the controlled indicator $x_k(t)$ during this period, then we can assume that this indicator $x_k(t)$ is not the control one. However, the established values of the indicator $x_k(t)$ can be basic or background, supporting the trend in the dynamics of the indicator y_k. Thus, to interpret the results, we should consider the fact that the indicator $x_k(t)$ changes during the period *nw*. If during this period there are no changes, then there is no point in assessing controllability. If during the implementation of "control" the y_k indicator does not change its trend or its dynamics, that is, does not respond to disturbance, while the correlation graph lies in the range of values (near) +1 or -1, then the conclusion about "controllability" is not valid. In this case, the "negative" correlation results observed on this time interval, such as a change in the sign of the function or the approximation of the graph to zero, are not significant.

3.2. Economic interpretations of possible results of the modeling

Here is a model example that demonstrates the principle of analysis used in the work.

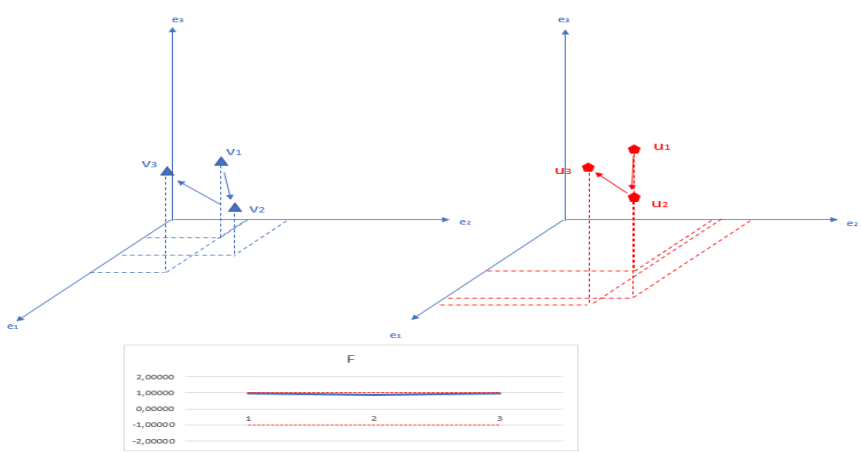

Figure 1. Demonstration of the behavior of F in the case of close series

Source: compiled by the authors

We consider two time series a = (1; 2; 3; 2; 4) and b = (3; 4.5; 5; 4; 5.5), the values of which differ by 2, with the exception of two perturbations, the second and fifth components. We consider vectors of dimension 3 that dynamically arise when the time factor v_1 = (1; 2; 3) and u_1 = (3; 4.5; 5), v_2 == (2; 3; 2) and u_2 = (4.5; 5; 4), v_3 == (3; 2; 4) and u_3 = (5; 4; 5.5). The function F(t) in this case is defined as $F(1)=\cos(v_1;u_1)$, $F(2)=\cos(v_2;u_2)$, $F(3)=\cos(v_3;u_3)$. Thus, if the relationships between the elements of the time series change significantly, then the

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angles between the corresponding vectors will change. In this case, the dimension determines the time that establishes the existing regularity. A demonstration of the angles and values of F in the given case is shown in Figure 1.

We introduce a violation of relations; now let b=(3;4.5;5;2;3), u_1=(3;4.5;5), u_2=(4.5;5;2), u_3=(5;2;3). Obviously, the angles between the vectors have changed, the values of the function F began to deviate from 1. An example is shown in Figure 2.

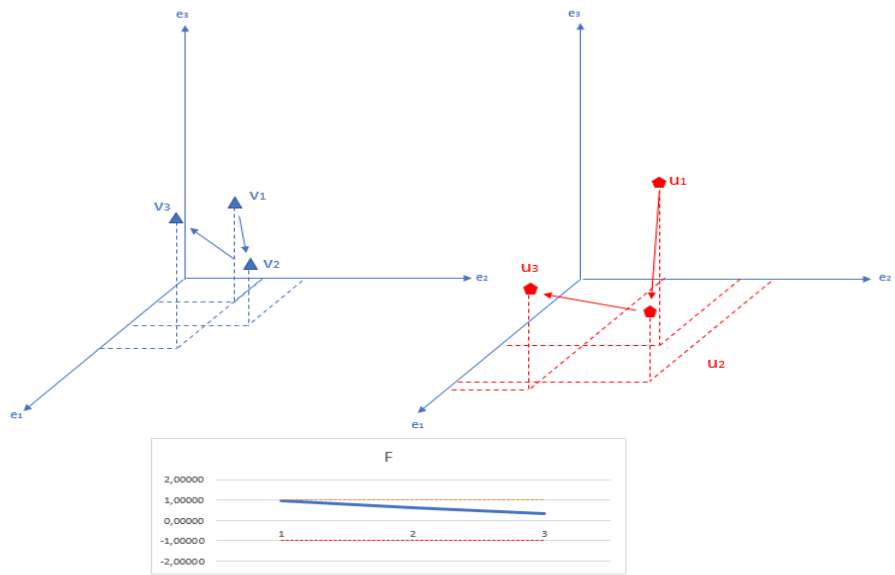

Figure 2. Demonstration of the behavior of F in the case of not close series

Source: compiled by the authors

Obviously, in the practice of analysis, we consider a higher dimension to obtain more information about the formation of patterns. The situation is clearly interpreted if the graph of the function $F(\{X\},\{Y\},s,t)$ fluctuates in the neighborhood of 1 (less than 1) or -1 (more than -1). This means that over the entire studied period of time t on which the graph is built the factor X is a controlling one. Depending on the point of the graph, the effect is either positive (higher X is accompanied by a growth in Y indicator, with a parallel decrease in both X and Y indicators) or negative (an increase in X is accompanied by a decrease in Y indicator, and Y increases, while X decreases). The unambiguously interpreted result is the oscillation of trajectory $F(\{X\},\{Y\},s,t)$ with high amplitude in the strip containing both the set in the negative and in the positive semi-plane. This means that variable X cannot be selected as the control variable.

A poorly interpreted situation is the one in which the trajectory deviates slightly from zero. This means that the values do not correlate, and the control is neither registered nor significant. If at some point the trajectory had an "oscillation" into a semi-plane with a different sign, and then returned to the previous area of localization, then this can be due to the lack of information. Let us ignore such oscillations in the trajectory, assuming that the temporary deviation is a correction of the macroeconomic factor or due to unreliable data.

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3.3. Analysis of the input data

In this study, we examined five countries: Japan, Norway, South Africa, Brazil, and China. We selected countries with different development levels of both banking systems and economies. The data for analysis were obtained from the websites of central banks of the above countries and were transformed as follows. The data on reserve requirements (reserve ratios in China, Japan, South Africa, and Brazil, as well as the volumes of required reserves in Norway) were given per month, while GDP data were presented per quarter. To make these data comparable, we filled the missing periods with the last value. We established the data period from January 1, 2000, to January 1, 2018, since the results after this date were not available for some countries at the time we began working on the research. We included the data on GDP (volume) in local currency in Norway and Brazil; GNP (volume) – in China; real GDP – in South Africa and Japan; nominal GDP – in Japan; and GNI (per capita) in USD in South Africa.

China

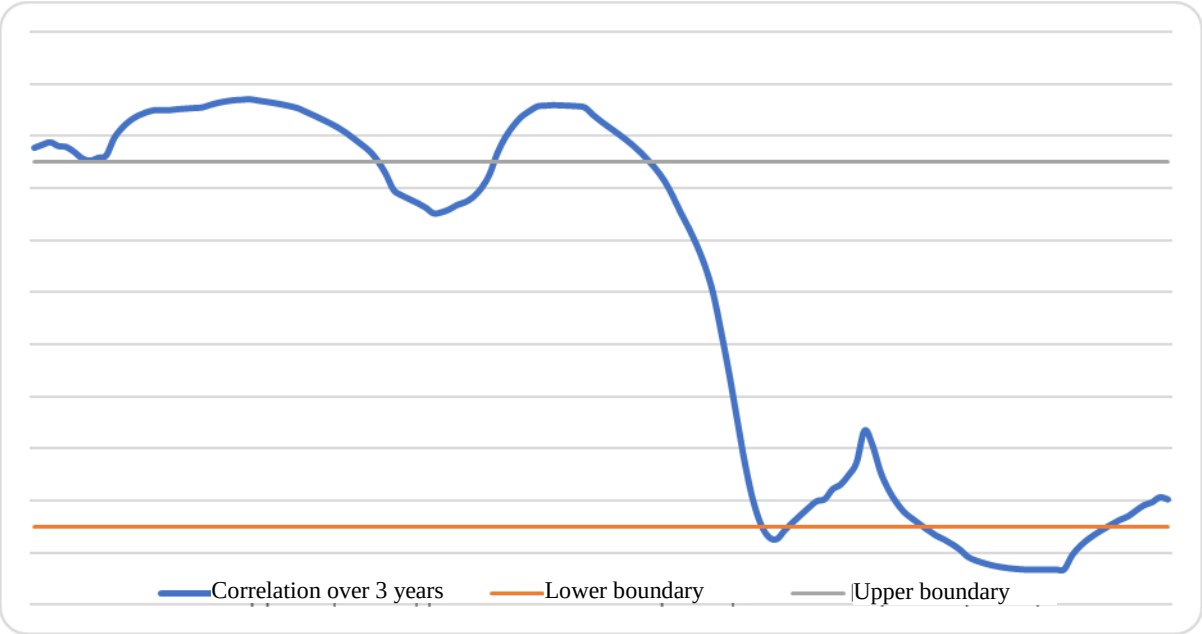

Figure 3. The correlation between the reservation rate and GNP in China

Source: compiled by the authors

To analyze the controllability, we built the function $F(\{X\},\{Y\},s,t)$, where {X} is the time series of reserve ratios, {Y} is the time series of China's GNP, the time lag is s=0, and w is a month, like in all further cases considered. We chose the zero-lag since changing the values of s from 0 to 12 we could observe an insignificant change in the shape of the graphs, while for s=0 the graph of the function was closest (in the metric of the functional space C([01/01/2000; 01/01/2015)) to the levels of 1 or -1.

Having analyzed the behavior of function $F(\{X\},\{Y\},s,t)$, we observed a steady strong positive correlation in the periods from 2004 to 2007 and from 2008 to 2010. At the same time, a strong negative correlation was observed from the second half of 2013 to the end of 2014. This behavior contradicts the logic, as one would expect that the required reserve ratios could control a macroeconomic factor, for example, GDP. Indeed, an increase in the required reserve ratio objectively reduces the interest of commercial banks in intensifying lending, which, in turn,

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should limit production activities, and, hence, GDP growth. According to this logic, the growth of reserve ratios leads to a decrease in GDP; therefore, the correlation should have a negative sign.

A positive correlation was observed between 2003 and 2009, which contradicts the hypothesis that the reserve ratio can be used as a control tool to maintain GDP growth. Most likely, at this time interval, this tool was a sort of martingale aimed at maintaining the control effect implemented by other tools in a given position for a long period. It can be assumed that, for example, if the refinancing rate and the reserve ratio are used in combination, the expected effect is not instantaneous, but "stretched" over a long time. This behavior can be observed in the activities of other central banks in the pre-crisis period (for instance, in Japan, South Africa, and Norway).

Thus, we could identify two periods on the trajectory: before 2010 and after this year. In this study, the mutual behavior of two factors was determined over the period of three years, which means that the strongest positive correlation coefficient observed before 2010 reflects the period of economic recovery before 2007, and the changed sign in 2010 refers to the period of 2007, including the moment when the global economic crisis, which lowered China's GNP, forced the People's Bank of China to increase the reservation rate. A change in sign indicates a new type of relationship: an increase in the reserve ratio was accompanied by a decrease in GNP. It is interesting that the proximity of two factors began to decrease even before 2008: the trajectory went below the confidence level with the correlation coefficient that estimated 0.7 on March 31, 2010. Given the three-year period over which the correlation was calculated, the trends began to change in March 2007. This is when the crisis of high-risk mortgage loans in the USA began, which had no direct influence on China's GNP.

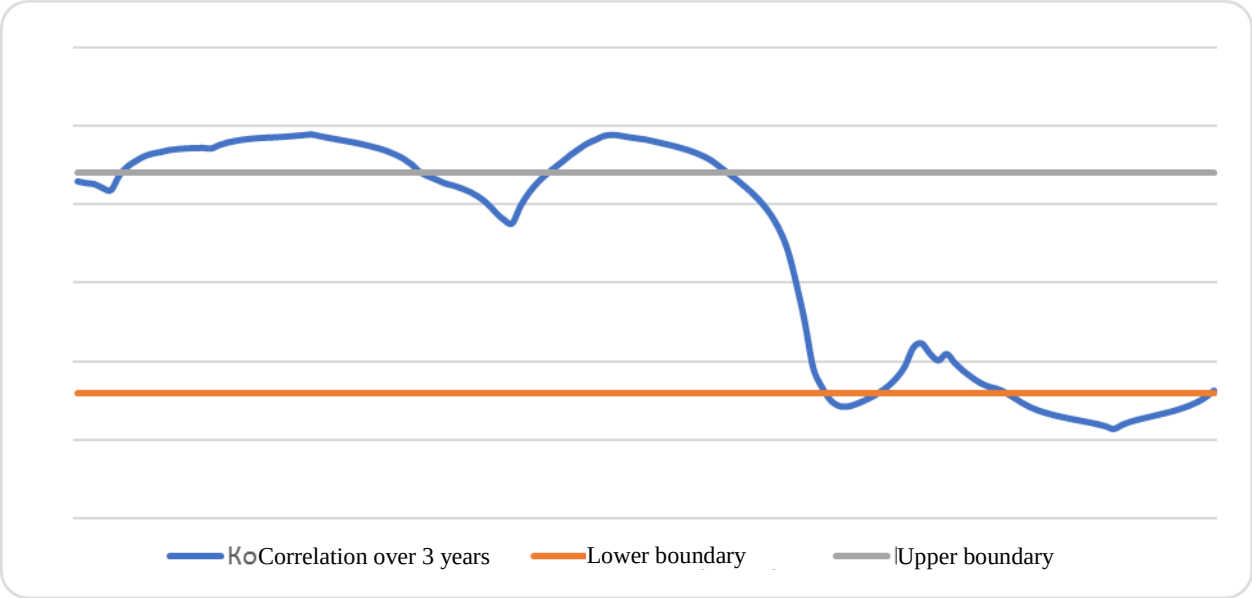

Figure 4. The correlation between the reservation rate and GDP in China

Source: compiled by the authors

Figure 2 presents graph $F(\{Z\},\{Y\},s,t)$, where {Z} is the time series of the reservation rate, {Y} is the time series of the volume of China's GNP, the time lag is s=0, and w is a month, like in all other cases considered. Until 2010 (except for the beginning of 2008), the relationship between the reservation rate and GNP was stable, strong, and direct. During the crisis period, at the end of 2008, China's GDP indicator decreased significantly and began to grow only from the middle of 2009 to 2010. Consequently, over this period, the People's Bank of China adjusted the reservation rate: the bank lowered it in 2008 and increased from 2009 to 2010. This measure was effective.

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Since 2011, an opposite course of action was chosen: an increase in the rate led to a decrease in GDP and vice versa. At the same time, reserve ratios also changed the sign of correlation. The People's Bank of China skillfully reversed the impact of the refinancing rate: after the transition period, there were no significant oscillations of the correlation function, which proved the efficiency of the strategy and understanding how this tool should be used.

Japan

It was difficult to analyze Japan's GDP due to the fluctuations that made it impossible to determine the influence of the tools used. That is why we had to consider such macroeconomic indicators as nominal GDP per capita or real GDP of Japan at current prices (USD).

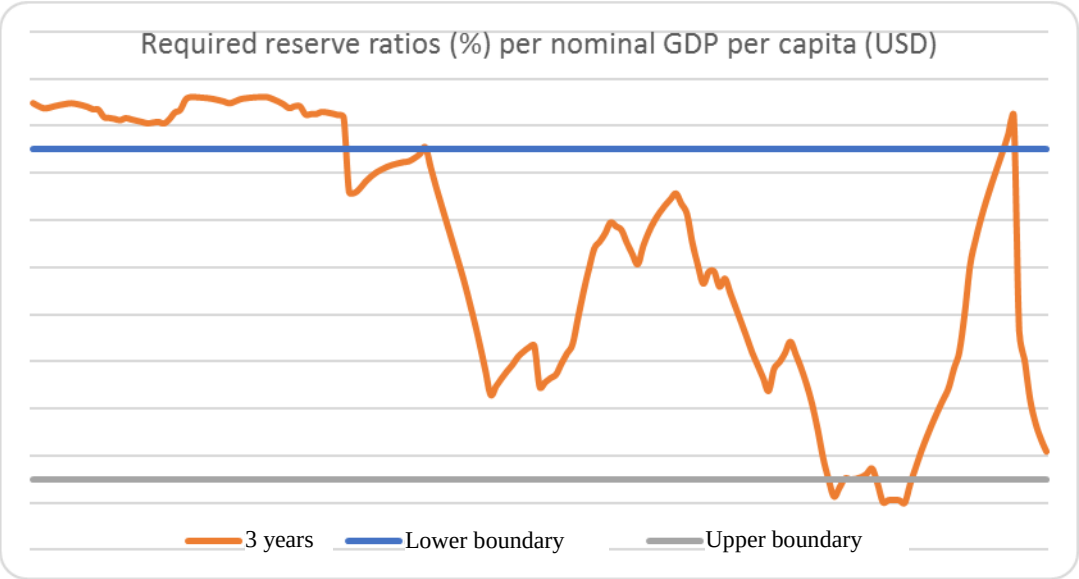

Figure 5. The correlation between the average effective reserve ratio and nominal GDP in Japan

Source: compiled by the authors

A positive correlation of reserve requirements and nominal GDP per capita (USD) was observed in Japan in the periods from 2000 to 2004 and from the end of 2014 to the beginning of 2015, and a slight negative correlation – in 2012 and 2013. Significant correlation fluctuations indicate that the attempts to use reserve ratios to correct dynamics did not lead to a significant positive effect.

Since 2013, the mutual behavior of reserve ratios and GDP changed. Most likely, this was due to a change in the Bank of Japan's course: in 2013, the head of the Bank, Masaaki Shirakawa, who held this post since 2008 and did not support the policy of Prime Minister Shinzo Abe, was replaced by Haruhiko Kuroda, who supported the Prime Minister's policy and tried to overcome deflation by loosening the Bank's policy. The goal was to bring annual inflation in the country to 2%. All available tools were used to achieve this aim, which primarily led to an increase in the money supply. Koichi Hamada (Yale University) substantiated this approach. This financial research school traditionally determines the policy of the US Federal Reserve, which often resorts to such methods. The latter is connected with the traditional "martingale" behavior of the correlation function of reserve ratios and GDP after 2013. Figure 3 presents graph $F(\{Z\},\{Y\},s,t)$, where {X} is the time series of reserve ratios, {Y} is the time series of Japan's nominal GDP per capita, the time lag is s=0, and w is a month.

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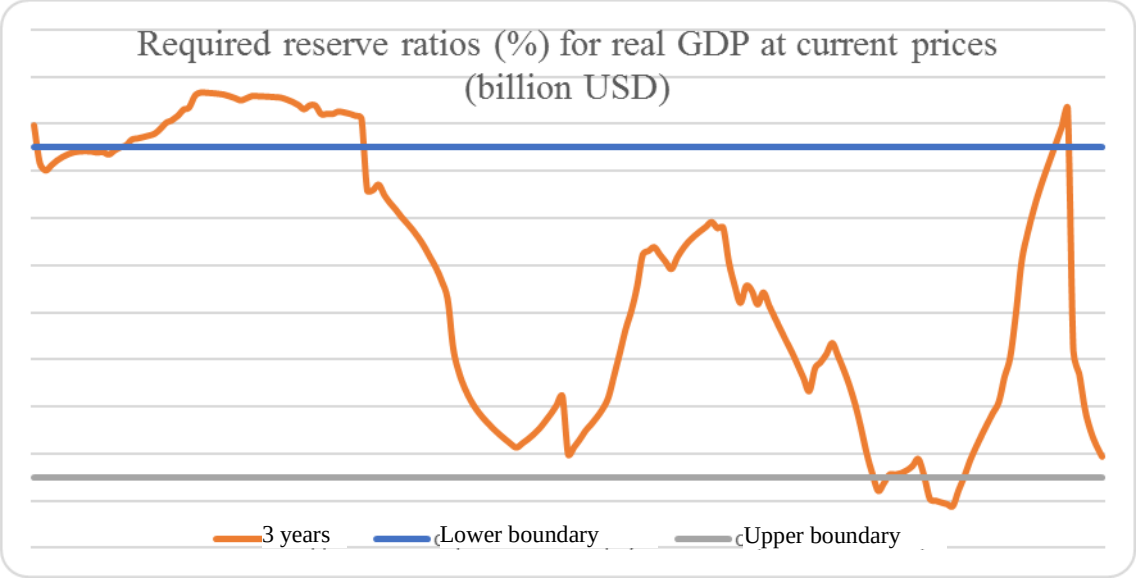

Figure 6. The correlation between the average effective standard of required reserves and real GDP in Japan

Source: compiled by the authors

A similar situation was observed when we analyzed the "control" over real GDP at current prices by changing reserve ratios. A positive correlation of reserve requirements and real GDP at current prices (billion USD) was observed in Japan from 2001 to 2004, and a slight negative correlation – in 2012-2013.
The Bank of Japan was pursuing a policy of quantitative easing since April 2013. In the periods, there were no significant correlations of the changes in the refinancing rate by the Bank of Japan, so it could not be an additional impact factor. Significant fluctuations in both correlations indicate that the attempts to use reserve ratios to improve the dynamics did not lead to a significant positive effect.

Thus, the required reserve ratio did not affect the long-term growth of either nominal or real GDP in Japan.
Figure 4 presents the parameters of the analyzed function $F(\{X\},\{Y\},s,t)$, where {X} is the time series of the required reserve ratios, {Y} is the time series of Japan's real GDP at current prices, the time lag is s=0, and w is a month.

The Republic of South Africa

Figure 5 presents the parameters of the analyzed function $F(\{X\},\{Y\},s,t)$, where {X} is the time series of the required reserve ratios, {Y} is the time series of South Africa's real GDP at current prices, the time lag is s=0, and w is a month. We concluded that this tool did not exert any control. Indeed, the values of function F are higher than 0.7 only at two short intervals. These intervals are short, which indicates that the South African Reserve Bank could have applied analytical methods based on statistical data to justify the expected result if this tool was used to control real GDP.

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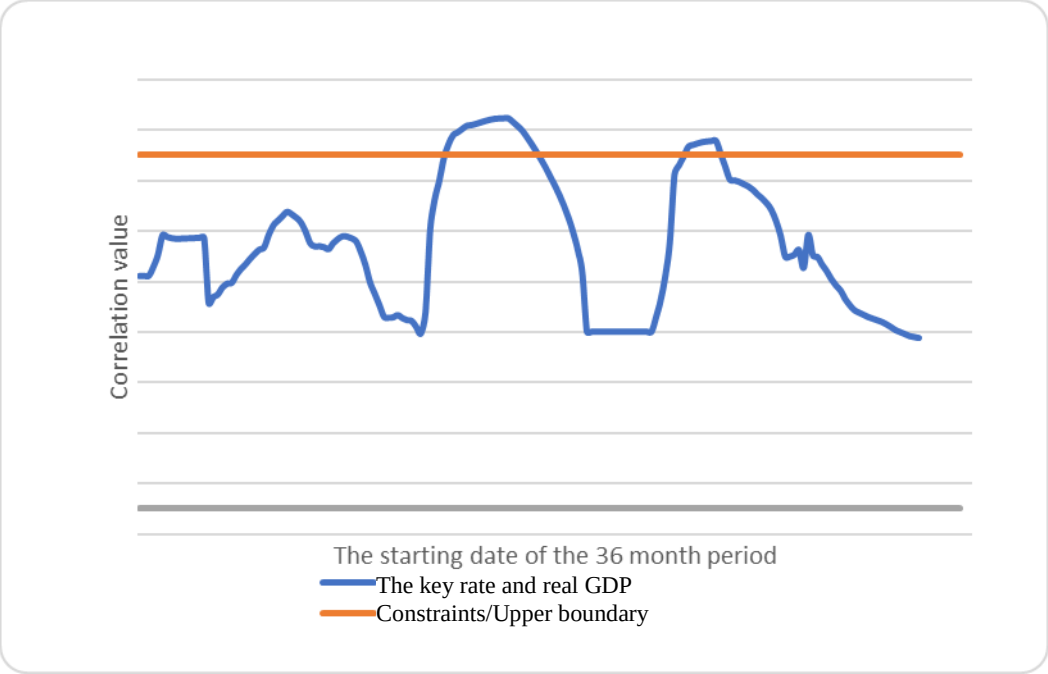

Figure 7. The correlation of reserve ratios and real GDP
Source: compiled by the authors

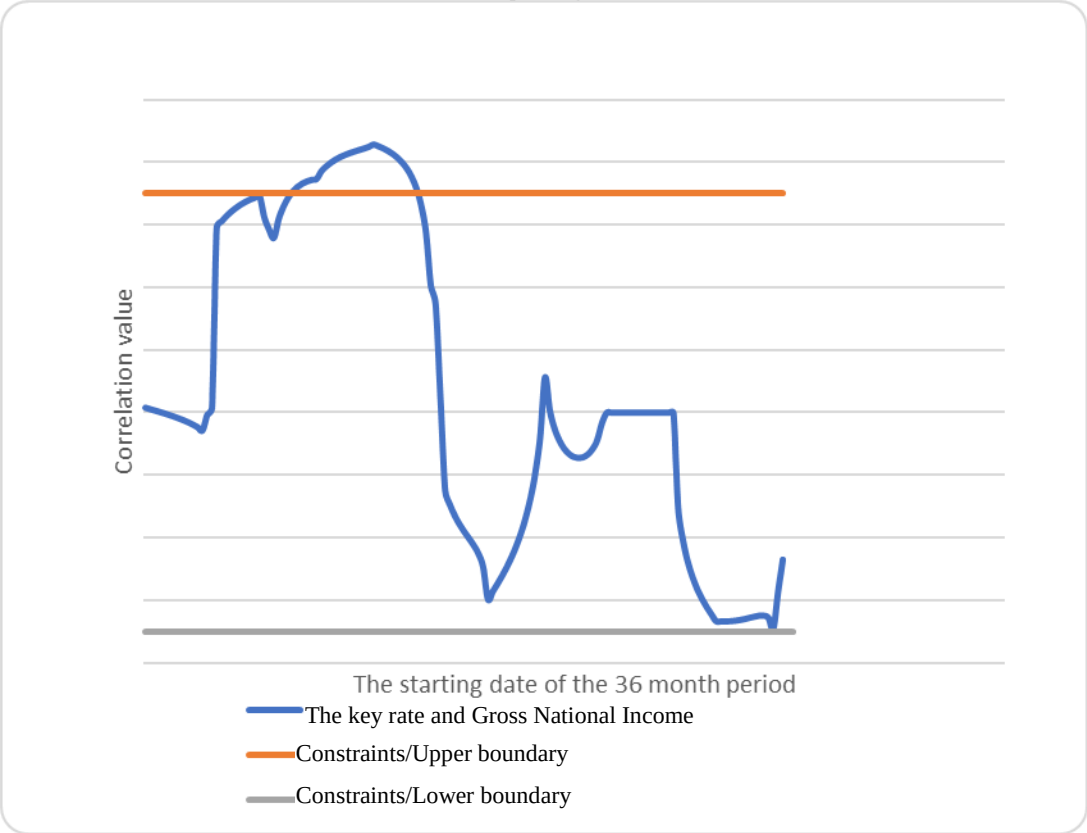

Figure 8. The correlation of reserve ratios and Gross National Income per capita, USD
Source: compiled by the authors

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If another control goal is chosen, for instance, Gross National Income per capita, again, one cannot conclude that this tool could be used as a control element. A positive correlation between the required reserve ratio and Gross National Income per capita in South Africa can be observed from 2002 to 2004. From 2008, South Africa gradually reduced required reserve ratios. At the same time, since 2006, real GDP was declining, with sharp drops in 2008, 2009, and 2015.

The refinancing rate also changed during positive correlations. The refinancing rate was increased in 2006, while from 2002 to 2004, and from 2009 to 2010, it was reduced. It is possible that at certain time intervals the correlation was influenced by a decrease in the refinancing rate. Thus, it can be concluded that the reserve requirements established by the South African Reserve Bank cannot be regarded as the controlling factor in GDP or GNI. Considering the above, one cannot draw a conclusion on the effect of the tool, as it was not used for controlling GDP.

Brazil

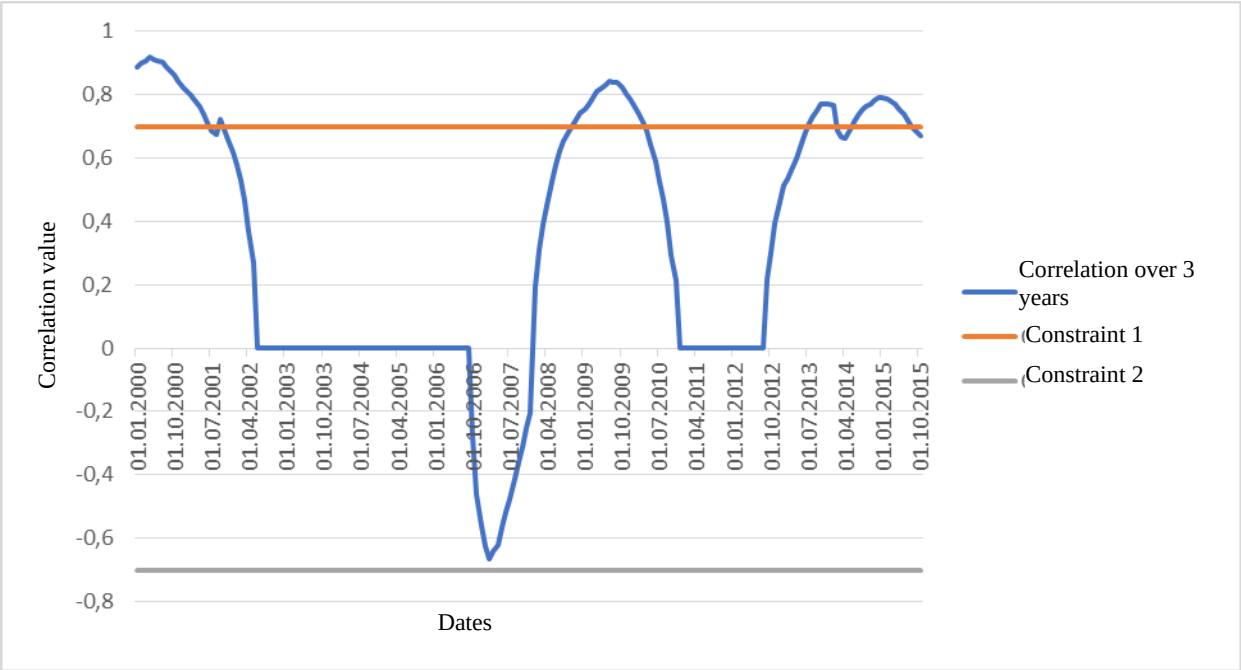

Figure 9. The graph of the correlation between the required reserve ratio (%) and GDP (BRL)
Source: compiled by the authors

Having studied the properties of the correlation function $F(\{X\},\{Y\},s,t)$, where {X} is the time series of the required reserve ratios, {Y} is the time series of Brazil's GDP, the time lag is s=0, and w is a month, we could conclude that this tool cannot be effectively applied to control the dynamics of GDP. In Brazil, a positive correlation between reserve requirements and GDP (BRL) was observed in the periods from 2000 to 2001, from 2009 to 2010, and from 2012 to 2015. The positive correlation was strongest in 2000 and amounted to 0.89. We did not register a negative correlation.

The required reserve ratio in Brazil was gradually increasing since 2001. The main spikes occurred over the periods from 2001 to 2002, in 2010, 2015, and 2016. At the same time, GDP was also growing steadily. At each time interval where a positive correlation was observed, the refinancing rate changed: it either increased in 2001, 2010, from 2012 to 2015 or decreased in 2000 and 2008. From the moment Henrique de Campos Meirelles

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became the President of Brazil's Central Bank in 2003, there were practically no changes in the reserve ratio affecting GDP. The preference was given to such an instrument as SELIC – the special overnight rate of the Central Bank of Brazil. The aim of short-term manipulations with reserve ratios during the crisis period was not connected with the control over GDP. This conclusion can be drawn if we look at the small period of stable positive correlation. After 2012, the oscillation was observed in the positive semi-plane. This stage was proclaimed by the head of the Central Bank, Alexandre Tombini, as the period of targeting inflation by changing the refinancing rate, and, as we could see, in other countries, the required reserve ratio could be considered a "constraint". Therefore, there is no evidence that the required reserve ratios are a successful tool to control GDP in the long and midterm, so even if this tool was used for this purpose, it was ineffective.

Norway

The control over GDP by changes in the required reserve ratios was analyzed on the basis of the constructed function $F(\{X\},\{Y\},s,t)$, where {X} is the time series of the required reserve ratios, {Y} is the time series of Norway's GDP, the time lag is s=0, and w is a month (Fig. 8). Until 2008, there was a stable positive correlation, which could be due to the martingale property. An increase in reserve ratios, accompanied by a decrease in the refinancing rate, makes it possible to prolong the management effect – either to lower inflation or to intensify lending to the real sector of the economy, which leads to GDP growth.

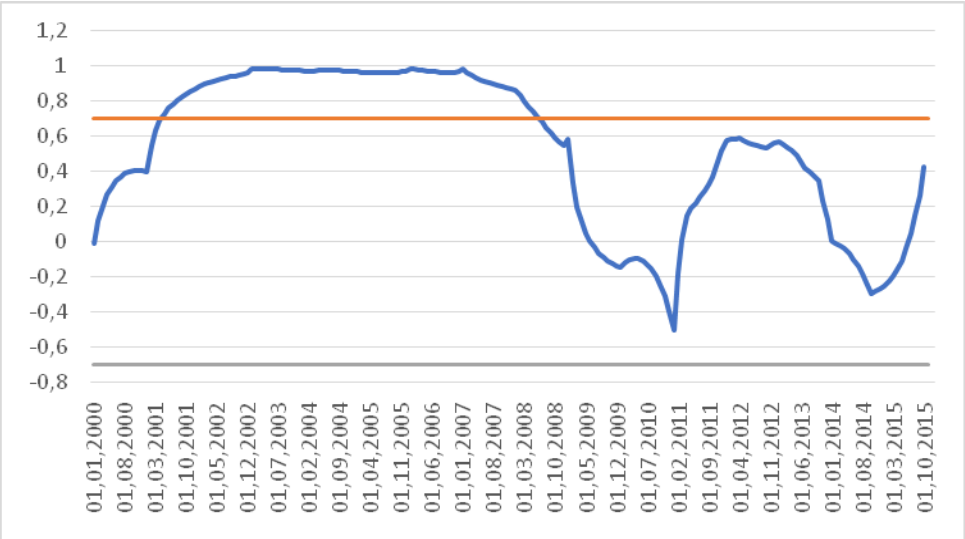

Figure 10. The correlation of the volumes of required reserves and GDP (billion NOK)
Source: compiled by the authors

Therefore, we could observe a positive correlation between the volume of required reserves and GDP from 2001 to 2008. The volume of required reserves over the entire time was growing stepwise. A slight decrease in the volume of required reserves was observed since 2002, in 2008 and 2015. At the same time, GDP was gradually increasing since 2000, with slight decreases in 2015 and 2016. The refinancing rate was changed throughout the identified correlation period. For instance, the refinancing rate was reduced before March 2004 and then increased.

At the same time, a weak correlation and the graph oscillations during the period after 2011 indicate that for Norway, the tool that implied controlling the volume of required reserves by changing the dynamics of GDP was ineffective in the long term.

Having studied the correlations of the volume of required reserves and GDP in Norway, we concluded that from 2001 to 2008 this country had a strong correlation. In this regard, we share the view of D. Kondratov and A. A. Amaev (2018) that the main goal of the Bank of Norway's policy was price stability, which in turn ensured an increase in welfare. This is confirmed if the martingale hypothesis we put forward above is valid.

Conclusions

Summing up the research results, we can conclude that in most of the studied countries, reserve requirements cannot be considered a factor in the control over the dynamics of GDP. As long as other factors are not considered, changes in reserve requirements do not guarantee a detectable effect on GDP.

In a number of countries, we registered a positive correlation between required reserve ratios and GDP over some long time intervals. Since this contradicts the logical thesis that an increase in required reserve ratios should limit lending activity and slow down GDP growth, we proposed a hypothesis called "martingale". To target macroeconomic indicators effectively, central banks assume that "a lower refinancing rate leads to an increase in GDP" and take measures to curb the effect of changes in rates by simultaneously imposing a regime of tightening reserve requirements. This can be done to prolong the expected effects and to make the growth more elastic. If this hypothesis is true, we can conclude that the required reserve ratio becomes an important auxiliary element in the targeting of macroeconomic indicators.

In this research paper, we considered completely different changes in reserve requirements and their impact on the change. Consequently, such a monetary policy tool as the reserve requirements cannot be considered as the main factor in changing GDP.

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THE INFLUENCE OF THE CLASSIFICATION OF NON-CURRENT ASSETS AS HELD FOR SALES ON THE LIQUIDITY OF THE COMPANY'S BALANCE SHEET

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Abstract. Enterprises are in constant search for additional sources of financing their activities and increasing the liquidity of their balance. One of these methods is the classification of non-current assets as held for sale, which causes changes in the structure of assets of the company, affects its liquidity and solvency. At the same time, users of information should be sure of the reality of such operations for the classification of non-current assets. It is important to avoid manipulating balance sheets and artificially enhancing their liquidity by changing the structure of assets. The results of a study of the impact of operations on classification of non-current assets as held for sale on the liquidity of the company's balance sheet are presented in this article. The impact of non-current assets held for sale on liquidity is shown separately provided that they are included in the groups of fast-selling assets and slow-selling assets. The impact of such groupings on the liquidity indicators is shown by means of coefficient analysis. The nature and level of the impact of non-current assets held for sale on the liquidity of the balance sheet is identified by modelling a consistent change in their volume relative to the value of non-current assets and capital of the company. For the purpose of effective asset management, the optimal indicator of non-current assets held for sale in the company's balance sheet has been proposed, which avoids the risk of lowering the productivity of the existing equipment while ensuring the release of financial resources due to the sale of assets.

Keywords: non-current assets; held for sale; liquidity; liquidity analysis; ratio analysis of liquidity; capital; reclassification of non-current assets

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1. Introduction

The activity of modern economic entities is accompanied by a high degree of risk and variability of the environment. Enterprises feel the constant influence of risk factors on their financial position, liquidity and solvency. One way to increase liquidity and find additional sources of financing is to transfer assets from non-current to current assets for resale. Such object as non-current assets held for sale (hereinafter – NAHS), is formed as a result of these classification procedures.

In economically developed countries, non-current assets held for sale occupy a share in the assets for 0.1% to 6.4% (according to the financial statements of the oil and gas companies of the United Kingdom, France, USA, Poland for 2007-2018). NAHS are an effective management tool for structure of assets of an entity, they help in regulation of its level of liquidity and solvency, as well as represent a source of investments in the material base of activity.

The need for effective management of such kind assets as non-current assets held for sale requires the development of appropriate analytical procedures for the purpose of determining the indicators of their condition and dynamics, and conducting ratio analysis. It should be noted that at present there are no ready-made decisions and special studies on the analysis of transactions with non-current assets held for sale.

2. The purpose and methodology of the research

The purpose of this article is to investigate the impact of the classification of non-current assets as held for sale on the company's balance sheet liquidity, and to substantiate the asset groups to which non-current assets held for sale should be included in conducting the liquidity analysis.

The analytical methods based on the construction of qualitative groupings for the creation of key groups of assets and liabilities, are the basis of the presented study. Identifying structural and temporal changes in the company's assets and liabilities by major groups of them is carried out by determining the indicators of structure and dynamics. The ratio analysis allowed us to calculate liquidity ratios, followed by a systematic approach to finding solutions and recommendations for users of liquidity analysis results. Methods of analysis and synthesis, induction and deduction, structural and logical methods, methods of idealization and generalization were used in the construction of theoretical foundations of the presented research, the identification of problematic issues, the formulation of hypotheses and the formation of conclusions.

3. Results of the research

Problems of the analysis of non-current assets are of high scientific interest of scientists and researchers. In particular, the authors investigate approaches to the analysis of the structure of property of the company (Gabrusewicz 2018), evaluation of the effectiveness of the use of non-current assets (Khalatur, 2016), analysis of impairment of non-current assets (Nawaiseh 2015), analysis of the structure and use of non-current assets (Kalubi 2017; Kulko-Labyntseva 2014; Paliukh, Matviychuk 2015; Selivanov 2016), the analysis of the sale of non-current assets (Cieśla 2016; Kraszewska-Szuba 2017; Lazarowicz 2018), the analysis of the availability, condition and efficiency of the use of intangible assets (Poliova, Dubovets 2010; Rozeliuk, Denchuk 2006; Cherep, Pukhalska 2011; Chub 2014) etc.

The analysis of liquidity of economic entities is widely disclosed in the research of scientists, among them approaches to classification of assets by the degree of liquidity (Ivashevska 2006), effects of changes in balance

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sheet on liquidity ratios (Stupnytska 2014), the system of indicators of liquidity analysis (Teren 2016), the study of the balance sheet liquidity (Tiuleneva 2013) and others.

However, the analysis of transactions with non-current assets held for sale and their impact on the balance sheet liquidity still scarcely explored. In addition, such type of analysis has a number of unresolved issues, in particular, to which group of assets should non-current assets held for sale be classified in the analysis of liquidity, as fast-selling or slow-selling. Also a problematic issue is determining the optimum indicator of NAHS in the company's balance sheet, that would allow to avoid the risk of diminishing the productivity of the existing equipment, and thus contribute to the release of financial resources resulting from the sale of assets.

In international practice, the accounting for non-current assets held for sale is governed by IFRS 5 "Non-current Assets Held for Sale and Discontinued Operations". It is necessary to take into account the conditions of recognition set out in paragraphs 6-9 of IFRS 5 in order to classify assets as a group of non-current assets held for sale:
1) the reimbursement of the carrying amount of an asset occurs as a result of a sale transaction;
2) the asset must be in a condition suitable for immediate sale;
3) the asset must be fit for sale on terms that are common to such assets;
4) the high probability of sale of such assets is ensured and the procedures, promotion of the asset in the market at current fair value (sales plan, buyer determination program) are performed;
5) the sale will take place within one year from the date of classification (except for the effects of events independent of the entity and the cases specified in paragraph 9 of IFRS 5).

The reasons for reclassifying non-current assets and selling them may be different, and may include planned activities to upgrade the material base of production (the sale of worn-out equipment requires constant repairs, requires refurbishment, re-equipment, does not provide the required production capacity, etc.) as well as forced search for free financial resources (sale of available components of non-current assets for release of cash to cover urgent liabilities).

The company receives significant benefits from the reclassification of non-current assets, regardless of the reasons for such operations (Table 1).

Table 1. Advantages for a company from classifying non-current assets as held for sale

Advantages	
Material content	Financial content
reduces or eliminates equipment that has moderate and / or high levels of physical or moral obsolescence	creates a reserve to increase funding for activities
eliminates equipment that not used in operating activities (due to falling demand for products, occurrence of substitute products, loss of market share, etc.)	is a source of growth in the solvency of a company as a result of the release of additional financial resources
reduces or eliminates equipment that requires high maintenance, repair or retrofitting	is a tool to increase the liquidity of assets by managing their structure
reduces the volume or eliminates equipment that needs urgent upgrading as a result of reduced productivity, the emergence of technologically new types of production	is a source of investment in fixed assets and their updating

Source: The authors

Considering the significant benefits of classifying non-current assets as held for sale, companies may use artificial manipulation of financial statements to enhance balance sheet liquidity in individual cases. The risk of

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manipulation requires increasing attention of analysts and other users to the financial statements, which presents the non-current assets held for sale, as well as the reliability of their valuation and validity of recognition.

Conducting liquidity analysis of the balance sheet involves execution of standard procedures for grouping assets and liabilities. In particular, assets are divided into groups according to their degree of liquidity, and liabilities for the urgency maturity: A1 - absolutely liquid and highly liquid assets; A2 - fast-selling assets; A3 - slowly realized assets; A4 - hard-to-sell assets; L1 is the most urgent liabilities; L2 - current liabilities; L3 - long-term and other long-term liabilities; L4 - permanent liabilities. A more detailed division of assets and liabilities into 6 groups may be applied respectively in some cases.

The company's balance sheet will be considered as liquid if its current assets will exceed or match the volume of its current liabilities. The following correspondences between asset and liability groups should also be maintained in order to ensure the liquidity:

	Asset groups	Correlation		Liability groups
A1	absolutely liquid and highly liquid assets	≥	L1	the most urgent liabilities
A2	fast-selling assets	≥	L2	current liabilities
A3	slowly realized assets	≥	L3	long-term and other long-term liabilities
A4	hard-to-sell assets	≤	L4	permanent liabilities

Performing classification of non-current assets as held for sale requires changing the structure of the asset groups according to their liquidity level. Thereafter, non-current assets from Group A4 of hard-to-sell illiquid assets are transferred to Group A3 of slowly realized assets as they are highly likely to be sold within one year from the date of reclassification. At the same time, they can also be transferred to group A2 of fast-selling assets if their sale date is clearly defined within the next few months. The choice of group A2 or A3 should be clearly substantiated by the appropriate grounds in conducting a liquidity analysis.

It is important for stakeholders to have accurate information about the composition and structure of a company's assets, as inaccurate data may distort the results of the company's financial position analysis, its liquidity and solvency. The negative impact of the decisions made on the basis of unreliable data may be the provision of credit or investment resources to the company, which will not be able to cover its commitments in the future.

The criteria for assigning non-current assets after their reclassification in NAHS to group A2 of fast-selling assets or A3 of slowly realized assets for the purposes of liquidity analysis can be obtained on the basis of comparative study of the two mentioned approaches to grouping on the example of a real entity.

The calculations presented in this article are based on the financial statements of PKN ORLEN (Poland) for 2007-2018. The performed structuring of assets by liquidity level and liabilities by maturity is presented in Table 2.

Given actual data of PKN ORLEN reflects the volumes of the respective asset groups in terms of their liquidity [A1-A4] and liabilities for their maturity [L1-L4], according to which NAHS compile 0.06-0.7% of the value of non-current assets of the company and 0.03-0.41% of its capital.

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Table 2. Asset and Liability Grouping of PKN ORLEN (Poland) for 2007-2018 for the purposes of liquidity analysis (PLN million)

Groups of assets, liabilities	2007		2008		2009		2010		2011		2012		2013		2014		2015		2016		2017		2018	
	Value	%	Value	%	Value	%	Value	%	Value	%	Value	%	Value	%	Value	%	Value	%	Value	%	Value	%	Value	%
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
NAHS as a part of hard-to-sell assets (A4)																								
A1	1666,2	3,6	1602,1	3,4	3122,1	6,4	3045,3	6,0	5702,6	9,7	2579,6	4,9	2854,0	5,56	4799,0	10,3	3154,0	6,6	5169,0	9,3	6678,0	11,0	4716,0	7,4
A2	10884,3	23,6	10366,9	22,1	9698,9	19,8	11091,7	21,7	14075,4	24,0	14533,7	27,6	14388,0	28,0	11870,0	25,4	10604,0	22,0	12335,0	22,2	13838,0	22,8	10593,0	16,5
A3	6627,9	14,4	5674,5	12,1	6590,0	13,4	6540,2	12,8	10325,8	17,6	8642,3	16,4	7188,0	14,0	5051,0	10,8	6920,0	14,4	7673,0	13,8	8333,0	13,7	14666,8	22,9
A4	26924,5	58,4	29332,4	62,4	29687,2	60,5	30472,5	59,6	28627,7	48,7	26875,3	51,1	26922,0	52,4	25005,0	53,5	27459,0	57,0	30382,0	54,7	31815,0	52,4	34055,2	53,2
Capital	46102,8	100,0	46975,7	100,0	49088,1	100,0	51149,8	100,0	58731,5	100,0	52630,8	100,0	51352,0	100,0	46725,0	100,0	48137,0	100,0	55559,0	100,0	60664,0	100,0	64031,0	100,0
L1	39,4	0,1	35,5	0,1	24,2	0,1	23,4	0,1	673,6	1,15	83,7	0,2	36,0	0,07	42,0	0,1	162,0	0,3	659,0	1,2	290,0	0,5	473,0	0,7
L2	9896,2	21,5	9626,8	20,5	11612,0	23,7	13580,5	26,6	15534,8	26,5	12777,9	24,3	14123,0	27,5	12235,0	26,2	11728,0	24,4	14308,0	25,8	15102,0	24,9	14213,0	22,2
L3	2503,1	5,4	12147,7	25,9	2521,3	5,1	2621,1	5,1	3604,3	6,1	2265,7	4,3	1795,0	3,5	1757,0	3,8	1776,0	3,7	1655,0	3,0	990,0	1,6	2212,0	3,5
L4	33664,2	73,0	25165,8	53,6	34930,6	71,2	34924,8	68,3	38918,7	66,3	37503,5	71,3	35398,0	68,9	32691,0	70,0	34471,0	71,6	38937,0	70,1	44282,0	73,0	47133,0	73,6
Capital	46102,8	100,0	46975,8	100,0	49088,1	100,0	51149,8	100,0	58731,5	100,0	52630,8	100,0	51352,0	100,0	46725,0	100,0	48137,0	100,0	55559,0	100,0	60664,0	100,0	64031,0	100,0
NAHS as a part of slowly realized assets (A3)																								
A1	1666,2	3,6	1602,1	3,4	3122,1	6,4	3045,3	6,0	5702,6	9,7	2579,6	4,9	2854,0	5,6	4799,0	10,3	3154,0	6,6	5169,0	9,3	6678,0	11,0	4716,0	7,4
A2	10884,3	23,6	10366,9	22,1	9698,8	19,8	11091,7	21,7	14075,4	24,0	14533,7	27,6	14388,0	28,0	11870,0	25,4	10604,0	22,0	12335,0	22,2	13838,0	22,8	10593,0	16,5
A3	6816,0	14,8	5726,0	12,2	6612,2	13,5	6581,9	12,9	10354,4	17,6	8706,9	16,5	7203,0	14,0	5085,0	10,9	7017,0	14,6	7734,0	13,9	8408,0	13,9	14855,0	23,2
A4	26736,3	58,0	29280,9	62,3	29655,0	60,4	30430,9	59,5	28599,1	48,7	26810,6	50,9	26907,0	52,4	24971,0	53,4	27362,0	56,8	30321,0	54,6	31740,0	52,3	33867,0	52,9
Capital	46102,8	100,0	46975,7	100,0	49088,1	100,0	51149,8	100,0	58731,5	100,0	52630,8	100,0	51352,0	100,0	46725,0	100,0	48137,0	100,0	55559,0	100,0	60664,0	100,0	64031,0	100,0
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
L1	39,2	0,1	35,5	0,1	24,2	0,1	23,4	0,1	673,6	1,2	83,7	0,2	36,0	0,07	42,0	0,1	162,0	0,3	659,0	1,2	290,0	0,5	473,0	0,7
L2	9896,2	21,5	9626,8	20,5	11612,0	23,7	13580,5	26,6	15534,8	26,5	12777,9	24,3	14123,0	27,5	12235,0	26,2	11728,0	24,4	14308,0	25,8	15102,0	24,9	14213,0	22,2
L3	2503,1	5,4	12147,7	25,9	2521,3	5,1	2621,1	5,1	3604,3	6,1	2265,7	4,3	1795,0	3,5	1757,0	3,8	1776,0	3,7	1655,0	3,0	990,0	1,6	2212,0	3,5
L4	33664,2	73,0	25165,8	53,6	34930,6	71,2	34924,8	68,3	38918,7	66,3	37503,5	71,3	35398,0	68,9	32691,0	70,0	34471,0	71,6	38937,0	70,1	44282,0	73,0	47133,0	73,6
Capital	46102,8	100,0	46975,8	100,0	49088,1	100,0	51149,8	100,0	58731,5	100,0	52630,8	100,0	51352,0	100,0	46725,0	100,0	48137,0	100,0	55559,0	100,0	60664,0	100,0	64031,0	100,0
NAHS as a part of fast-selling assets (A2)																								
A1	1666,2	3,6	1602,1	3,4	3122,1	6,4	3045,3	6,0	5702,6	9,7	2579,6	4,9	2854,0	5,6	4799,0	10,3	3154,0	6,6	5169,0	9,3	6678,0	11,0	4716,0	7,4
A2	11072,5	24,0	10418,4	22,2	9731,0	19,8	11133,3	21,8	14103,9	24,0	14598,3	27,7	14403,0	28,05	11904,0	25,5	10701,0	22,2	12396,0	22,3	13913,0	22,9	10781,2	16,8
A3	6627,9	14,4	5674,5	12,1	6580,0	13,4	6540,2	12,8	10325,8	17,6	8642,3	16,4	7188,0	14,0	5051,0	10,8	6920,0	14,4	7673,0	13,8	8333,0	13,7	1466,80	22,9
A4	26736,3	58,0	29280,9	62,3	29655,0	60,4	30430,90	59,5	28599,1	48,7	26810,6	50,9	26907,0	52,4	24971,0	53,4	27362,00	56,8	30321,0	54,6	31740,0	52,3	33867,0	52,9
Capital	46102,8	100,0	46975,8	100,0	49088,1	100,0	51149,8	100,0	58731,5	100,0	52630,8	100,0	51352,0	100,0	46725,0	100,0	48137,0	100,0	55559,0	100,0	60664,0	100,0	64031,0	100,0
L1	39,2	0,1	35,5	0,1	24,2	0,1	23,4	0,1	673,6	1,2	83,7	0,2	36,0	0,1	42,0	0,1	162,0	0,3	659,0	1,2	290,0	0,5	473,0	0,7
L2	9896,2	21,5	9626,8	20,5	11612,0	23,7	13580,5	26,6	15534,8	26,6	12777,9	24,3	14123,0	27,5	12235,0	26,2	11728,0	24,4	14308,0	25,8	15102,0	24,9	14213,0	22,2
L3	2503,1	5,4	12147,7	25,9	2521,3	5,1	2621,1	5,1	3604,3	6,1	2265,7	4,3	1795,0	3,5	1757,0	3,8	1776,0	3,7	1655,0	3,0	990,0	1,6	2212,0	3,5
L4	33664,2	73,0	25165,8	53,6	34930,6	71,2	34924,8	68,3	38918,7	66,3	37503,5	71,3	35398,0	68,9	32691,0	70,0	34471,0	71,6	38937,0	70,1	44282,0	73,0	47133,0	73,6
Capital	46102,8	100,0	46975,8	100,0	49088,1	100,0	51149,8	100,0	58731,5	100,0	52630,8	100,0	51352,0	100,0	46725,0	100,0	48137,0	100,0	55559,0	100,0	60664,0	100,0	64031,0	100,0

Notes: A1 – absolutely liquid and highly liquid assets; A2 – fast-selling assets; A3 – slowly realized assets; A4 – hard-to-sell assets; L1 – the most urgent liabilities; L2 – current liabilities; L3 – long-term and other long-term liabilities; L4 – permanent liabilities; Capital – is the total amount of the balance sheet.

Source: The authors calculations, based on the Financial Statements of PKN ORLEN (Poland) for 2007-2018

The conducted comparison of the respective asset and liabilities groups of PKN ORLEN for the years 2007-2018 allowed to determine a payment surplus or a shortage in the main relationships between asset and liability groups, in particular A1 ≥ L1, A2 ≥ L2, A3 ≥ L3, A4 ≤ L4, the results of which are shown in Table 3. Comparative data for cases, where the NAHS is classified into different asset groups A4, A3 or A2, are shown for the purposes of identifying the impact of the NAHS on the balance sheet liquidity. This made it possible to identify differences in the amount of payment surplus or lack in each case of groupings.

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Table 3. Payment surplus (lack) of PKN ORLEN for 2007-2018 (PLN million)
(NAHS compile 0.06-0.7% of non-current assets and 0.03-0.41% of capital)

Ai-Li	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
1	2	3	4	5	6	7	8	9	10	11	12	13
NAHS as a part of hard-to-sell assets (A4)												
A1-L1	1626,80	1566,60	3097,88	3021,97	5028,96	2495,82	2818,00	4757,00	2992,00	4510,00	6388,00	4243,00
A2-L2	988,09	740,12	-1913,20	-2488,80	-1459,40	1755,78	265,00	-365,00	-1124,00	-1973,00	-1264,00	-3620,00
A3-L3	4124,80	-6473,30	4058,64	3919,11	6721,50	6376,64	5393,00	3294,00	5144,00	6018,00	7343,00	12454,80
A4-L4	-6739,70	4166,52	-5243,40	-4452,30	-10291,00	-10628,00	-8476,00	-7686,00	-7012,00	-8555,00	-12467,00	-13078,00
NAHS as a part of slowly realized assets (A3)												
A1-L1	1626,80	1566,60	3097,88	3021,97	5028,96	2495,82	2818,00	4757,00	2992,00	4510,00	6388,00	4243,00
A2-L2	988,09	740,12	-1913,20	-2488,80	-1459,40	1755,78	265,00	-365,00	-1124,00	-1973,00	-1264,00	-3620,00
A3-L3	4312,96	-6421,80	4090,82	3960,76	6750,03	6441,26	5408,00	3328,00	5241,00	6079,00	7418,00	12643,00
A4-L4	-6927,80	4115,03	-5275,50	-4493,90	-10320,00	-10693,00	-8491,00	-7720,00	-7109,00	-8616,00	-12542,00	-13266,00
NAHS as a part of fast-selling assets (A2)												
A1-L1	1626,80	1566,60	3097,88	3021,97	5028,96	2495,82	2818,00	4757,00	2992,00	4510,00	6388,00	4243,00
A2-L2	1176,25	791,61	-1881,00	-2447,20	-1430,90	1820,40	280,00	-331,00	-1027,00	-1912,00	-1189,00	-3431,80
A3-L3	4124,80	-6473,30	4058,64	3919,11	6721,50	6376,64	5393,00	3294,00	5144,00	6018,00	7343,00	12454,80
A4-L4	-6927,80	4115,03	-5275,50	-4493,90	-10320,00	-10693,00	-8491,00	-7720,00	-7109,00	-8616,00	-12542,00	-13266,00

Source: The authors calculations, based on the Financial Statements of PKN ORLEN (Poland) for 2007-2018

The main indicator of liquidity is the excess of current assets over current liabilities, and the higher this indicator is, the financial position of the company is more favourable in terms of liquidity. In general, as evidenced by the data of the Table 3, balance sheet of PKN ORLEN is relatively liquid.

The level of coverage of urgent liabilities with the most liquid assets in PKN ORLEN is sufficient [A1 ≥ L1], indicating that the current liquidity level of the company is adequate. Solvency in the near term is determined by the relation [A2 ≥ L2] and has significant limitations over the period under review, since eight years out of ten (2008-2011 and 2014-2018) have a negative balance of payments in comparing fast-selling assets and current liabilities.

An estimate of prospective liquidity at a relation of [A3 ≥ L3] shows, overall, the adequate solvency of PKN ORLEN in respect of long-term and other long-term liabilities, with the exception of individual years (2008), in which the coverage of long-term liabilities by slowly realized assets is impaired.

Financial stability PKN ORLEN in the long run is determined by the relation [A4 ≤ L4], which in most years reflects a negative balance of payments. It means that non-current assets are insufficient to cover a company's permanent liabilities. Such relation is normal and allowed in conditions of positive values of relations between assets and liabilities from previous groups.

The identified indicators of payment surplus and lack of liquid assets of PKN ORLEN testified to the disturbance of payment relations by indicators [A2-L2] in 2009-2011 and 2014-2018 and [A3-L3] in 2008. However, the ratio analysis of the company's liquidity for 2007-2018 shows a sufficient level of liquidity of its assets, despite the existing payment imbalance (Table 4).

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Table 4. Liquidity ratios of PKN ORLEN for 2007-2018
(NAHS compile 0.06-0.7% of non-current assets and 0.03-0.41% of capital)

Years	High liquidity ratio			Strict liquidity ratio (acid test ratio)			Quick liquidity ratio		
	NAHS in group A4	NAHS in group A3	NAHS in group A2	NAHS in group A4	NAHS in group A3	NAHS in group A2	NAHS in group A4	NAHS in group A3	NAHS in group A2
1	2	3	4	5	6	7	8	9	10
2007	0,17	0,17	0,17	1,26	1,26	1,28	1,93	1,95	1,95
2008	0,17	0,17	0,17	1,24	1,24	1,24	1,83	1,83	1,83
2009	0,27	0,27	0,27	1,10	1,10	1,10	1,67	1,67	1,67
2010	0,22	0,22	0,22	1,04	1,04	1,04	1,52	1,52	1,52
2011	0,35	0,35	0,35	1,22	1,22	1,22	1,86	1,86	1,86
2012	0,20	0,20	0,20	1,33	1,33	1,34	2,00	2,01	2,01
2013	0,20	0,20	0,20	1,22	1,22	1,22	1,73	1,73	1,73
2014	0,39	0,39	0,39	1,36	1,36	1,36	1,77	1,77	1,77
2015	0,27	0,27	0,27	1,16	1,16	1,17	1,74	1,75	1,75
2016	0,35	0,35	0,35	1,17	1,17	1,17	1,68	1,69	1,69
2017	0,43	0,43	0,43	1,33	1,33	1,34	1,87	1,88	1,88
2018	0,32	0,32	0,32	1,04	1,04	1,06	2,04	2,05	2,05

Source: The authors calculations, based on the Financial Statements of PKN ORLEN (Poland) for 2007-2018

According to the data of Table 4, we observe high liquidity ratio within the normal range of 0.17 to 0.43 (norm is 0.2-0.35), the strict liquidity ratio (or acid test) ranges from 1.04 to 1.36 (norm to 1.0), the quick liquidity ratio takes on value from 1.52 to 2.05 (norm is 1.3-2.0). Considering the normative values of liquidity ratios, it can be said that PKN ORLEN during 2007-2018 has a satisfactory level of liquidity and has all the prerequisites for timely repayment of its current debt.

We performed conditional calculations based on the created models in order to identify the nature and extent of influence the operations of classifying non-current assets as held for sale on the balance sheet liquidity. These models presented the reclassification of non-current assets as NAHS in various variable volumes relative to non-current assets (from 5% to 50%) and equity PKN ORLEN (from 2% to 30%) during 2007-2018. The corresponding changes in the company's liquidity indicators, determined by the impact of the NAHS reclassification operations, were identified as a result (Table 5).

Table 5. Estimated effect of classification of non-current assets as held for sale on balance sheet liquidity of PKN ORLEN for 2007-2018

№	The share of NAHS in non-current assets, %	The share of NAHS in the capital of the company, %	NAHS as a part of slowly realized assets (A3)	NAHS as a part of fast-selling assets (A2)	Company's balance sheet liquidity
1	2	3	4	5	6
1	0.06-0.7*	0.03-0.41*	There is a payment imbalance in the relation [A3-L3] in one year	Payment imbalances are observed in the relation [A2-L2] in eight years	Liquidity ratios are within the normal range, the level of liquidity is generally satisfactory
2	5**	2-3**	The relation [A3-L3] remains unchanged	The values of relation [A2-L2] are switched to positive in three years out of eight, the payment imbalance is aligned	Liquidity ratios remain close to normal; the level of liquidity is satisfactory
3	10**	5-6**	The relation [A3-L3] remains unchanged	The values of relation [A2-L2] are switched to positive in seven years out of eight, the payment imbalance is aligned	Liquidity ratios are close to normal, but in the face of an increase, the level of liquidity is satisfactory

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4	15**	7-9**	The relation [A3-L3] remains unchanged	The values of [A2-L2] are switched to the positive in eight years out of eight; the payment imbalance is aligned in all the studied years	Liquidity ratios exceed the norm by 0.5 points, the level of liquidity becomes high
5	20**	10-12**	The relation [A3-L3] remains unchanged	The relation [A2-L2] is positive	Liquidity ratios exceed the norm by 0.5-0.8 points, the level of liquidity is high
6	30**	15-18**	The relation [A3-L3] remains unchanged	The relation [A2-L2] is positive	Liquidity ratios exceed the norm by 0.75-1.0 points, the level of liquidity is excessive
7	40**	20-25**	There is a shift in the relation [A3-L3] to positive, the payment imbalance is aligned	The relation [A2-L2] is positive	Liquidity ratios exceed the norm by 1-1.5 points, the level of liquidity is excessive
8	50**	25-30**	The relation [A3-L3] is positive	The relation [A2-L2] is positive	Liquidity ratios exceed the norm by 1.5-1.7 points, the level of liquidity is excessive

Notes: * - actual company's data; ** - author's estimates.
Source: The authors calculations, based on the Financial Statements of PKN ORLEN (Poland) for 2007-2018

The results of the calculations of the payment surplus or lack in the main relations between asset and liability groups of PKN ORLEN for the years 2007-2018 on the basis of the created models of NAHS indicators are presented in the Table 6. This model is based on the condition that NAHS compile 40% of non-current assets and 20-25% of capital of the company. This calculation is presented due to the fact that it contains the first shift of the relation [A3-L3] from negative to positive, and has all positive changes in the relations [A2-L2].

Table 6. Payment surplus (lack) of PKN ORLEN for 2007-2018 (PLN million)
(NAHS compile 40% of non-current assets and 20-25% of capital)

Ai-Li	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
1	2	3	4	5	6	7	8	9	10	11	12	13
NAHS as a part of hard-to-sell assets (A4)												
A1-L1	1626,80	1566,60	3097,88	3021,97	5028,96	2495,82	2818,00	4757,00	2992,00	4510,00	6388,00	4243,00
A2-L2	988,09	740,12	-1913,20	-2488,80	-1459,40	1755,78	265,00	-365,00	-1124,00	-1973,00	-1264,00	-3620,00
A3-L3	4124,80	-6473,30	4058,64	3919,11	6721,50	6376,64	5393,00	3294,00	5144,00	6018,00	7343,00	12454,80
A4-L4	-6739,70	4166,52	-5243,40	-4452,30	-10291,00	-10628,00	-8476,00	-7686,00	-7012,00	-8555,00	-12467,00	-13078,00
NAHS as a part of slowly realized assets (A3)												
A1-L1	1626,80	1566,60	3097,88	3021,97	5028,96	2495,82	2818,00	4757,00	2992,00	4510,00	6388,00	4243,00
A2-L2	988,09	740,12	-1913,20	-2488,80	-1459,40	1755,78	265,00	-365,00	-1124,00	-1973,00	-1264,00	-3620,00
A3-L3	14894,60	5259,69*	15933,50	16108,10	18172,60	17126,70	16161,80	13296,00	16127,60	18170,80	20069,00	26076,90
A4-L4	-17509,00	-7566,40	-17118,00	-16641,00	-21742,00	-21378,00	-19245,00	-17688,00	-17996,00	-20708,00	-25193,00	-26700,00
NAHS as a part of fast-selling assets (A2)												
A1-L1	1626,80	1566,60	3097,88	3021,97	5028,96	2495,82	2818,00	4757,00	2992,00	4510,00	6388,00	4243,00
A2-L2	11757,90	12473,10	9961,71*	9700,17*	9991,64*	12505,90	11033,80	9637,00*	9859,60*	10179,80*	11462,00*	10002,10*
A3-L3	4124,80	-6473,30	4058,64	3919,11	6721,50	6376,64	5393,00	3294,00	5144,00	6018,00	7343,00	12454,80
A4-L4	-17509,00	-7566,40	-17118,00	-16641,00	-21742,00	-21378,00	-19245,00	-17688,00	-17996,00	-20708,00	-25193,00	-26700,00

Note: *Indicators in which the relation [A3-L3] shifted to the positive due to increased volumes of NAHS to 20-25% of the company's capital. The switching of the relations [A2-L2] to the positive began to occur with increasing of NAHS volumes to 2-3% of the company's capital.
Source: The authors calculations, based on the Financial Statements of PKN ORLEN (Poland) for 2007-2018

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The data in Table 6 indicates existing changes in the balance of payments of PKN ORLEN in 2008, 2009-2011 and 2014-2018 as a result of changes in the asset structure and classification of non-current assets as hold for sale in the amount of 40% of non-current assets and 20-25% of the company's capital. Accordingly, the liquidity ratios of the balance sheet also changed (Table 7).

Table 7. Liquidity ratios of PKN ORLEN for 2007-2018
(NAHS compile 40% of non-current assets and 20-25% of capital)

Years	High liquidity ratio			Strict liquidity ratio (acid test ratio)			Quick liquidity ratio		
	NAHS in group A4	NAHS in group A3	NAHS in group A2	NAHS in group A4	NAHS in group A3	NAHS in group A2	NAHS in group A4	NAHS in group A3	NAHS in group A2
1	2	3	4	5	6	7	8	9	10
2007	0,17	0,17	0,17	1,26	1,26	2,35	1,93	3,01	3,01
2008	0,17	0,17	0,17	1,24	1,24	2,45	1,83	3,04	3,04
2009	0,27	0,27	0,27	1,10	1,10	2,12	1,67	2,69	2,69
2010	0,22	0,22	0,22	1,04	1,04	1,94	1,52	2,42	2,42
2011	0,35	0,35	0,35	1,22	1,22	1,93	1,86	2,56	2,56
2012	0,20	0,20	0,20	1,33	1,33	2,17	2,00	2,84	2,84
2013	0,20	0,20	0,20	1,22	1,22	1,98	1,73	2,49	2,49
2014	0,39	0,39	0,39	1,36	1,36	2,17	1,77	2,58	2,58
2015	0,27	0,27	0,27	1,16	1,16	2,08	1,74	2,66	2,66
2016	0,35	0,35	0,35	1,17	1,17	1,98	1,68	2,49	2,49
2017	0,43	0,43	0,43	1,33	1,33	2,16	1,87	2,70	2,70
2018	0,32	0,32	0,32	1,04	1,04	1,97	2,04	2,97	2,97

Source: The authors calculations, based on the Financial Statements of PKN ORLEN (Poland) for 2007-2018

As can be seen from the Table 7, the level of liquidity of the balance sheet of PKN ORLEN has changed significantly as a result of changes in the asset structure and exceeds the normative values by an average of 1-1.5 points. It should be noted here that the estimated liquidity level, given in Table. 7 for the company, is excessive, especially considering its scope of activities, such as the oil and gas industry, which is capital intensive and requires significant amounts of machinery and equipment to ensure normal operations. However, the calculations made it possible to identify critical changes in the volume of non-current assets held for sale, which require the analysts' attention when conducting financial statements analysis and stakeholders when making decisions based on such analysis.

Conclusions

The conducted analysis of liquidity of the oil and gas company PKN ORLEN (Poland) for 2007-2018 showed how its liquidity indicators and balance of payments by groups of assets and liabilities change, under the influence of classification of non-current assets as held for sale. The calculations are made taking into account the inclusion of NAHS into the different groups of assets by the degree of their liquidity, in particular A4, A3 та A2.

Conducted liquidity analysis of PKN ORLEN, based on its 2007-2018 actual data, showed that overall the company's balance sheet is comparatively liquid but has some warning indicators. In particular, the company has an adequate level of current liquidity, and its current liabilities are sufficiently covered by the most liquid assets. Solvency in the near term has significant limitations, whereas a negative balance of payments is observed eight years out of ten (2008-2011 and 2014-2018) and fast-selling assets do not cover current liabilities. The prospective liquidity assessment generally showed that the company has an adequate level of solvency in respect of long-term and other long-term liabilities, except for individual years (2008), in which long-term liabilities are

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not covered by slowly realized assets. Long-term financial sustainability is normal taking into account the proper level of current coverage of the company's liabilities.

Despite the existing payment imbalances, the company's liquidity analysis for 2007-2018 showed a sufficient level of liquidity of its assets. The calculated ratios of high liquidity, strict liquidity (or acid test) and quick liquidity are within the recommended normative values, and the company has all the prerequisites for timely repayment of its current debt.

Conditional calculations were performed based on the created models to identify the nature and extent of the impact of the classification of non-current assets as held for sale on the balance sheet liquidity of PKN ORLEN. These models reflect the result of the reclassification of non-current assets in the NAHS in different variable volumes relative to non-current assets (from 5% to 50%) and capital (from 2% to 30%) during 2007-2018. As a result, relevant changes of the company's liquidity ratios identified by impact of the NAHS classification operations.

According to the analysis, taking into account the inclusion of NAHS in different groups of assets by their degree of liquidity (A4, A3 and A2), the switching the values of relation [A2-L2] to positive starts when the non-current assets held for sale compile 5% and more of non-current assets and 2-3% of the company's capital. There is also an impact on the balance sheet liquidity that begin to gain in excess (exceeding the norm by 0.5 points and more) when non-current assets held for sale compile 15% and more of non-current assets and 7-9% of the value of capital.

For the purposes of liquidity analysis in the grouping of assets according to their degree of liquidity, NAHS can be included in both the A3 group of slowly realized assets and the A2 group of fast-selling assets. A reasonable choice of group A3 or A2 should be made taking into account the available conditions of sale for each object of NAHS separately. The period during which the asset will be sold should be performed as the basic indicator for grouping. In particular, if the sales plan of NAHS ensures their alienation within 6 months, this is a reliable basis for qualifying assets as fast-selling assets (A2). If, however, the NAHS sale is foreseen for a period from 6 months to a year, then the NAHS should be assigned to a slowly realized asset group (A3).

In order to determine the optimum indicator of NAHS in a company's balance sheet, which allows to avoid the risk of diminishing productivity of available production capacities and at the same time contribute to the release of financial resources as a result of the sale of assets, it should be taken into account the fact that switching the relation [A2-L2] to positive begins to occur when non-current assets held for sale compile from 5% and more of non-current assets and 2-3% of the value of capital. Balance sheet liquidity ratios should also be considered as they begin to gain in excess when the non-current assets held for sale compile 15% and more of non-current assets and 7-9% and more of the value of capital.

Accordingly, the optimal indicator of NAHS in the balance sheet of the company is the volume of 5 to 10%, which allows to align the balance of payments without the risk of reducing productivity. NAHS values up to 5% will not have a significant impact on the liquidity of the balance sheet; values greater than 15% can have a critical impact on the overall performance of non-current assets.

Restrictions on the application of the above methodology for analysing the impact of classification of non-current assets as held-for-sale on the balance sheet liquidity of the company may be short-term sales transactions of NAHS that do not reflect the value of NAHS in the interim or annual financial statements of the company. In such cases, analysts have to provide a special request for information to the company in terms of the value of NAHS, the time period of their retention in the accounts and sales transactions. Also, to accurately assess the liquidity and solvency of the company, cash flow data during the reporting period should be taken into account.

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DYSFUNCTIONS OF THE PROCESS OF MANAGING FINANCE IN POLISH COMMUNES - THE PERSPECTIVE OF MANAGEMENT SCIENCES

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Abstract: The article is an attempt to indicate that proper cost settlement of the tasks set in communes requires both taking into account the specifics of these organisations and solutions that are the answer to the challenges posed by modern management and accounting sciences. The main problem here is the fact that currently used methods of settlement in this respect, apart from the cost accounting requirements, do not fulfill their role. They cause incorrect calculation of the amounts due and their negation by the ordering party on the one hand and on the other hand, they expose communes to failure in payment proceedings courts. In this context, the article is also an attempt to encourage communes to change the methods and ways of determining costs their own set tasks and on this basis asserting their rights both in negotiating proceedings with the commissioner and in any court proceedings.

Keywords: commune; cost; set tasks; subsidy/grant

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1. Introduction

One of the significant problems occurring at the meeting point of the central and local government subsectors is the value of funds made available to communes in relation to the tasks entrusted to them. The constitutional rule in force in Poland within the scope, referred to as the principle of adequacy, has been included in art. 167 of the Constitution, according to which (paragraphs 1 and 4 of the regulation), units of the local government are guaranteed to have a share in public revenues, respectively to their tasks and changes the scope of tasks and competences of units of territorial government occur together with the changes in public revenues. Thus, the provision requires both adequate resources and skillful calculation of the value of the funds for particular communes. It should be remembered that according to the concepts of organization and management sciences, there are no two the same sets of resources making up an organization, therefore there are no two systems operating in the same way to perform specific tasks. As a result, it is required to adjust funds value transferred

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under the principle of adequacy to each of the units separately rather than specify amounts standardizing their activities through assigned revenues or specify the number of cases of a given type, a uniform man-hour rate and the median time allocated for the task. The main drawback of both ways of determining the value of the subsidies is the fact that they do not take into account the specificity of units, including the value of revalued costs and the way of organizing the process of implementing specific tasks. In this context, beside taking actions to improve the processes of providing services as a part of commissioned tasks, financial management at the level of individual communes and taking actions to raise funds in their adequate value gain more significance , both by conducting negotiations with disposers and in courts. The aim of the study is to evaluate the way of determining the value of restricted grants for tasks commissioned to Polish communes claiming their rights in courts of one of the court districts and an attempt to analyse the mistakes made in the process of determining the due value.

The application objective is to suggest solutions ensuring reliability and a relatively higher accuracy of calculations aiming at persuading managers of units of the local government that there is a need to use optional solutions within this scope. The objective results both from the obligation to present the calculation of amounts due proceedings for payment and from the belief that obligatory solutions, as mainly the requirements of the state budget, will always focus on the goal of ensuring financial stability of the state as a whole.

The study – to achieve the goals set - uses literature analysis in the field of contemporary concepts of management sciences, cost accounting and the analysis of court proceedings concerning subsidies to targeted grants for performing tasks in the field of military and defense issues, population registration and tasks of the Registry Office. In the proposed improvement procedure, cost accounting solutions in the calculation system and activity cost accounting were used.

2. Costs of tasks ordered in communes and targeted subsidies in the management theory

The assessment - in the adopted perspective - of actions to determine whether the amounts of donated subsidies are or were sufficient for the full and timely performance of the commissioned tasks requires , first of all, taking into account a number of assumptions resulting from the existing law regulations, accounting principles, concepts and principles of economics, management or finance sciences. The presentation of boundary conditions identified in this way is , thus, the justification for the suggested methods and practical solutions.

Considerations concerning determining due amounts for commissioned tasks require, first of all, the confirmation that the legal entity of a commune in Poland, similar to other entities, is the one in the whole area of the law and that it comes down to the ability to become the subject of laws and obligations (Bigo, 1928). In the discussed area, the commune empowerment when it comes to finance takes on a special significance. The application of the criterion of separating management and administration of commune resources through a statutory form of regulations legal relations within a given scope allows to solve the problem of valuation of resources involved in the processes of providing services by a given commune. in the area of commissioned tasks , the dependencies clearly show the need for management (Supreme Court Resolution of 4th February, 1993), which involves , among other things, exercising ownership rights in relation to the resources involved, vested in communes, as organizational entities separated and equipped with legal personality in the civil-law sense. This leads to a situation in which the management of commune resources is subject to civil-law solutions, making the activities in the area under assessment similar to those of an economic entity (Resolution of the Supreme Court of 12 March, 1992). Such an approach has also been postulated in recent years in the science of management, emphasizing the concept of New Public Management (Garson, Overman, 1983; Hood, 1994, Hughes, 2003, Sarker, Pathak, 2000) in which similarity of the activities of public organizations and the activities in the commercial sector and pro-result orientation of the conducted activities and the introduction of competition in public service processes is important (Osborn, Gaebler, 1994; Zalewski, 2005; Kohei, Avellaneda, 2018; Kabir, Alam, Ashaduzzaman, Kalimullah, 2012).

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The indicated conditions allow, on the basis of broadly understood economic sciences, to recognize the commune as an organization constituting a collection of diversified resources in which management processes occur, conditioning both effectiveness and competitiveness (Flaszewska, Zakrzewska – Bielawska, 2013). Because these resources, in particular organizations, are neither identical nor common, resulting from the specificity of activities and belonging to various sectors , organizations (including individual communes) differing from each other, aim at achieving the same results (in this case, commissioned tasks with one characteristic in accordance with the requirements of the commissioning party) from various resources. This phenomenon is referred to as a equifinality (Bielski, 2002, Krukowski, 2016) and causes that focusing attention on assessing whether the amounts of targeted subsidies provided to a given commune were sufficient to complete and timely perform tasks commissioned only on financial resources limits the scope as well as the cognitive value of analytical and research processes. Due to those reasons, the analysis should also take into account other non-financial aspects and determinants.

It should also be noted that the approach to an organization in which resources are taken into account (Wernerfelt 1984, Prahalad, Hamel 1990, Barney 1991, Grant 1991, Peteraf 1993, Mondey, Aladeraji, 2015) makes it impossible to confirm that each top-down imposing of the amount of the targeted subsidy provides a commune with the possibility to fulfill tasks, whereas in cases of non-conformity, the organization is alleged that it did not respect the principles of rational management (minimizing costs or maximizing effects). It should be remembered, therefore, that the results of the assessment depend on non-financial information conditioning the values of liabilities payable to the commune, however, the financial scope of the analysis does not include the justifications of needs in the field of non-financial resources, e.g. needs due to the number of employees, scopes and obligations arising from work under task commissioned, compliance of costs incurred with the required needs and legal requirements within the commissioned tasks, etc.

The scientific perspective of management, recognising a commune as an organization consisting of resources, means that attention must be paid to the problem of costs and expenses (Kożuch, 2014, Wakuła, 2013, Wakuła 2013a; Sasongko et al., 2019; Vigliarolo, 2020), the latter being an inherent category resulting from costs, which is a mapping of the movement of financial means due to the costs incurred. This dependence causes that in some cases (e.g. investments) expenses exceed costs in time, they occur earlier, and in other cases, costs may precede the expenses. As a result, in the first case, there may be a situation where among the expenditure for a given accounting year (including the budget year), the consumption of some resources will not be reflected (this applies to e.g. depreciation of buildings used in the process of providing services by the commune).

The core of costs also means that the characteristics that describe them should be treated as conjunctions, , and therefore, the failure to meet even one of the conditions, i.e. purposefulness, compliance with normal operations, end-use, etc. results in losses of organizational activities. This is a phenomenon that reduces the level of efficiency of the analysed organizations because the occurrence of losses as a result of purposelessness of consumption, exceeding standards or lack of usefulness of services, reduces the level of efficiency, economy and effectiveness of a given unit of the local government.

The assumption of the similarity of the commune's activities in the scope of commissioned tasks to activities of an economic entity causes that one of the basic cost features, their returnable nature, becomes crucial (Lapsley, Wright, 2004; Gabrusewicz, Kamela-Sowińska, Poetschke, 2014). Reimbursement is *sine qua non* condition for the organization to take action, but in communes this issue should be considered at least in two perspectives:

1. In relation to own tasks, the reimbursement of costs is usually non-financial, referring to e.g. the increase in meeting the needs of community participants, thus ensuring the achievement of the goals set for the communes, also in an immeasurable dimension, difficult to identify.

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2. With respect to commissioned tasks, the reimbursement of costs should include the value of all resources consumed, any lacks in this respect should be treated as an expression of mismanagement, activities to the detriment of the organisation, etc, resulting in reduced ability to carry out own tasks and lower effectiveness in achieving the objectives of the commune.

The latter of the indicated approaches should be interpreted by a kind of analogy to the logic of the principle of adequacy. It is justified to recognize that since local self-government revenues are used to carry out their own tasks, and their amount should be appropriate to the scope of these tasks (Article 167 paragraph 1 of the Constitution), therefore also in the case of public law entities of the local government subsector, own revenues should be used to finance own tasks and commissioned tasks should be financed by the orderer, paying the amount appropriate to the scope of these tasks.

It is worth remembering that contrary to the principle of adequacy is also the illusiveness of income standardization used in the Polish legal system, which is e.g. the result of not taking into account the expenditure independence of local government units (judgement of the Constitutional Tribunal of 24 March, 1998). In the implementation of the commissioned tasks, this problem results from both the previously indicated resource diversification of communes and the resulting diversification of the predicted costs (Niedbała, Sierpińska, 2003) - costs resulting from decisions undertaken in previous years (e.g. the cost of remuneration of employees with whom employment contracts were signed earlier; cost of depreciation of the building in which the business is conducted, etc.) Such costs cannot be limited in the short term, and their inevitability and the resulting amount of demand for cash in the conditions of the commune do not allow to resign from the order for performing commissioned tasks (the company may not take the order in such a situation).

In these conditions, it should be recognized that the commissioner should know the conditions of the process of providing services in a given commune, which includes information about the amount of necessary funds for the implementation of commissioned tasks. If the ordering party has not become acquainted with this specificity, the value of cash transferred to the contractor should correspond to the actual level of costs (and not expenses, because these, as it is commonly known, do not include the value of consumption of all resources in a given budget year).

In the area of costs and the resulting amounts of targeted subsidies, the main problem also arises from the need for compliance with the normal activities of the organization and the purposefulness of the actions taken, directed at the commissioned tasks for which the commissioner is responsible. In this case, this requires taking into account the fact that commissioned tasks may not be charged with indirect costs related *stricte* to the activity of a commune in the area of own tasks, e.g. remuneration of employees for activities unrelated to the performance of commissioned tasks, commune head's remuneration for work time spent on council sessions , business trips unrelated to the direct management of the commune, regarding strategic management, meetings within various forums, etc. The same relation applies to other employees whose remuneration or other costs related to the performance of tasks are to directly burden tasks performed in a given commune. Failure to consider this relation means that, by analogy with the provision of Article 28 paragraph 3 of the Accounting Act, the consumption of resources (in this case human resources) is overestimated, which inadequately increases the value of the costs of carrying out tasks.

As a result, this pressure resulting from the specificity of the functioning of local government units on the compliance of the conducted activities with the objectives serving to meet the needs of citizens and other stakeholders of individual organizations of the local government sub-sector requires that the applied accounting solutions allow to identify those activities and related indirect costs that are not related to commissioned tasks. This action cannot be limited to indicating that the income of local government units is not sufficient for the implementation of public tasks (Judgement of the Constitutional Tribunal of 7th June 2001). It is necessary to present arguments showing the disproportion between the scope of tasks and revenues of government

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administration and individual levels of the local government. It is only possible when an entity has adequate records providing detailed knowledge of costs and expenditure, instruments for planning and controlling task assignments (Kożuch, 2012). In most communes in Poland such records are, however, in accordance with the legal requirements but not in line with management needs. They are limited to the scope resulting from legal requirements (obligatory solutions).

3. The assessment of methodology of determining the value of excess costs over the value of subsidies transferred in the examined court files

The main idea guiding Polish communes filing lawsuits in the examined cases is that the amounts of expenses disclosed in the relevant reports meet the requirements for recognizing them as costs, broken down into indirect and direct costs. Therefore, this assumption alone causes (due to differences between these categories) a significant problem, although it is somewhat offset by further proceedings, a kind of analogy to the solutions used within cost accounting (Gosselin, 1997) and calculation of unit costs.

Using the appropriate classification, communes submitting lawsuits usually recognize that the direct costs included the remuneration of employees (K_{bw}) performing commissioned tasks (assuming that they devoted all their working time to these activities, even in a situation where the scope of duties was different) and expenditure on official delegations of these employees and expenses for their training or necessary publications in the field of performed tasks (K_{bi}). To a large minority, communes consider only expenses of employees' remuneration as direct costs, accounting for other items as general indirect expenses.

Expenses related to business trips include both trips strictly related to the implementation of commissioned tasks, e.g. to collect specific documents, consultations or other meetings, and optional training that was included in costs without the agreement with the ordering party and which is of significant doubt. The same carelessness was also shown in the scope of expenditure on training and necessary publications in the field of performed tasks, considering, which seems to be wrong, that each training is obligatory, and each book item related to the topic is necessary for the performance of commissioned tasks. In these examples, the basic principle was forgotten , according to which only obligatory actions can be a cost-generating element for commissioned tasks. Optional training as well as related delegations and further training materials should be treated as investments in human capital and the value of the capital thus obtained should be reflected in the remuneration of employees. At the same time, the lack of possibility to regulate remuneration cannot be the basis for charging the costs of these activities to the party commissioning tasks to the commune.

On the other hand, the indirect costs category includes: expenses for the purchase of electricity and gas, expenses for renovation services, expenses for the purchase of necessary materials and equipment, expenses for the purchase of other services, expenses for the purchase of internet services, expenses for the purchase of telecommunication services (sometimes divided into landline and mobile telephony) and remuneration of Commune Heads, Secretaries and Treasures)

In all the examined cases, the method of additional calculation was adapted and applied (Sawicki, 2001; Matuszewicz, Matuszewicz, 2003; Micherda, 2005, Helden, 1997), which consists of calculating the single cost of each product or service (the subject of the calculation) using direct costs (in this case, possible to refer directly to specific commissioned tasks) and indirect costs (added to indirect costs by means of so-called distribution keys, which are appropriately selected relations ensuring the quality of the division made).

In the analyzed cases, however, all direct costs were settled for tasks ordered on the basis of the proportion of full-time jobs assigned to perform individual tasks in the total number of full-time jobs in the commune, which constitutes a significant violation of the rules applicable when determining the division (clearing) keys for

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individual types of indirect costs. At the same time, despite the application of a cost prospective in the presented calculations , the costs of depreciation of the rooms in which they were commissioned were completely omitted. This clearly indicates the dominant importance of budgetary accounting solutions and the focus of attention is put only on the expenditure of a given budgetary year. Therefore, the basic problem to solve within the scope of the settlement discussed is supplementing the cost items with depreciations costs (K_a) of the rooms used for the implementation of commissioned tasks.

The assignment of direct costs (K_b) to individual tasks covering the total amount of expenses for business trips and the costs resulting from documented invoices for training and materials in particular periods is also a problem for the quality of calculation processes. This requires the removal of values that are subject to the risk of a lack of purposefulness of resource consumption, and therefore e.g. cost items related to the organization of the 50th anniversary of marriage and the 100th anniversary of birth, in particular regarding dinners or champagnes for these celebrations, etc., as they go beyond the obligation to show due respect by the appropriate binding. These positions may be considered as discretionary categories, promoting more the commune itself and not required by the ordering party's goals. Direct costs cannot also include the amounts arising from invoices for training and the related costs of business trips, in particular those related to training organized by non-governmental organizations or private entities. The core of this problem lies in the inability to clearly indicate not so much the needs as the training obligations in the discussed area.

Not without significance here is the problem of the deadline for reporting the scope of services provided or training needs. In relations between the contracting authority and the contractor, such arrangements should be made before the commencement of the process of providing services, and their scope should result from mutual arrangements. In this context, trainings of employees can be included in costs only in the amounts corresponding to compulsory training (resulting from legal provisions) andante not the ones that increase the competence of employees in general (even if they concern services rendered). The same problem also concerns the fact how to provide framing for jubilee celebrations. It should include only these actions that result from the existing regulations, and not take into account subjective feelings about how to show respect.

An important problem arising from the lack of working time records is the settlement of the remuneration costs of employees performing commissioned tasks (K_w) including part-time employment, expressed by appropriate indicator W_e. The positions, although included in direct costs , require some correction using an indicator illustrating the share of working time devoted to the implementation of public tasks in relation to total working time (W_{pzz}). However, the value of the remuneration cannot be denied here, considering that they are a guaranteed costs, and their value is the result of decisions taken before the commencement of commissioned tasks implemented in a given reporting period, and it is necessary to correct these amounts by remuneration for training days not allocated to the costs of providing services.

The settlement of indirect costs also requires changes, in particular by guaranteeing the quality of distribution keys correctly reflecting the manner in which costs participate in the provision of services by the commune, while ensuring the stability of relations between the values forming them (they cannot undergo hesitations due to changes in the surroundings of the organization). (Matuszewicz, Matuszewicz, 2003). As a result, it is reasonable to use the distribution key to settle building depreciation costs, expenses for consumed energy and gas (K_{zeg}) and expenses for repair services (K_{ur}) , which is a share of the area used to carry out tasks within the scope of the action in the area of the building in which the activity was carried out (W_{ap}). The core of this solution is due to the fact that both the depreciation costs and the costs associated with heating or renovation depend on the area of the rooms more than , as suggested in lawsuits, the number of full-time jobs. The calculations should also include part-time employment.

Other indirect costs, including the commune head's remuneration (K_{ww}), Secretary's remuneration (K_{ws}), Treasurer's remuneration (K_{wsk}), expenses for the purchase of necessary materials and equipment (K_{wmw}),

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expenses for the purchase of other services (K_{pu}), expenses for the purchase of internet services (K_{ui}), expenditure on the purchase of telecommunication services provided in the mobile telephone network (K_{tr}) and expenses for the purchase of telecommunication services provided as landline (K_{ts}), can be accounted for using the distribution key which is the relation between the number of full-time jobs shown as assigned to the commissioned tasks in relation to the total number of full-time jobs (W_{et}). It should be remembered, however, that in the case of remuneration for heads of offices, secretaries or treasurers, it is necessary to indicate the time devoted directly to managing the office, not their total working time. They perform many activities that relate *stricte* to the commune's own activities, its promotion, etc. As a result, it is necessary to introduce an indicator of their activity (W_{ak}), which is the share of hours devoted e.g. to a direct contact with employees in relation to the total number of hours.

The assessment of the filed lawsuits and the solutions used in them, after eliminating the indicated defects and inaccuracies, allows to propose the following, expressed in a formula, algorithm ensuring relatively correct settlements in determining the value of costs of tasks ordered in the lawsuits covered by the assessment:

$$K_c = K_{bi} + \sum_{i=1}^{n} \Big[K_{bw} + \left(K_a + K_{zeg} + K_{ur}\right) \cdot W_e \cdot W_{ap} + \left(W_{ak1} \cdot K_{ww} + W_{ak2} \cdot K_{ws} + W_{ak3} \cdot K_{wsk} + K_{wmw} + K_{pu} + K_{pui} + K_{tr} + K_{ts}\right) \cdot W_{et} \Big] \cdot W_{pzz}$$

The indicator used in the formula illustrating the share of working time devoted to the implementation of public tasks in relation to total working time (W_{pzz}) is the basic determinant of the sensitivity of the amount of due subsidy.

4. Analysis of the costs of performing tasks ordered in the selected basic local government unit

One of the Polish communes was analysed and asked the court to determine whether the amounts of targeted subsidies were sufficient for the full and timely execution of tasks ordered in the previous three years. The study covered amounts resulting from the consolidated entries of the general ledger and supplementary information obtained from the commune.

The calculations of the values constituting the final result and the determined values of the costs necessary in the given conditions to perform the commissioned tasks are presented in Table 1.

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Table 1. Values forming the result of the analysis and determining the value of costs incurred for the implementation of tasks commissioned in one of the surveyed years.

Lp.	Specification	Division key	REQUEST 1 – USC (PLN)	task 2 military defense (PLN)	task 3 - population register (PLN)	Total
1.	Direct costs (Kb) not charged with Wpzz indicator	x				**6634,88**
1a	Expenses for service delegations of employees	767,5				x
1c	Other expenses documented by invoices	5 867,38				x
2.	Costs to be charged with Wpzz indicator	**x**	**16 286,76**	**20 683,12**	**16 034,25**	**53 004,12**
1.	Salaries of employees (Kw)	Wpzz	34 899,01	31 401,73	41 975,05	108 275,79
2.	Depreciation costs (Ka)	Wap*	598,10	151,52	159,49	909,11
3.	Electricity and gas costs(Kzeg)	jw.	504,23	127,74	134,46	766,42
4.	Material costs billed according to the area indicator (Kwmua)	jw.	4 980,74	1 261,79	1 328,20	7 570,73
5.	Renovation services (Kr)	jw.	724,41	183,52	193,18	1 101,10
6.	Commune head's salary - Kww	Wet***	2 312,70	4 625,40	3 469,05	10 407,14
7.	Secretary's salary (Kws)	jw.	1 789,08	3 578,15	2 683,61	8 050,84
8.	Treasurer's salary (Kwsk)	jw.	3 242,15	6 484,29	4 863,22	14 589,65
9.	Material costs (…) - Kwmue	jw.	983,72	1 967,44	1 475,58	4 426,74
10.	Costs of telecommunication and internet services (Kuti)	jw.	703,85	1 407,69	1 055,77	3 167,31
11.	Postal costs (Kup)	jw.	441,75	883,51	662,63	1 987,89
12.	Anti-virus programme cost (Kpra)	jw..	6,04	12,08	9,06	27,18
Wpzz indicator (according to the statement of the claimant)		**x**	**0,75**	**0,625**	**1,00**	**x**
Indirect costs - without remuneration of employees - after being charged with Wpzz indicator		**x**	**12 215,07**	**12 926,95**	**16 034,25**	**41 176,26**
Total period costs						**156 086,93**

* - for task 1 = 0,75, for task 2 = 0,625 (on average), for task 3 = 1
** - Wap for particular tasks determined according to information from the claimant - for task 1 amounted to 0,5, for task 2 = 0,014, for task 3 = 0,015
*** - for task 1 - 0,025*; for task 2 - 0.05 i 0,0375 for task 3

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A comparison of the obtained values with the value of targeted subsidies for performing commissioned tasks in the scope of the government administration from chapter 75011 of the budget classification for the year indicates that **the difference between the tasks related to the performance of commissioned costs of the commune (156.086,93 PLN) and the total subsidies transferred (69.900,00 PLN) is 86.186,93 PLN in total (eighty-six thousand one hundred eighty-six 93/100 PLN).**

In the course of the conducted analytical work, the focus was put on the value of funds necessary for the full and timely execution of tasks commissioned in the terms proposed by the commune- it is, therefore, an accounting calculation of the amounts due.

Verification of calculations in terms of costs necessary for proper management of state budget funds is impossible in this case, at least due to the lack of records providing information on the working time spent on performing tasks, on the time spent on work and organization of supervision over the performance of commissioned tasks (regarding the head of the commune, the secretary and the treasurer) etc. In the examined commune, this record was, however, in accordance with legal requirements, but not in accordance with management needs - limited to the scope of costs by type, which means that most calculations are made on the basis of indicators, averages and rounding , and , therefore, they are subject to the risk of errors. In this case - according to the metodology of sensitivity analysis, the effects of overstating of working time devoted to the implementation of tasks ordered by the hour by a commune were indicated (each subsequent hour causes the same financial consequences). It shows that any inaccuracy in the evidence or statements of communes triggers significant financial results. Such a way of correcting the results of the analysis, therefore, only serves to indicate to the Court the need to verify the validity and the degree of proof of the information provided in commune statements within the discussed scope and, in the event of doubt, to provide a prediction of possible financial effects.

Conclusions

The main conclusion resulting from the theory of management sciences and its connection with the specificity of the needs in the area of settlements for the implementation of commissioned tasks is, therefore, the need to identify categories of direct and indirect costs of carrying out these tasks and to implement in the accounting of communes optional solutions of the cost calculation system (with a clear indication that it has costs and not expenses). The core of this system increases the scope and quality of information generated by the accounting system, requiring the inclusion in the accounting policy a much larger number of accounts used for recording direct costs and a relatively larger amount of information on indirect costs. In this approach, at the same time, it seems necessary to describe individual tasks commissioned in accordance with the requirements of process management, in particular in the area of identification of individual activities serving these tasks, determining their mandatory nature and, what is particularly important, ensuring specific standardization in this respect, implemented by approving the course and content of the process by the ordering party. This method of standardization will ensure, on the one hand, compliance with the requirements of the administrator of the funds transferred under the subsidy, and on the other hand, it will allow to diversify the value of funds transferred to individual communes, which are organizations consisting of different resources, and , therefore, burdened with different costs of a predicted nature.

Understanding the structure of processes will allow communes to properly indicate direct cost accounts and will facilitate the account assignment of individual business operations included in these items. At the same time, which results from the conducted research, it will be the basis for determining a relatively small number of billing keys, ensuring the quality of the distribution of indirect costs related to the performance of commissioned tasks. In this context, however, the need to identify strictly working time *stricte* for the performance of commissioned data of both employees performing these tasks and managers (the head of a commune, a secretary, a treasurer), in the part that can be considered as intended for direct management of public service processes, is not without

significance. This last observation also requires appropriate attribution of responsibility in the office in such a way as to demonstrate their necessity in the processes discussed, and at the same time to exclude from working time the part that was devoted to tasks unrelated to the commissioned tasks, such as: time intended for sessions of the commune council and their preparation, time allocated for the promotion of the commune and its development, etc. Such activities should be calculated solely for own tasks and in this area and they should be settled by determining their own costs.

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EFFECTS AND MOTIVATION OF POLITICAL - ECONOMIC COOPERATION BETWEEN TWO COUNTRIES: A CASE STUDY OF SLOVAKIA AND AUSTRIA*

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Abstract. The political and economic relations between Slovakia and Austria reflect the geographical situation in Central Europe, the change in the political climate after 1989 and, finally, the establishment of the Slovak Republic and its successful efforts to join Euro-Atlantic structures and the European Union. Subsequently, entry into the Schengen area and the European Monetary Union. We focus on some aspects of mutual cooperation between two long-standing neighboring states from the point of view of the theoretical basis of international political and economic cooperation. The aim of the case study is to analyze the successes of international cooperation between Austria and Slovakia, to identify open issues in bilateral relations between Slovakia and Austria, and to predict trends in the coming period. The ambition of this study is also to highlight areas that can be considered key to bilateral cooperation. International cooperation is a very broad field in which general and specific scientific methods can be used. Given the type of study, we decided to use selected general scientific methods, which we adapted to the specifics of examining economic relations between countries. Based on the results, we can say that the possibilities of economic cooperation between Austria and Slovakia are far from exhausted. Joint projects in the field of transport and energy infrastructure, energy security and diversification of energy sources are several examples where cooperation lasts for several years and has a perspective for the future. The increase in cooperation is in the field of foreign trade, in the field of foreign investment, but also in the growing level of services, including the increase in cooperation in the field of tourism. Since its inception, Slovakia has become an important trading partner of Austria, with trade with Austria catching up with trade Slovakia with traditional partners - with neighbors (Poland, Hungary).

Keywords: economic cooperation; a case study; Slovakia; Austria

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1. Introduction

From a historical point of view, the cooperation between Slovakia and Austria is a logical fact. In the course of history, but especially since the revolution in 1848 in Austria - Hungary, when Slovak historians, for obvious reasons, sided with the Austrian side, the relations between the two nations have converged (Schulze, M. S.; Wolf, N. (2012)). Relations did not suffer even after the Second World War, because the Czechoslovak government dealt with Germany and Hungary. For Slovakia is Austria a priority relation of foreign policy activities, due to its close location and the maturity of the economy, Austria is a priority relation of foreign policy activities. Austria does not lag behind in similar activities due to the opportunity to apply its assets in the dynamically developing economy of Slovakia. This is supported by a constructive foreign and economic policy and intensive bilateral economic, cultural and political dialogue at all levels. The achieved level of such mutual relations is highly appreciated by the European Union in periodic evaluations (Rostetska, S.; & Naumkina, S. (2019)). Examples of positive political cooperation between Slovakia and Austria include the highway, river and rail interconnections of major cities (Tóth, B. (2019)), which are being dynamized by the TEN (Trans-European Transport Network) project, and the Slovak-Austria Cross-border Cooperation Program 2007-2013 within the European Union Regional Economic Policy.

2. Economic and political characteristics of cooperating countries

2.1 Realities of the economy of the Republic of Austria

After the end of the First World War and the monarchy, the First Republic was declared in 1918. In 1938, Austria was incorporated into the National Socialist German Empire and lost its state independence. After the end of World War II, Austria was first occupied by the Allies, but in 1955 it regained its sovereignty by the State Treaty. Austria has been a member of the European Union since 1 January 1, 1995. Under the agreement of the countries that occupied Austria from 1945 to 1955, independent Austria was declared "permanently neutral" (Luif, P. (2016)). For this reason, it has been granted an exemption within the EU and thus maintains its neutrality, even with regard to the EU's Common Foreign and Security Policy. Austria is also not a member of NATO.

Austria's population was estimated to be nearly 9 million (8.9) in 2020 by the Statistik Austria. It has a relatively low population density of about 98 inhabitants per km^2 (Eurostat). The Roman Catholic Church has complete dominance in religion. A large part of Austria is uninhabited, as 2/3 of the country is the Alps. In fact, one in three Austrians lives in five major cities in the country: Vienna (1 540 000 inhabitants), Graz (240 000 inhabitants), Linz (205 000 inhabitants), Salzburg (148 000 inhabitants) and Innsbruck (122 000 inhabitants). The official language is German. The population is 98% German-speaking. The remaining two percent are Slovenian (Kärnten), Croatian (in Burgenland), Hungarian, Czech and Slovak national groups and linguistic minorities (Statistics Austria (2010)). As a federal state Austria consists of nine federal states. The federal capital Vienna is also one of the nine federal states. Each of the nine federal states is administered by the Federal Government, headed by the Prime Minister.

Austria is a parliamentary republic and is based on the basic principles of democracy and the division of power. The Economist Intelligence Unit rated Austria a "full democracy" in 2019 (The Economist Intelligence Unit (2019)). The highest representative of the state is the federal president, whose term of office lasts six years. The two chambers of parliament are the National Council (Nationalrat) and the Federal Council (Bundesrat). They are the legislatures. The Federal Government is chaired by the Federal Chancellery. The Federal Constitution, the State Treaty, the Neutrality Act, as well as the Act of Accession to the EU form the constitutional foundations of the republic. There are five parties in the National Council in 2020 (Austrian Interior Ministry (2019)), two government parties: The Austrian People's Party (Österreichische Volkspartei - ÖVP) and the Austrian Green Party (Die Grünen Österreich) and the other parties of the Social Democratic Party of Austria (Österreichische

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Volkspartei - ÖVP). Sozialdemokratische Partei Österreichs - SPÖ), the Freedom Party of Austria (Freiheitliche Partei Österreichs - FPÖ), as well as New Austria and the Liberal Forum (Das neue Österreich - NEOS).

Austria is the 4th richest country in the EU. As in most advanced economies, the decisive share in the national economy is represented by the services sector (70.4%). The share of the manufacturing sector (22.0%) can be considered above average and stable in the long run. The growth of industrial production increased in 2018 by 8.2% in nominal terms. The structure of the Austrian economy is very modern and diverse. Austria is characterized by a high proportion of state-owned enterprises. Almost half of the land is used for agriculture. In terms of raw materials, Austria has lead, brown coal, iron ore, zinc, gas and oil. An important raw material is wood. There is also a large amount of magnesite in Austria. The most important industrial companies are in the iron, steel, engineering, chemical and food industries. The electrical engineering and electronics sectors also play an important role. Tourism is one of the best known and most important sectors of the economy. Foreign trade is crucial for the country. The share of exports of goods and services in GDP reached 54.5% in 2018. Exports are widely diversified and therefore less prone to economic crisis. The strong dependence of the Austrian economy on mutual trade with EU countries is evidenced by the fact that up to 69.91 % of exports and 70.62 % of imports go to / from EU countries, with Germany, the USA, Italy, France and Switzerland being the most important trading partners. The country is characterized by close ties to the German economy and strong dependence on bilateral trade relations with Germany (Eurostat).

On October 26, 1955, the Austrian Parliament passed the law on neutrality. Subsequently, Austria joined the EU on January 1, 1995. Due to neutrality, this country has been granted an exemption in the EU due to the common foreign and security policy. Austria is not even a member of NATO. Austria does not record a general government deficit in 2018, but instead a surplus of 0.1%, which the Austrians managed to do at the national level for the first time since 1974. The forecast for 2019 speaks of a public finance surplus of 0.4%, in 2020 it should be up to 0.7%. Compared to 2017, state revenues increased by 8.6 billion EUR, and reached the value of 178.6 billion EUR, which represents an increase of 4.8%. Government expenditures increased only slightly, namely 2.9%, ie 5.3 billion euros, reaching a value of 187.2 billion. euros. The state treasury was also filled thanks to a high increase in property and income tax revenues - 8.4% compared to 2017, which represented an increase of approximately 4 billion euros (Eurostat; MFEA SR (2019)).

In the field of employment, Austria is one of the most successful EU member states. With an unemployment rate of 4.3%, it is well below the EU average. Unemployment has the character of structural unemployment (Christl, M., Köppl – Turyna, M.; Kucsera, D. (2016)). One of the reasons for low unemployment is the dual education system (Graf, L. (2016)), which guarantees the industry a supply of skilled labor from apprentices and industrialists. Another reason is the flexibility of the workforce and the legalization of undeclared work and part-time work. From January 1, 2013, conditions for entrepreneurs have improved. Compared to 2011, the number of employees also increased by 35 000 to 3.467 million employees (highest employment since 1945). The unemployment rate reached 4.9% in 2018, while in 2019 the unemployment rate is expected to fall by 0.3%. In December 2018, AMS Österreich (Labor Office) registered a total of 355 637 unemployed, of which 106,693 were long-term unemployed. In February 2019, fewer unemployed were registered than in the last month of 2018, namely 343 400. Migrants are not expected to have a significant impact on employment (Renger, B. et al. (2017)). The average hourly price of labor reached 33.96 € in 2018, which means an increase of 2.8% compared to 2017 (Eurostat). In the manufacturing sphere, the average price of labor was 36.87 €, in the provision of services 32.45 €. The highest values were recorded in the financial and insurance sphere - 58.02 €, and also in the energy industry - 54.53 €. On the contrary, the least financially valued work is in the gastronomy and hotel industry - 18.07 €. In 2018, employers paid 73% of total wage costs and 27% of indirect costs. The highest share of indirect labor costs was in the sphere of construction, namely 31%.

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Employment and economic growth are inseparable. Gross domestic product reached in 2018 value 386.09 billion €, which, per capita represents 39 292 € with regard to the standard of purchasing power. Austria's real GDP growth reached 2.7% in 2018, up from 2. % a year earlier. The inflation rate in Austria reached 2.1% in 2018. The increase was due to significantly higher prices of fuels and heating oil. The cost of living is relatively high. The price level is about 5% above the EU average, at the same time higher than in neighboring Germany and Italy (Eurostat). Austrian industry is the main contributor to economic growth. We can call it a subcontracting industry. It is concentrated mainly in Vienna, Linz, Salzburg and Innsbruck. Once the state-owned industry was largely privatized. The most famous are OMV AG and Siemens. The Austrian steel industry increased its production by 10% in 2011 and production is expected to increase in 2012 as well. There are increases in almost all sectors. An example is the chemical industry, where there is intensive cooperation between the economy and science. This ensures competitiveness on world markets (MFEA SR (2019)). Services are a major contributor to stability and economic growth in this country. From the point of view of tourism, Austria is one of the most visited countries in Europe (Popescu, A. (2017)). Annually, the income from tourism per person represents 1 657 €, which is the 2nd place in the world. The share of tourism in total GDP is about 6%. As a result of the economic crisis, accommodation fell by only 20 % in 2010 and turnover fell by 2-3%. However, the situation has been improving since 2011 (Eurostat). Austria supports international trade and trade without barriers and seeks to create favorable conditions for foreign investors (Lomachynska, I.; Yakubovskiy, S.; Plets, I. (2019)). Under the Federal Ministry of the Economy, Family and Youth, a state agency was set up to support the inflow of foreign investment under the name of the Austrian Business Agency. The main goal of this organization is to support foreign investors in establishing themselves on the Austrian market. The basic preconditions that are Austria's most important source of competitive advantage on an international scale are political and social stability, legal certainty and high law enforcement, a high standard of living and an education system.

2.2 Realities of the economy of the Slovak Republic

The Slovak Republic was established in 1993 by the disintegration of the Czech and Slovak Federal Republic into an area of 49 035 m^2, which in 2019 was inhabited by 5 450 421 inhabitants (Eurostat). The capital of the Slovak Republic is Bratislava, situated in the southwestern part of Slovakia on the borders with Hungary and Austria. Slovakia is a democratic state. The Economist Intelligence Unit rated Slovakia a "Flawed democracy" in 2019 (The Economist Intelligence Unit (2019)). State power in it belongs to the citizens. They participate in power through their elected political representatives elected in democratic elections. Power in the state is divided into 3 independent components: legislative, executive and judicial. The highest representatives of the political system in the Slovak Republic are the National Council of the Slovak Republic, the Government of the Slovak Republic and the President of the Slovak Republic (Horvath, P. (2017)). The National Council of the Slovak Republic is the only constitutional and legislative institute of the Slovak Republic. It is based in Bratislava and has legislative power. Members of the National Council of the Slovak Republic are elected in general, equal and direct elections by secret ballot. The number of Members is 150 and their term of office is four years. All citizens over the age of 18 can vote. A citizen of the Slovak Republic can become a deputy from the age of 21. Parliament is headed by a Prime Minister and Deputy Prime Ministers, Members work in committees. In the political system of the Slovak Republic, the parliament approves laws, the state budget, and assesses the activities of the government. The head of the Slovak Republic is the president. The President represents the Slovak Republic externally and internally, and by his decision-making he ensures the proper functioning of constitutional institutions. The President is elected by the citizens of the Slovak Republic in direct elections by secret ballot for five years. The Government of the Slovak Republic is the highest institution of executive power in the political system of the Slovak Republic. The government is formed after the elections, the winners of the elections form a coalition (alliance), the political parties, which have a minority representation in parliament, form the opposition. The Prime Minister is appointed and removed by the President of the Slovak Republic. On the proposal of the Prime Minister, the President of the Slovak Republic appoints and dismisses other members of the Government and entrusts them with the management of ministries. The judiciary in the Slovak Republic has two levels. The system of courts in the Slovak Republic is divided into: general courts and military courts. The system of general courts in the Slovak

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Republic consists of the Supreme Court of the Slovak Republic, regional courts and district courts. The Constitutional Court with its seat in Košice City has an independent legal status and does not belong to the system of general courts. Military courts decide on criminal cases involving members of the military. Citizens of the Slovak Republic can appeal to the European Court of Human Rights, based in Strasbourg, France. Slovakia is a full member of the European Union, NATO, OECD and the Schengen area. Slovakia adopted the euro on January 1, 2009 and thus became the 16th member state of the euro area because it met all the required Maastricht criteria. Despite the global economic crisis, which caused a decline in GDP, Slovakia maintains a very good position in GDP growth among EU countries. The threat of future development is mainly fast aging of population, low natality and changes in the structure of the economy and employment (Urbaníková, M.; Štubňová, M. (2018)).

The Slovak Republic consists of 8 self-governing regions, whose administration is independent of the central state power, and 79 districts (Papcunová, V.; Urbaníková, M.; Korenková, M. (2016), Papcunova, V., Hudakova, J., Beresecká, J. (2018)). The largest regions in terms of population are the Košice and Prešov self-governing regions, the population density of the Bratislava self-governing region stands out (294 inhabitants per km^2). The level of development of regions within the Slovak Republic, determined for example by the quality of road infrastructure (especially motorways and roads for motor vehicles), the inflow of foreign investment and the related level of wages and unemployment rate of the population, still varies considerably. In general, the regions in the west (Bratislava, Trnava self-governing region) are more developed than the central (Banská Bystrica self-governing region) or eastern (Prešov, Košice self-governing region) regions of Slovakia. The highest unemployment and the corresponding lowest wages are recorded in the Prešov and Banská Bystrica regions, in the Bratislava and Trnava self-governing regions the situation is exactly the opposite (Levický, M. et al. (2019); Maroš, M.; Rybanský, Ľ. (2016)). The government is trying to implement tools that would reduce existing regional disparities (Dušek, J. (2017)).

In connection with the more developed infrastructure and proximity of trans-European transport networks, several foreign investors in the Slovak Republic preferred the west of the country. In the Žilina, Trnava and Bratislava regions, automotive clusters around KIA (Žilina City), PSA Peugeot (Trnava City) and Volkswagen (Bratislava City) were naturally established, while in the Trnava City and Nitra City regions an electrical cluster was formed around Samsung (Galanta City, Voderady City), Foxconn (Nitra City), supplemented by AU Optronics (Trenčín City). Steel production has a tradition in the Košice self-governing region, where the company U.S. Steel Košice, chemical production in the Prešov region (Humenné City) and Trenčín region (Púchov City) self-governing regions, while the wood processing industry is concentrated mainly in the central part of the country (Banská Bystrica self-governing region). Despite the fact that the country has potential in the field of tourism development (Beresecká, J. (2013)), this sector is not sufficiently established. Tourism began to play an important role as a tool of development regarding cross-border cooperations after the change of the regime. A more efficient cooperation is needed to employ the potentials in tourism-related development of environmental endowments as well as the significant improvement in standards of other factors (Bujdosó, Z. et al. (2015)). There are several industries in Slovakia with a long tradition, such as engineering, chemical, electrical, woodworking and food industries. Industry is currently undergoing a phase of rapid growth, not least due to a significant inflow of foreign investors (Fabuš, M.; Csabay, M. (2018)). Slovakia is currently becoming one of the world leaders in the automotive industry. The established Volkswagen factory in Bratislava City was joined by car manufacturers PSA in Trnava City, KIA Motors in Žilina City and Jaguar / Land-Rover in Nitra City. In the future, however, Slovakia would like to focus more on supporting production and services with a higher rate of added value, which is also related to the issue of economic security (Kelisek, A.; Klucka, J.; Ondrusek, M.; Strelcova, S. (2011)). One of Slovakia's strategic steps in supporting foreign investment is also significant investment support and the presentation of the domestic Slovak research and development environment. Research and development are among the key features of developed countries, the growth of the country's economic level, sustainable development and the promotion of a knowledge-based society and an innovation-based economy. Modern technologies, support for innovation, innovative business, creativity, education, building research and development centers, laboratories and test rooms

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are currently the most important areas for the progress of the whole country (Klement, L. (2017); Fiľa, M.; Kučera, J. (2016)). Slovakia is a country with a competitive technical background and a long tradition of industrial research and development. Slovakia has active research and development staff participating in top domestic and international projects. Slovakia has an accessible engineering and scientific base, it has built a Research & Development (R&D) network consisting of industrial research and development organizations, scientific research institutes at technical and natural sciences, research institutes of the Slovak Academy of Sciences. This R&D base is also well connected with other interested institutions such as industry associations, unions, clusters, research, development and innovation support agencies, business innovation centers and incubators, science and technology parks, but also software development companies. Several foreign companies have already been convinced of the skills of Slovak researchers, developers and engineers (Urbaníková, M. (2017)), which have set up their R&D centers in Slovakia, such as: Johnson Controls, ON Semiconductor, Leoni, BSH, ThermoSolar, Sauer Danfoss, Krauss Maffei, Ness, Siemens, Alcatel-Lucent, Mühlbauer, Continental Automotive Systems, Elastogran and others.

3. Methodology

In the case study, we deal with the achieved successes of international cooperation between Austria and Slovakia and identify open issues in bilateral relations between Slovakia and Austria, as well as outline trends in the coming period. The ambition of the study is also to highlight areas that can be considered key for bilateral cooperation. International cooperation is a very broad issue for which general and specific scientific methods can be used. Given the type of study, we chose to use selected general scientific methods, which we adapted to the specifics of examining economic relations between countries. We subjected the realities of countries and selected economic and social indicators of countries to a comparative analysis, in which we examined the similarities and differences in selected indicators. We used causal analysis to identify the causal relationships of selected indicators. In several cases, we examined the composition of the selected system, which was represented by a specific economic indicator, through a structural analysis. The sources of secondary data that we used in the case study were mainly publicly available data databases. The databases are accessible on the websites of the institutions of both countries. In particular, we used data from the Statistical Office of the Slovak Republic and the Republic of Austria, the National Bank of Slovakia, the Austrian National Bank, the Ministry of Economy of the Slovak Republic, the Ministry of the Interior of the Republic of Austria, and finally the Eurostat database. Important information was obtained from internal materials of the Slovak Investment and Trade Development Agency.

4. Economic relations between Slovakia and Austria

4.1 Development of foreign trade between Slovakia and Austria

Based on data from the Ministry of Economy of the Slovak Republic, the Statistical Office of the Slovak Republic, the Embassy of the Slovak Republic in Austria, data from the Slovak Chamber of Commerce and Industry and the Austrian Embassy in Bratislava, it can be seen that Slovakia 's foreign trade has been developing positively since 1993. With the exception of 2009, which was marked by the impact of the economic crisis, foreign trade was growing. Trade between countries is growing every year, and as a result, in 2019, Austria ranked fourth in the ranking of the largest Slovak trade suppliers. In terms of per capita, the Slovak Republic has the second highest trade turnover with Austria. On the part of Austria, the Slovak Republic is Austria's eleventh most important trading partner.

As part of the development of foreign trade, in addition to individual indicators, different data from Slovak and Austrian statistical sources will also be interesting. For completeness, we present the statistics of the Ministry of Economy of the Slovak Republic, as well as the Statistical Office of Austria (see table 1 and table 2).

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Table 1. Data on foreign trade of Slovakia

Category	unit of measure	2015	2016	2017	2018	2019
Imports of goods from Austria	mil. €	1 620	1 953	2 041.5	2 348.5	2 533.6
Share in total imports of the SR	%	2.5	2.9	2.8	3.04	3.2
Export of goods to Austria	mil. €	3 863	4 010	4 478.8	4 540.2	4 496.7
Share in total exports of the SR	%	5.7	5.7	6.0	5.69	5.6
Foreign trade balance	mil. €	2 243	2 057	2 437.3	2 191.7	1 963.1

Source: Ministry of Economy of the Slovak Republic

Table 2. Data on foreign trade of Austria

Category	unit of measure	2015	2016	2017	2018	2019
Imports of goods from Slovakia	mil. €	2 964	2 946	2 940	3 498	3 282
Share in total imports of Austria	%	2.2	2.2	2.1	2.24	2.08
Export of goods to Slovakia	mil. €	2 715	2 808	3 010	3 185	3 191
Share in total exports of Austria	%	2.1	2.1	2.0	2.12	2.08
Foreign trade balance	mil. €	- 249	- 138	- 70	- 313	- 91

Source: Statistical Office of Austria

The largest increase in exports was recorded in the Slovak Republic in 2018 to China, at 52.8 % compared to the previous period. However, there was also a significant increase towards the Austrian economy - at the level of 20.9%, while imports from Austria increased by 4.4%, which results in a growing positive balance of foreign trade of the Slovak Republic and Austria (table 3, figure 1 and figure 2).

Table 3. Overview of mutual trade between the Slovak Republic and Austria in mil. €

Category	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Export	2 350	3 271	3 956	4 100	3 977.2	3 965	3 863	4 010	4 478.8	4 540.2	4 496.7
Import	1 006	1 193	1 245	1 363	1 535.3	1 530	1 620	1 953	2 041.5	2 348.5	2 533.6
Turnover	3 356	4 464	5 201	5 463	5 512.4	5 495	5 483	5 963	6 520.3	6 888.7	7 030.3
Balance	1 344	2 078	2 711	2 737	2 441.9	2 436	2 243	2 057	2 437.3	2 191.7	1 963.1

Source: Ministry of Economy of the Slovak Republic

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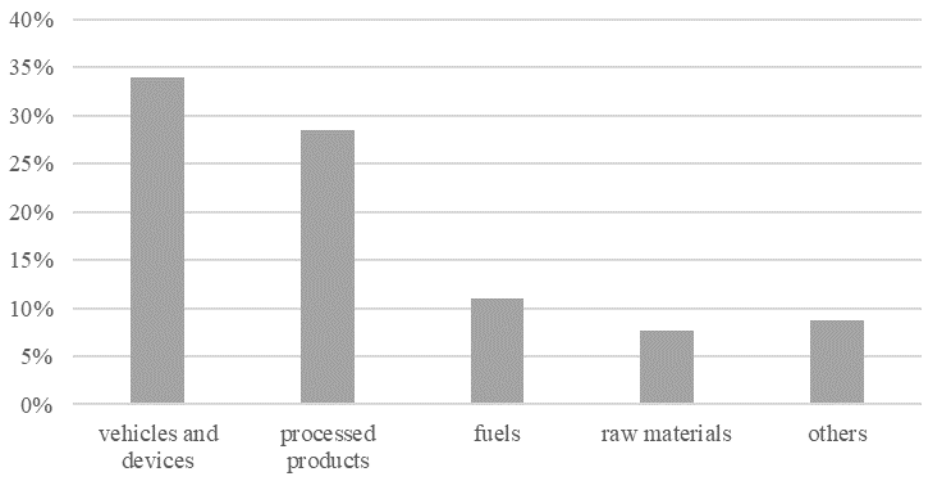

Figure 1. The most imported goods from Austria to Slovakia in 2019 (percentage share)

Source: Statistical Office of Austria

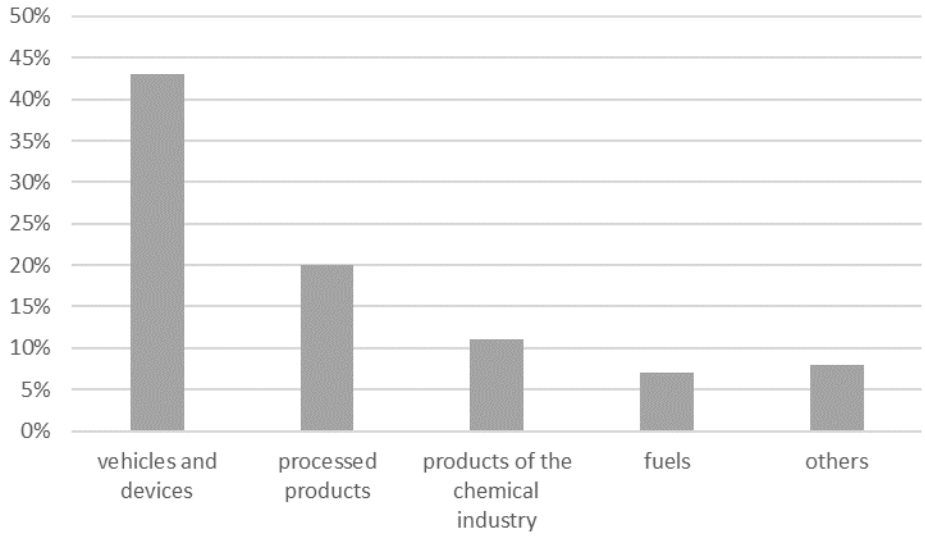

Figure 2. The most imported goods from Slovakia to Austria in 2019 (percentage share)

Source: Statistical Office of Austria

4.2 Foreign direct investment between countries

Austria is an important and large foreign investor, especially in Germany (24.8 billion €), the Netherlands (17.6 billion €) and the Czech Republic (10.6 billion €). It is one of the main investors in the countries of Central and Eastern Europe. Although these investments are undergoing changes as a result of political and economic developments (Ukrainian-Russian conflict, domestic political developments in Hungary, problems in the Western Balkans, etc.), Austria's position as a gateway to Central and Eastern Europe remains. A substantial part of Austrian foreign direct investment goes to financial and insurance services. In subsidiaries of Austrian companies

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abroad work 785 thousand employees. Austrian countries are among the most important employers in countries such as Romania, Slovenia, Croatia, Bosnia and Herzegovina and Serbia (table 3).

Table 3. Values of Austrian foreign direct investment

Category	unit of measure	2015	2016	2017	2018	2019*
Value of Austria 's foreign direct investment abroad	mil. €	188,509	186,891	194,031	202,973	n/a
Value of foreign direct investment from abroad to Austria	mil. €	146,706	142,920	163,536	176,333	n/a

* data unavailable

Source: Austrian National Bank

Austria is the second largest investor in the Slovak Republic (after the Netherlands), with a share of foreign direct investment in the Slovak Republic of 16 %. Austrian companies employ 44 500 employees in their subsidiaries and branches in the Slovak Republic. According to the data of the Austrian National Bank, in 2016 the value of Austrian foreign direct investment in the Slovak Republic was 5 856 billion €. The National Bank of Slovakia will register € 6.64 billion in foreign direct investment from Austria by 2016. Austrian companies in Slovakia are not among the largest (except for banks, which are in the 1st and 3rd place), they are rather small and medium-sized companies, but there are more than 2000 in Slovakia and they use their lead in the field of know-how. The Slovak government is constantly implementing measures to improve the business environment. Also, conditions for business of a state have an influence on its attractiveness for potential foreign investments (Fabuš, M. (2017)).

Table 4. Values of Slovakian foreign direct investment

Category	unit of measure	2015	2016	2017	2018	2019*
Value of Slovakia 's foreign direct investment abroad	thousand €	2 261 572	2 496 000	4 3827 038	4 004 940	n/a
Value of foreign direct investment from abroad to Slovakia	thousand €	42 265 453	45 150 265	49 619 706	51 042 587	n/a

* data unavailable

Source: National Bank of Slovakia

In comparison, the Slovak foreign direct investment in Austria in the amount of 151 mil. € much smaller (table 4). These are mainly small and medium-sized business, technological, construction, construction-supply, engineering and metalworking companies and companies in the field of IT, tourism and social services. The latest closed investment projects in 2018 show us how Austrian companies are establishing themselves in Slovakia (Table 5).

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Table 5. Overview of successfully completed investment projects of the SARIO agency in 2018

Company name	Investor's home country	New investition/ Expansion (N/E)	Amount of investment in mil. €	Number of jobs created	Sector	Description of activities	Investment location (City of SR)
J-Technics	Belgium	N	1.00	10	Engineering industry	Production of gates and fences	Rimavská Sobota
SPC Technologies AG	Switzerland	N	1.50	40	Engineering industry	Production of carbon fiber parts for bicycles	Vlkanová
Kamenárstvo Ulický	Slovakia	E	2.60	25	Stone processing	Production of stone plate	Rimavské Zálužany
ZF Slovakia	Germany	N	0 (no new machines)	250	Automobile industry	Production of stabilizers	Detva
SAM Automotive	Germany	N	50.00	800	Automobile industry	Production of aluminum parts	Veľký Krtíš
Dongil Rubber Belt	South Korea	E	19.17	150	Automobile industry	Production of seals	Považská Bystrica
Intercable	Italy	N	10.00	255	Automobile industry	Production of high-voltage equipment	Kriváň
Optotune	Switzerland	N	0.52	150	Electro technical industry	Production of optoelectronic components	Trnava
Continental Automotive Systems	Germany	E	47.50	150	Automobile industry	Production of brake systems	Zvolen
Mubea	Nemecko	N	51.00	504	Automobile industry	Production of chassis parts	Kežmarok
Oerlikon Balzers	Liechtenstein	E	10.00	100	Metallurgy	Surface treatment of metals and plastics	Veľká Ida
Lander Automotive	United Kingdom	N	2.50	118	Automobile industry	Production of fuel systems	Galanta
Smartwood	Czech Republic	N	5.00	50	Wood processing	Production of food packaging	Strážske
De Heus	Netherlands	N	6.00	40	Manufacturing industry	Feed production	Kendice p. Prešove
Forlit	Czech Republic	N	8.70	136	paper industry	Production of paper panels	Fiľakovo
Kistler	Switzerland	E	0.20	100	informatics	Software development	Žilina
Pulsar Expo	Czech Republic	N	7.00	220	Automobile industry	Production of transport parts	Horné Sŕnie
Karloff	Slovakia	E	2.10	25	Food industry	Production of decorative bottles	Kežmarok
Diebold Nixdorf	Germany	E	5.00	80	Informatics	IT infrastructure	Košice
Pankl Automotive	Austria	E	12.00	120	Automobile industry	Production of propulsion systems	Topoľčany
Adient	USA	E	3.50	105	Automobile industry	Production of parts of seats	Lučenec
EMI-Sabinov	Slovakia	N	0.70	13	Textile industry	Production of bed linen	Sabinov
MEMOLAK	Slovakia	N	0.60	10	Metallurgy	Surface treatment of metals	Lučenec
Brose Prievidza	Germany	E	57.40	350	Automobile industry	Production of mechatronic components	Prievidza
Neuman Aluminium	Austria	E	11.50	215	Metallurgy	Metal processing for motor vehicles	Žarnovica
Klauke	Germany	E	2.00	150	Electro industry	Production of connectors	Gelnica

Source: Slovak Investment and Trade Development Agency, Annual Report 2018

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4.3 Field of research and development

Innovative activities in support of the business environment, not only in technology, research and development, are generally the driving force behind economic development. The scientific and technical environment is made up of for-profit and non-profit institutions that deal with scientific research, development of new materials, methods and products.

Developments in Austria over the last 10 years have been characterized by stagnation to a slight decrease in energy consumption, a structural shift away from petroleum and coal, and an increase in the share of renewable energy sources. In 2017, up to 72% of total electricity consumption in Austria was produced from renewable energy sources. The production of district heating from renewable energy sources increased by about 3%, with about 4 8% of the district heating used being produced from renewable energy sources. Austria's foreign dependence increased by 2 percentage points to 64 % compared to the previous year. This increase is mainly due to the foreign trade flow of natural gas. Austria has only low reserves of fossil fuels, which in turn offsets the high level of use of renewable energy sources. In terms of final consumption, transport, industrial production and energy consume the most energy from domestic and imported petroleum, gas and coal. Hydro and wind power plants produce electricity for the economy and households, biomass and solar energy, together with natural gas, oil and coal, are used to produce heat. It is assumed a high potential for renewable electricity expansion in combination with low financial prosperity is most likely to lead to a successful expansion of renewable electricity production from wind and photovoltaics (Wurster, S.; & Hagemann, C. (2019)). Austria is committed to meeting international climate and energy goals. The main goal of the Federal Government's climate and energy policy (Mission 2030), approved in May 2018, is to reduce greenhouse gas emissions by 36% by 2030 compared to 2005. For this reason, the federal government has taken an important decision to develop an integrated climate strategy and energy to adopt a consistent path of decarbonisation by 2050. Maintaining a high level of energy security and becoming less dependent on energy imports is a top priority in the transformation of the energy system. The share of renewable energies in Austria is currently around 33.5%. The share of electricity production from renewable energy sources reached 72% (in the EU on average 28%). The Austrian government has set a target to cover 100% of electricity consumption from renewable energy sources by 2030. The government puts more emphasis on transport in the Strategy. In freight transport, it will be a transfer to the railways; in road transport, it will promote low and zero emission vehicles. Alternative propulsion systems and fuels based on renewable energy sources will benefit. However, significant changes in the structure of buildings and in means of transportation are necessary, as well as the implementation of the Smart cities concept (Hummel, M.; Windsperger, A. (2009), Strielkowski, W. et al. (2020), Tvaronavičienė, M. (2018)).

Austrian expenditure on science, research and innovation in 2017 represented 3.16% of GDP. According to the European Commission, the country is in second place in terms of research intensity. The competence of supporting science, research and innovation in Austria is shared by the Federal Ministry of Transport, Innovation and Technology and the Federal Ministry of Education, Science and Research. The advisory institutions are the Research and Technological Development Council and the Austrian Scientific Council.Publicly subsidized, autonomous funds have been set up to support research and technology. The central institution supporting technology research and innovation in the field of applied research is the Austrian company to support 100% state-owned research. The Fund for the Support of Scientific Research is an independent central institution for the support of basic research in Austria. Private funding is provided through Grunderfond and Business Angels, as well as through individual initiatives. The platform www.forschungsatlas.at provides an overview of specific scientific research institutions and projects. According to the Austrian Statistical Office, R&D intensity increased to 3.19% (12.3 billion €) in 2018. In 2018, the government sector financed research and development in the amount of 4.2 billion €, which is 4.3% more than in 2017. Almost 3.56 billion € was spent from the federal

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government. Approximately 526 mil. € comes from regional governments. Other public institutions contributed approx. 117 mil. €. Funding from the private non-profit sector is at the level of 71 mil. €.

The share of gross expenditure on research and development in GDP in Slovakia is very low compared to the EU. Compared to other EU countries, Slovakia is one of the worst ranked countries. In 2015, there was an increase in expenditure on research and science, due to the exhaustion of structural funds. Subsequently, it also had an impact on the increase in the number of persons employed in 2016. Since 2015, the share of expenditures has decreased, but even so, the number of science and research employees has been growing. In 2018, the largest number of employees in the research and development sector is recorded so far (Stachová, K. et al. (2018)). Most employees in research and development in Slovakia worked in the university sector (47.6%), followed by the business sector (29.7%) and the government sector (22.2%). In the field of sciences, most employees work in technical sciences (43.9%), natural sciences (17.1%) and social sciences (14.9%). In the last 4 years, there has also been a large increase in the number of employees in the business sector (Statistical Office of Slovak Republic). Figure 3 shows the evolution of the structure of R&D expenditure. In 2017, the share of business resources represented 49% of the total expenditure structure (figure 3).

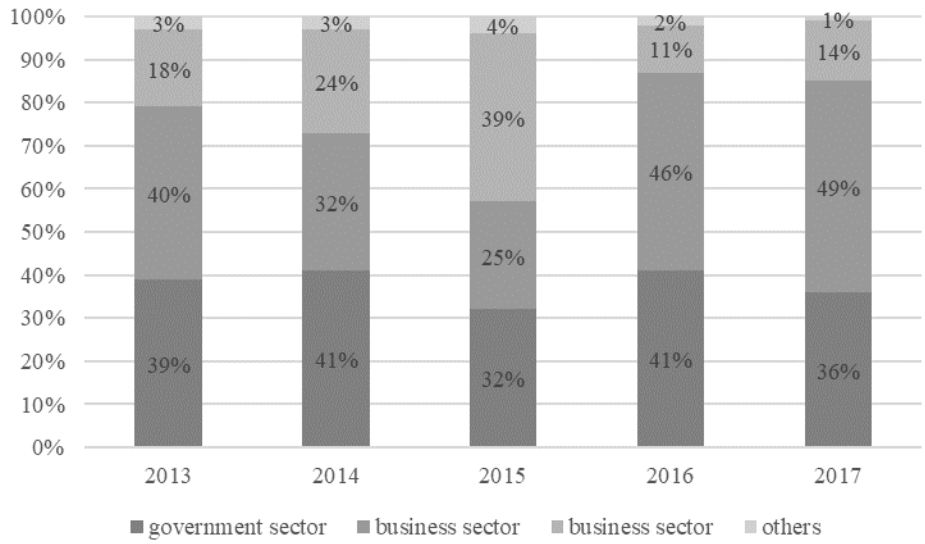

Figure 3. Development of the structure of expenditure on research and development by source of funding

Source: Statistical Office of the Slovak Republic

The Ministry of Economy of the Slovak Republic acts as a guarantor and coordinator of many activities (Sidak, M. et al. (2020)). Within the Ministry of Economy of the Slovak Republic, important programs to support enterprises include the Operational Program Research and Innovation and the Agency for Support of Research and Development. The business sector has long the largest share in research and development expenditures. In the field of scientific disciplines, the government sector mostly supports technical sciences (58.77%), which also have the most employed researchers. This is followed by natural sciences with a share of 19.86%, followed by social sciences, humanities, medicine and pharmaceutical sciences. Agricultural sciences receive the least support funds (Report on provided state aid in the Slovak Republic for 2018). The most serious problem in Slovakia in the field of technology and innovation is the low level of investment in science, research and innovation. Compared to the EU average, Slovakia is one of the lowest countries in the EU. The share of R&D expenditure in 2018 was 0.88% of GDP, while the EU average was 2.12%. Slovakia has implemented the largest share in the field of research and development in the business sector. The business sector accounted for almost 50.4%, but is still below the EU

average (60%). Support should be increased in the private sector, with an emphasis on micro-enterprises, which need the most support. Financial support for research and development from the EU structural and investment funds represents a great opportunity for Slovakia.

Conclusion

The economic policies of many countries, including Slovakia, favor active investor support through investment incentives. Although international agreements do not, in principle, allow discrimination against foreign or domestic investors, differences in treatment often result from set criteria that an investor must meet in order to obtain these incentives. In the Slovak Republic, small and medium-sized enterprises predominate, and they often cannot meet the criterion of a minimum volume of investment, so it is most often foreign investors who benefit from investment incentives. Based on the results, we can say that the possibilities of economic cooperation between Austria and Slovakia are far from exhausted. Joint projects in the field of transport and energy infrastructure, energy security and diversification of energy sources are several examples where cooperation lasts for several years and has a perspective for the future. The increase in cooperation is in the field of foreign trade, in the field of foreign investment, but also in the growing level of services, including the increase in cooperation in the field of tourism. Since its inception, Slovakia has become an important trading partner of Austria, with trade with Austria catching up with trade. Slovakia with traditional partners - with neighbors (Poland, Hungary). Strategic interconnection at the core of the euro area together with a peripheral geographical position Austria and Slovakia in the east of the EU create preconditions for a new intensity of bilateral dialogue between the two countries on key issues of European integration. In the context of resolving the debt crisis, both countries were included among the so-called countries of the north, which in the first years of debt crisis, an emphasis on accountability and fiscal stability. Unlike Austria and Slovakia the surrounding lands experienced significant fluctuations in national currencies during this period. At the same time, both countries are in the position of countries that have the potential to build bridges of cooperation and dialogue with countries seeking membership of the euro area, with a special interest in Slovakia is to maintain the highest possible degree of political and economic cohesion between members of the euro area and other EU countries, in particular neighboring Visegrad countries. There is real potential for strategic dialogue and a closer partnership between Austria and Slovakia, in particular as regards the functioning of the euro area, EU enlargement in the Western Balkans and deepening relations with its eastern neighbors EU (Benč, V. et al. (2013); Slovak Investment and Trade Developmen (2018)).

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FORMS OF ORGANIZATION AND SPATIAL CONCENTRATION OF LOCAL FOOD SYSTEMS. A CASE FROM POLAND

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Abstract. A close analysis of the modern combined agri-food industry shows two prevailing development trends. The first one is the trend towards mass-produced food based on high impact production methods and delivered through long supply chains. The second trend suggests growing popularity of local food. Local food systems constitute an alternative approach to the production and consumption of food and fit in the idea of sustainable development. We may analyze local food systems at various levels, with respect to their environmental action, local communities, and regional economy. The article is an analysis of the forms of organization and spatial concentration of local food systems in Poland. Forms of entities such as: direct sale, agricultural retail sale and, marginal, localized and restricted activities are described. The forms of organization are not only continually changing, but they also vary from country to country, which contributed to the decision to undertake this research. The article presents the spatial diversity of individual local entities both in absolute terms and in relation to selected regional features. The analysis of the spatial structure of direct sales revealed concentration of DS entities in the south-west and central Poland. The regions of large spatial concentration of agricultural retail trade are the Warmińsko-Mazurskie, Lubelskie, Dolnośląskie and Mazowieckie provinces. The entities in the last studied group, i.e. marginal, localized and restricted entities, are present in great numbers across Mazowsze, Little Poland, and Silesia. The study was conducted based on methods such as review of literature and legal acts, methods of graphic presentation in the form of maps and calculation of the localization coefficient. The presented analysis allowed the researcher to determine the organization and localization of the local market in Poland. The results of the study may become guidelines on regional policy and new business action development.

Keywords: local food systems; forms of organization; spatial concentration; marginal, localized and restricted activities; direct sale; agricultural retail trade

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Introduction

There are several terms which refer to direct relations between food manufacturers and final consumers operating within a limited geographical area (Balazs et al., 2013). Phenomena, such as direct sale, short supply chains, extensive agriculture, traditional methods of processing, or local consumption appear in literature under different names (Fegan, 2007). The most popular phrase which combines the said issues is 'local food systems' (Feenstra, 1997; Gorelick et al., 2007; Henderson, 1998; Lacy, 2000). Feenstra (1997) describes local food systems as the systems identified with production regions, which are committed to the optimization of economic performance of food chain participants, which employ sustainable methods of production and distribution, and which promote direct social relations. At present, the above approach to food systems is the clear trend in food production and consumption in numerous countries (Malak-Rawlikowska et al., 2019; (Michel-Villarreal, 2019). According to the European Committee of the Regions (2011), 80% of food worldwide is produced and sold locally. In the European Union states, the average percentage is 20. Researches demonstrate that local food systems are highly diversified among the EU states with respect to quantity (from 0.5% of total food production in Ireland to 34.6% in Italy) and the form of operation (European Commission, 2013; Biasini, 2018). What is more, there is a large variation in terms of profiles and spatial distribution of local entities.

Methodology

The main research question of the paper stated: What are the possible forms of organization of local food systems in Poland and how they are spatially concentrated across Poland? Therefore, the research presented in this article was intended, above all, to identify and characterize the forms of organization of local food systems in Poland. The second research objective was to present the spatial distribution of the identified entities. The subject of the analysis were entities committed to the production, processing, and sale of products of animal origin on the local market. The research group does not include entities which produce and sale products of plant origin, what can be regarded as limitations of the research. The study hypotheses were that local food systems adopted organizational (legal) forms that were different from those of business entities in other industries. Furthermore, it was assumed that the analyzed entities were characterized by diverging spatial system across Poland and constituted a large group of entities in relative terms. The study was based on the register of local entities maintained by the General Veterinary Inspectorate (GIW) as of 31 Dec 2017 and secondary data published by the Central Statistical Office (GUS). The identification of the organizational forms of local food systems was conducted under the legal framework governing the combined agri-food sector. The spatial distribution of the analyzed entities was developed with the use of QGIS 3.4.5 'Madeira'. At the subsequent stage of the research, localization coefficients were set, on the basis of which the sizes of individual groups of entities could be confronted with variables specific to individual regions, such as: the percentage of all MLL entities in a region with the number of all entities involved with industrial processing, the percentage of ART and DS entities in a region with the total number of individual farms. The calculations were performed in the MS Excel. Localization coefficients were calculated according to the following rule 1:

$$LQir = = \frac{x_{ri} / z_{ri}}{x_i / z_i} \qquad (1)$$

where:

LQ_r^i – localization coefficient of the analyzed activity in the *i*-th region of Poland, where $i \in \{1, \ldots 16\}$,

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X_{ri} – the number of analyzed entities registered in the *i*-th region,
Z_{ri} – the number of entities constituting a reference point depending on the group of local entities in the *i*-th region in 2017,
X_i – the number of all analyzed local entities in Poland in 2017,
Z_{ri} – the number of all entities constituting a reference point depending on the group of local entities in Poland in 2017,

Identification and characterization of local food system entities in Poland

Even though the notion 'local food systems' has been used for a long time in the Polish language, there is no single official definition which would account for the nature of the phenomenon. In subject literature, there are various definitions of the term. According to Blouin et al. (2009), local food systems are identified as an effective method in the pursuit of nutritional sovereignty, defined as the right of the society to have access to local, healthy and eco-friendly food manufactured with due respect for every partner in the supply chain and assuraning adequate working conditions and remuneration. There are three common criteria based on which local food systems can be characterized. The geographic criterion assumes that there is a distance between the consumer and the producer. Some sources provide the distance between 20 km and 100 km (Balazs et al., 2013) or even 80 km to over 100 km (Brown, Miller, 2008). In Poland, the spatial dimension of local food systems frequently becomes tantamount to an administrative area, i.e. one province (*in Polish: województwo*). The ambiguity of the criterion justifies the use of others. The term 'local food system' is applied whenever the number of entities in the supply chain is minimal (Ilbery, Maye, 2006). This is crucial not only as a marker of quality, authenticity and freshness, but also as a producer's way to generate real financial profit. The final criterion of defining local food systems refers to direct relations between system participants. They favor the establishment of social bonds which improve local community operations and develop a sense of regional affiliation (Devon County Council, 2011). Another approach to local food systems may be found in the definition suggested by the Department for Environment, Food and Rural Affairs UK (2003), which provides that local food systems are produced, processed and sold in a specific geographical area, economically effective for producers, processors and sellers, healthy, fair trade, employees' rights are not abused, production techniques are environmentally friendly, respecting food culture
In Poland, local production is subject to legal regulations which set out the detailed conditions of production, processing and local sale, the territorial scope of conducted activities, and production limitations. The activity comprises four forms of organization, i.e.:

- direct sale (DS) – which refers to the sale of products of animal origin;
- direct supply (DSu) – which refers to the sale of products of plant origin;
- agricultural retail trade (ART) – which refers to products of plant and animal origin;
- marginal, localized and restricted enterprises (MLL) – which refer to products of animal origin.

As of 31 December 2017, in Poland there are 12,765 locally focused entities dealing with the production, processing, and sale of products of animal origin, which are the object of research in this project (GIW, 2017). The most populous group are entities operating as part of direct sale.

Direct sale consists of rendering available unprocessed products of animal origin to final recipients, excluding agents, to satisfy their needs. The direct sale opportunity pertains only to those products which are produced from own raw materials, made available within the territory of the province on which the production takes place or in the neighboring areas. In special cases, i.e. during exhibitions, picnics, fairs or markets organized with a view to promote local products, sale on the territory of other provinces is allowed (Regulation of the Minister of Agriculture and Rural Development of 30 September 2015, 2015). Direct sale covers the sale of poultry, lagomorphs, game, fishery products, live snails, milk and sour cream, eggs for consumption, and unprocessed

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apiculture products (General Veterinary Inspectorate, 2017a). The volumes of production and sales of the above listed items is strictly determined and cannot exceed statutory limitations. The channels of distribution of the products of direct sale comprise:

- places where the production of the products held for direct sale takes place, including farms, apiaries, or fish farms;
- open-air markets;
- mobile equipment and objects, or temporary means of transport located within production areas, within open-air markets, or externally.
- retail trade establishments targeting the final consumer.

In addition, in the case of milk, the sale of products from distribution equipment designed to sell foods is permitted. Direct selling to the final consumer may also take place electronically, by shipment, and via the system of direct delivery to the consumer, as part of the so-called cooperatives. The place of production of products for direct sale should be in buildings which are detached from housing units or in adjusted rooms. All objects and equipment used for production as part of direct sale must meet sanitation requirements and guarantee safety of the production process. The most restrictive veterinary requirements refer to those places where carcasses, giblets, offal of lagomorphs or game and fishery products are handled for bleeding, heading, removal of fins and gutting. The absence of the need to implement the complete HACCP system and less frequent checks on the part of the General Veterinary Inspectorate are convenient for direct sale entities. The entities involved in direct sale are obliged to establish documents confirming the quantity of sold products, covering the results of water checks and medical certificates on the ability to performs works related to food production. All products sold as part of direct sales ought to be properly marked and labelled, which makes them identifiable and traceable. The body in charge of registration and supervision of direct sales is the Veterinary Inspectorate.
Detailed guidelines setting out the conditions of conducting direct sale are included in the Regulation of the Minister of Agriculture and Rural Development of 30 September 2015 on veterinary requirements applied to the production of products of animal origin due for direct sale.

The newest group of entities within the local food systems are the entities conducting the so-called agricultural retail trade (ART). The provisions facilitating farmers' processing and sale of agricultural and food products entered into force on 1 January 2017. Under the law (Regulation of the Minister of Agriculture and Rural Development of 16 Dec 2016, 2016), farmers may sell processed agricultural products produced on their own farms only after they had registered their activity as agricultural retail trade, without validation. This signifies that farmers may produce and sell the following: hams, sausages, pates, butter, milk, eggs, cheese, pickles, silage, non-meat based convenience foods, pies (*pierogi*) filled with meat, flour, porridge, flakes, bran, bread, confectionery, oils, juices, jams etc. Ipso facto, as part of agricultural retail trade one is able to produce, process and sell agri-food products intended for the final consumer and, as of 1 January 2019, for the purpose of retail trade establishments providing supplies to final consumers, such as restaurants, schools, canteens, and other institutions within a given territory. The production and sale of food as part of ART may not involve agents. Agricultural retail trade comprises products of both animal and plant origin, including undergrowth. The area of activity of agricultural retail trade is limited, similarly as in the case of direct sale, to the area of the province where the food is produced, and to the poviat or the city which is the seat of the Governor of a given province or of the Regional Council of the province adjacent to the province of product origin. The underlying condition of carrying out agricultural retail trade is possessing own raw materials to produce food. Agri-food products provided to final consumers as part of ART in whole or in part must originate from one's own farming, except for water. Moreover, processing and sale ought to be conducted according to the statutory quantitative and qualitative limits. The processing and sale of products of animal and plant origin may not be performed with the participation of people employed under the contract of employment, contract of mandate or task-specific contract, with certain exceptions. Furthermore, any agricultural retail entity shall have a duty to keep a register of food sales. The sale as part of ART, as is already the case for direct sale, is allowed:

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- at the place of production;
- at places intended for retail trade, such as open-air markets;
- at establishments conducting retail trade intended for the final consumer;
- from mobile equipment and objects, or temporary means of transport located within production areas, within open-air markets, or externally.

Moreover, activities conducted as part of agricultural farming also cover online sale of processed agricultural products and shipment to the final consumer. In the event of ART entities, there is no obligation to develop a technological project of the production area. It is possible to hold production inside private homes and with the use of household appliances. What is more, there is no need to introduce a complete HACCP system. Nonetheless, one must follow the principles of the so-called good production practice and good hygiene practice. All agricultural retail trade products should be identifiable and properly marked, allowing full traceability of products throughout the supply chain. It is crucial to place the "Polish product" label on the ART-manufactured products (Minister of Agriculture and Rural Development, 2019a). The registrar and supervisor of agricultural retail trade entities is the General Veterinary Inspectorate. At the turn of the year 2018 and 2019, the tax provisions regarding agricultural retail trade were amended. An increased tax relief amount was introduced, which means that any income up to PLN 40,000 per annum generated as part of ART is exempt from tax. Before January 2019, the amount exempt from tax was PLN 20,000.

Another possible form of activity as part of local food systems is to run marginal, localized and restricted activities (MLL). MLL activity registration in Poland has been available since 2007. The scope of activities of the MLL companies covers the production and sale of processed and unprocessed products of animal origin to the final consumer and shipping produced foods to retail trade establishments intended for the final consumer (Regulation of the Minister of Agriculture and Rural Development of 30 September 2015, 2015).
Marginal, localized and restricted activity provides an opportunity to conduct production, processing and sale to small business entities and family production establishments, which offer products of specific, unique features. MLL are identified with the strategy of local production support by allowing activities of reduced technical, organizational and tax requirements (Bareja-Wawryszuk et al.,2019). The territorial scope of MLL activities is also limited to the area of one province or the area of poviats adjoining the said province but located in other provinces. As part of marginal, localized and restricted activities, business related to the production and sale of the following products of animal origin may be conducted:

- cutting of fresh bovine meat, pig meat, sheep meat, goatmeat, horsemeat, poultry meat or lagomorph meat, or
- cutting of fresh meat of game culled in accordance with the provisions of the hunting law, or
- cutting of meat of wild animals kept at farms, or
- production of mincemeat, raw meat preparations, or
- production of meat products, or
- production of initially processed or processes fishery products, or
- production of dairy products or colostrum-based products made of milk or colostrum, production of egg products acquired as a result of the handling or processing of eggs previously boiled in shells,
- production of prepared food (meals) made of products of animal origin.

In addition, the cutting and sale of fresh bovine meat, pig meat, sheep meat, goatmeat, horsemeat, poultry meat or lagomorph meat, game meat or meat of wild animals kept on farms is also possible (Regulation of the Minister of Agriculture and Rural Development of 21 March 2016, 2016). The production limitations on the above products were revised on 1 January 2019. As part of promoting local activity, maximum volumes of production of the products intended for the final consumer have been lifted. This signifies that in the case of the sale of products to

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the final consumer, only the area of conducting sales, not quantity, as hitherto, is reduced. The processing and sale of products produced as part of marginal, localized and restricted activity may be performed in special buildings designed for production, in adjusted rooms (such as an outdoor kitchen) or in the rooms of residential units where food is prepared. The equipment in such rooms should conform to the requirements specified in the Regulation (EC) No. 852/2004. Furthermore, any establishment should develop HACCP rules and follow the principles of good practice. Products offered as part of MLL should meet microbiological criteria, storage temperature and cold chain requirements. The registrar and supervisor of MLL companies is, as in the case of other entities processing products of animal origin, the General Veterinary Inspectorate. The distribution channels of the above listed products are the same as the distribution channels in the case of direct sale and agricultural retail trade.

Identification and characterization of local food system entities in Poland

The entities dealing with direct sale constitute the most populous group of the object of the research. By the end of 2017, there were 9,340 entities registered in Poland. Direct sale in spatial terms is presented in Figure 1.

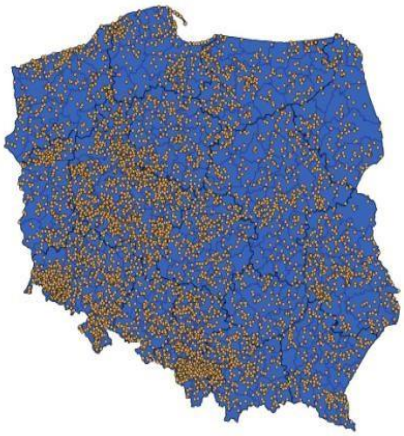

Figure 1. Distribution of direct sale entities in 2017
Source: GIW, 2017a. Own research.

The most direct selling entities in absolute terms operate in the following provinces: Wielkopolskie (kaliski, gnieźnieński poviats), Dolnośląskie (kłodzki, jeleniogórski poviats) and Śląskie (bielski, pszczyński poviats). Across the three provinces we have 42.3% of all direct sale entities. On the contrary, the provinces with the lowest number of direct sale entities are: Opolskie (brzeski, namysłowski poviats, Opole city), Podlaskie (Białystok city, bielski poviat), Świętokrzyskie (sandomierski poviat, Starachowice city).

With a view to present the distribution of direct sale, the coefficients of localization for each province were calculated. The number of direct sale entities in individual provinces was confronted with the number of all individual farms conducting agricultural activities in 2016. Direct sale is conducted in all 16 Polish provinces (in 373 poviats in Poland). The mean direct sale localization coefficient was 1.48. An above average localization coefficient was generated by 8 provinces. Table 1 shows the values of localization coefficients for each province.

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Table 1. Province ranking by localization coefficient for direct sale in 2017

Item	Province	No. of DS	No. of individual farms in 2016	Localization coefficient
1	**Lubuskie**	**498**	**20 012**	**3.75**
2	**Dolnośląskie**	**1272**	**55 553**	**3.45**
3	**Zachodniopomorskie**	**557**	**29 198**	**2.87**
4	**Wielkopolskie**	**1922**	**120 584**	**2.40**
5	**Śląskie**	**764**	**54 361**	**2.12**
6	**Warmińsko-mazurskie**	**526**	**42 862**	**1.85**
7	**Pomorskie**	**431**	**38 777**	**1.67**
8	**Opolskie**	**290**	**26 682**	**1.64**
9	Kujawsko-pomorskie	428	63 523	1.01
10	Małopolskie	521	139 765	0.56
11	Łódzkie	398	123 898	0.48
12	Lubelskie	531	179 801	0.44
13	Mazowieckie	536	212 602	0.38
14	Podlaskie	311	132 631	0.35
15	Podkarpackie	185	81 083	0.34
16	Świętokrzyskie	170	85 243	0.30
	TOTAL	**9340**	**1 406 575**	**Mean 1.48**

Source: GIW, 2017a. GUS, 2017. Own research.

An above-average value of Localization Coefficient means that in such provinces the number of direct sale entities against the number of individual farms is greater than in the remaining provinces. The provinces with the largest share of direct sale compared to the number of individual farms are: Lubuskie, Dolnośląskie and Zachodniopomorskie provinces. In the case of the Dolnośląskie and Zachodniopomorskie provinces, the result is consistent with the absolute ranking of the regions in terms of the volume of direct sale. In contrast, the lowest level of the value of localization coefficient was found in the Podkarpackie, Podlaskie, and Świętokrzyskie provinces, which is consistent with the low absolute number of entities in the region.

Another group of entities under investigation were entities dealing with agricultural retail trade in products of animal origin. Agricultural retail trade is a form of sale which had been called for over many years in order to have more freedom in the processing and resale of agricultural products. Registration as part of ART began in January 2016 and since then there has been a dynamic growth in the number of ART entities. By December 2017, 1,268 ART-oriented entities had been created in Poland. Between January and December 2018, their number grew by 53% (General Veterinary Inspectorate, 2018c). The distribution of the entities of agricultural retail trade is shown in Figure 2.

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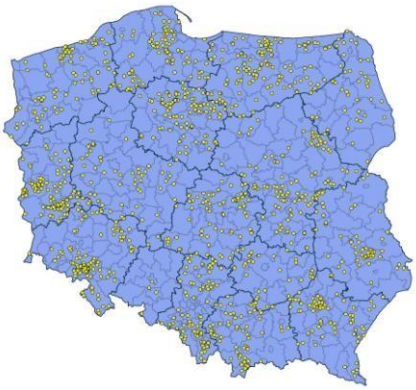

Figure 2. Entities dealing with agricultural retail trade in 2017
Source: GIW, 2017c. Own research

The most entities are registered in the following provinces: Warmińsko-Mazurskie (olsztyński, bartoszycki poviats), Lubelskie (krośnieński, nowosolski poviats) and Dolnośląskie (świdnicki, wałbrzyski poviats). Across the above three provinces, 28.2% of all ART entities are located. To demonstrate the number of agricultural retail trade entities in relative terms, their spatial diversity was compared with the spatial diversity of individual farms in 2016. The mean value of the coefficient of localization in 16 provinces was 1.64. In 7 provinces, an above-average occurrence of agricultural retail trade was observed. Table 2 shows province ranking in terms of the value of the coefficient of localization.

Table 2. Province ranking by localization coefficient for agricultural retail trade in 2017

Item	Province	Number ART	No. of individual farms in 2016	Localization coefficient
1	**Lubuskie**	**117**	**20 012**	**6.49**
2	**Zachodniopomorskie**	**101**	**29 198**	**3.84**
3	**Warmińskomazurskie**	**128**	**42 862**	**3.31**
4	**Pomorskie**	**81**	**38 777**	**2.32**
5	**Dolnośląskie**	**113**	**55 553**	**2.26**
6	**Kujawskopomorskie**	**98**	**63 523**	**1.71**
7	**Śląskie**	**81**	**54 361**	**1.65**
8	Podkarpackie	77	132 631	0.64
9	Łódzkie	70	123 898	0.63
10	Małopolskie	76	139 765	0.60
11	Mazowieckie	110	212 602	0.57
12	Podlaskie	40	81 083	0.55
13	Wielkopolskie	57	120 584	0.52
14	Świętokrzyskie	37	85 243	0.48
15	Lubelskie	76	179 801	0.47
16	Opolskie	6	26 682	0.25
	Total	**1268**	**1 406 575**	**Mean: 1.64**

Source: GIW, 2017c; GUS, 2017. Own research.

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Coefficients of localization above the average value were observed in the following provinces: Lubuskie, Zachodniopomorskie, Warmińsko-Mazurskie, Pomorskie, Dolnośląskie, Kujawskie and Śląskie. This signifies that in the above-mentioned provinces, agricultural retail trade shows a relatively large share with respect to all entities conducting agricultural activities in the area. In turn, relatively low values of the coefficient of localization are seen in Podkarpackie, Łódzkie, Małopolskie, Mazowieckie, Podlaskie, Wielkopolskie, Świętokrzyskie, Lubelskie and Opolskie provinces. Thus, in most regions in Poland, agricultural retail trade against the total of individual farms is below average.

The last group of entities consists in marginal, localized and restricted activities (MLL). Unlike the two above described groups of entities, individuals involved in marginal, localized and restricted activities have an opportunity to choose the method of social insurance, i.e. they may conduct processing and business activities while they continue to be farmers insured at KRUS, or they may have an entrepreneur status and conduct business activities when insured at ZUS. In December 2017, there were 2,157 MLL entities registered in Poland. The distribution of MLL companies is presented in Figure 3.

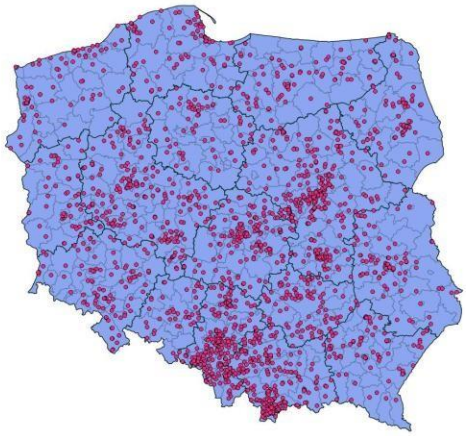

Figure 3. Entities involved in marginal, localized and restricted activities in 2017
Source: GIW, 2017b. Own research.

The largest number of MLL enterprises is detected in the following provinces: Mazowieckie (żyrardowski, radomski poviats), Małopolskie (nowotarski, tatrzański poviats), and Śląskie (cieszyński and wodzisławski poviats). Forty percent of all MLL entities in Poland are located across the above three provinces. In contrast, provinces with the lowest number of MLL entities are: Lubuskie (żarski, sulęciński poviats), Kujawskopomorskie (bydgoski, radziejowski poviats) and Opolskie (prudnicki, namysłowski poviats).

Marginal, localized and restricted activity is one of the legal forms which – according to the PKD code classification – is included in Section C (industrial processing), subsection 10 (food industry). In order to present the size of the group of entities in relative terms, the number of MLL was compared with the total number of the national economy entities (except for natural persons running individual farms) found in the REGON register and dealing with industrial processing, i.e. entities in Section C. The mean value of the coefficient of localization of MLL activities was 1.05. The above average occurrence of marginal, localized and restricted enterprises was observed in the following provinces: Warmińsko-Mazurskie, Świętokrzyskie, Lubelskie. In turn, relatively least MLL companies were noted in Kujawsko-Pomorskie, Pomorskie and Zachodniopomorskie provinces (Table 3).

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Table 3. Ranking of provinces by localization coefficient for marginal, localized and restricted activities in 2017

Item	Province	Number MLL	National economy entities by Section (PKD)	Localization coefficient
1	**Warmińskomazurskie**	**92**	**10 290**	**1.62**
2	**Świętokrzyskie**	**89**	**10 527**	**1.53**
3	**Lubelskie**	**105**	**14 028**	**1.35**
4	**Małopolskie**	**273**	**36 536**	**1.35**
5	**Lubuskie**	**65**	**8 744**	**1.34**
6	**Śląskie**	**262**	**44 779**	**1.06**
7	Podlaskie	96	16 589	1.05
8	Wielkopolskie	225	40 036	1.02
9	Łódzkie	157	28 390	1.00
10	Mazowieckie	331	60 365	0.99
11	Podkarpackie	84	16 589	0.92
12	Opolskie	44	9 079	0.88
13	Dolnośląskie	99	27 353	0.65
14	Kujawskopomorskie	63	17 746	0.64
15	Pomorskie	89	30 823	0.52
16	Zachodniopomorskie	83	18 172	0.83
	Total	**2157**	**390 046**	**Mean: 1.05**

Source: GIW, 2017b; GUS, 2017. Own research.

The analysis of the coefficients of localization in individual provinces demonstrates clear disproportions between the absolute number of MLL entities and the relative relation of the number of MLL to national economy entities in Section C. Provinces, where the number of MLL entities in absolute terms was highest, perform below average in the ranking by the value of the coefficient of localization, e.g. Mazowieckie province. This may be due to the size of the province and abundance of entities, which is a reference point for calculating the localization coefficient.

Conclusions

The study was based on the need to investigate the current trend in agribusiness. i.e. local food systems. The surging popularity of local food systems is equated to the crisis of confidence in the mass combined agrifood industry. The reasons for the crisis are, amongst other things, the spread of pandemics, such as swine fever, bird flu, BSE, ASF, and the fear of genetic modification and food preservatives. In addition, social awareness regarding the natural environment and commitment to environmental sustainability is growing, which contradicts the industrial approach to the agribusiness sector (Blouin et al., 2009). The driving force behind the development of local food systems are both the consumers, looking for valuable foodstuffs, and agricultural producers, seeking alternative forms of business activity. Furthermore, local food systems are of interest to the European policy, as reflected by the Common Agricultural Policy of the EU. The contemporary idea of local food systems as an alternative approach to conventional farming and food processing originated in the seventies in Japan under the name *teikei*, which means "cooperation, partnership" (Blouin et al., 2009). However, even though the local food system phenomenon has a global reach, it is diversified in terms of the methods of organization. Another fact supporting the research herein is that local food systems are crucial from the point of view of the economy of the region, social ties, and their relevance for the natural environment (Bareja-Wawryszuk, Gołębiewski, 2014). Ipso facto, the author saw the need to analyze the structure of local food systems not only in terms of organization, but also space. The analysis of the entities of the local market in the combined agri-food sector in Poland revealed that

it features unique organizational structures and legal forms. Entities registered under the name direct sale, agricultural retail trade, or marginal, localized and restricted activity are a separate group of entities authorized to conduct localized activities. The principles of operation of the above entities are simplified with respect to the registration of approved business activities, but they are also limited as far as the scope of activity and turnover are concerned. Fewer legal restrictions and phytosanitary requirements make this type of activity more accessible. The idea of local entities is to promote traditional production and regional development, and to generate alternative business activities. How important local establishments are is emphasized by ongoing legal changes consequential to social postulates appealing for greater freedoms and scopes of local activities. Another vital point is that the number of entities analyzed in the article continues to grow. The visualization of the distribution of each of the studied forms of activity illustrated how numerous a group of entities is direct sale, agricultural retail trade, and marginal, localized and restricted activity. Large numbers of entities described herein operate both in the absolute system and relative to various features of the region, which confirms the need to undertake research in the spatial context. The research results described above indicated that the most numerous group of entities are direct sales entities, i.e. 9.340 entities registered till 31.12.2017 in Poland. The most direct selling entities in absolute terms operate in the following provinces: Wielkopolskie, Dolnośląskie and Śląskie. Across the three provinces we have 42.3% of all direct sale entities. Provinces with the largest share of direct sale compared to the number of individual farms are: Lubuskie, Dolnośląskie and Zachodniopomorskie provinces. Another analyzed group of entities were agricultural retail trade counting 1,268 ART-oriented entities. However it is a group of entities showing the greatest growth dynamics. The most entities are registered in the following provinces: Warmińsko-Mazurskie, Lubelskie and Dolnośląskie. Across the above three provinces, 28.2% of all ART entities are located. Coefficients of localization above the average value were observed in the following provinces: Lubuskie, Zachodniopomorskie, Warmińśko-Mazurskie, Pomorskie, Dolnośląskie, Kujawskie and Śląskie. The last group of analized local entities were marginal, localized and restricted activity and by the end of 2017 there were 2,157 MLL entities registered in Poland. The largest number of MLL enterprises is detected in the following provinces: Mazowieckie, Małopolskie, Śląskie. Forty percent of all MLL entities in Poland are located across the above three provinces. The above average occurrence of marginal, localized and restricted enterprises was observed in the following provinces: Warmińsko-Mazurskie, Świętokrzyskie, Lubelskie.
Such a spatial structure of local food systems may be the result of multiple factors, such as: access to raw materials, market, or regional traditions. Information acquired in the course of the research may be used to explain the mechanisms of entity location and can show directions of development for individual regions.The considerations presented in the above article are pioneering and constitute a significant contribution to the knowledge of local food systems in Poland.

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IMPACT ANALYSIS OF FACTORS INFLUENCING BANK CAPITAL MANAGEMENT

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Abstract. Issues of bank capital management have always been topical for each commercial bank and for bank supervisory institutions. After-effects of the financial crises have encouraged strengthening of capital adequacy requirements and therefore supporting the reasonable risk level. Basel Committee on Banking Supervision adopted a range of guidelines, which promote raising of bank stability and safety, stressing the importance of capital as risk coverage. The aim of the research is the determination of factors influencing bank capital adequacy and assessment of financial strength of capital and especially equity in commercial banks. The subject of this research is focusses on commercial banks of Eastern Europe. Methodologically, research methods as comparison, factors analysis, ratio analysis, charts showing statistic information and others have been used by authors. As the result of the investigation, factors influencing bank capital adequacy have been identified. The most important of these factors is credit risk, which is specially analysed in this research. The obtained results allowed the authors to make a range of conclusions, of which some are: in the period of financial crises most of European commercial banks were operating on the verge of capital adequacy, banks did not have sufficient buffer capital, due to substantial losses during the period of crises capital adequacy was maintained only by the inflow of new share capital and subordinated capital. The authors have provided several suggestions concerning the management of bank capital adequacy to commercial banks.

Keywords: Capital adequacy management; Capital safety margin; Bank assets; Buffer capital; Regression analysis

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JEL Classifications: G2, G21

1. Introduction

Banking sector in most Eastern Europe countries within the period 2009 to 2012 was loss-making. Thus, maximum losses of banking sector in Romania were fixed in 2011 and amounted to 800 mln RON = 185 mln EUR (National Bank of Romania, Statistical data). The year 2011 was the most loss-making also for Hungary where banking sector had suffered losses nearly 300 mln HUF = 1 mln EUR (Central Bank of Hungary, Statistical data). Banking sector in Baltic countries – Lithuania, Latvia and Estonia – had maximum losses in 2009. Estonian commercial banks in 2009 had suffered losses 600 mln EUR (Eesti Pank, Statistical data; Estonian Financial Supervision Authority, Statistical data) while losses in banking sector of Lithuania and Latvia within the same period had exceeded 1 bln EUR (Bank of Lithuania, Statistical data; Bank of Latvia, Statistical data; Securities

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Commission of the Republic of Lithuania; Latvian Financial and Capital Market Commission, Statistical data). Although the banking sector of such Eastern Europe countries as Poland, Czechia, Slovakia during the crisis and postcrisis periods was in general loss-free, many banks of these countries also incurred losses and faced problems with risk management. A similar situation was observed also in other European countries. It all demanded to review the bank regulation, which was reflected in Basel III requirements. With the objective to increase the banking sector stability, reduce the systemic risk and prevent the systemic crises in future, Basel III toughened the requirements for the capital adequacy and liquidity as well as implements the financial leverage ratio.

The research methodology is based on study from general to specific, which assumes in the beginning the determination of macroeconomic factors affecting the regulation of banks' equity in the countries of Eastern Europe, identifying the dependence between the various elements of equity and calculation of financial strength margin in the banks of Eastern Europe, and after that a transition to the regression analysis method of capital in Latvian commercial banks, which are the part of banking system in Eastern Europe. Regression analysis was performed by stepwise. The dependent variable - a natural logarithm of banking capital of size. 9 indicators were selected for modelling through economic analysis. The purpose of regression analysis was to confirm the hypothesis of the influence of factors selected by the method of economic analysis on the amount of bank capital. The Durbin-Watson test was conducted to check the hypothesis that there was no autocorrelation of balances.

The observation and collection of financial information about activity of commercial banks, the analysis and synthesis of acquired data, the method of comparison between economic groupings, the ratio method as well as the method of graphic display of statistic information are used in the study. The official statistical data of the European Central Bank, National Central Banks of analysed Eastern Europe countries and data of the Supervisory Institutions are provided in the research.

The novelty of the research is that a statistically significant model of change in the value of bank capital, which can be used in the management of capital adequacy of bank, has been defined.

The limitations of the study are determined by the availability of data and the possibility of obtaining them. Therefore, the authors used the data of commercial banks of 8 Eastern European countries as the subject of the study.

2. Theoretical framework of bank capital management

The stability of a bank depends on a bank's capital management. A bank's capital is a mandatory and integral part of its financial resources, and its development in the form of core capital is a required step even before establishing a commercial bank (S. Saksonova, 2006). Practically every stage of a bank's business is directly or indirectly linked to the capital management. A bank's capital serves as one of determinants in the evaluation process of its stability. The adequacy of the bank's own funds provides for its financial stability and neutralises different risks inherent to a commercial bank's course of business (H.Greuning and S.Brajovic Bratanovic 2009). The size of a bank's capital is crucial not only for the safety of its customers, but also for the bank's own stability, avoiding the impact of short-term financial problems (S. Saksonova, 2006). The capital also serves as an indicator of the bank's credit solvency, since the total amount of its assets may not exceed a certain capital adequacy limit, which means that the maximum amount of the bank's assets depends on the size of its capital. The size of capital greatly determines the bank's competitiveness. Since shareholders of a bank always seek to increase the profitability of their investments, the bank's endeavours to increase the profit reflect on prices of products and services it provides. On the other hand, a bank must attract a certain amount of customer deposits to be able to ensure full-scale lending operations, which is only possible, if the bank has gained public trust and that is possible with sufficient capital reserve. In case of sudden capital adequacy problems a bank may lose its competitiveness (H.Greuning and S.Brajovic Bratanovic 2009).

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The American scientist D.Chorafas (2004), in his turn, believes that the main function of a commercial bank's capital is generation of bank's income and profit respectively, and provide for a possibility to cover unexpected operating losses of a commercial bank. American scientists H.Schooner and M.Taylor (2009) in their book „Global Bank Regulation: Principles and Policies" offer an identical definition, but in addition to that they stress the possibility to use capital of a commercial bank to cover possible losses caused by credit risk. American economists H.Greuning and S.Brajovic Bratanovic (2009) hold a view that capital adequacy level must be consistent with the risk level of the bank's operations. Capital structure is a significant factor in business valuing. Capital structure matters because it influences the cost of capital (Valaskova, K. et al. 2019). At the same time, Andrea Szalavetz claims that a significant part of the organizational changes aimed at reducing costs and improving efficiency caused by the global crisis of 2008 can be beneficial to some subsidiaries, including banks (Szalavetz A. 2016). But capital strict requirements will be associated with higher capital costs. Strong corporate governance provides effective financial decisions connecting with the cost of capital (Mokhova, N. et al. 2018). To evaluate banks activity and stability use a lot of internal and external indicators. Authors Saksonova S. and Koļeda O. identified a stable link between bank retained earnings and GDP growth. They proved this fact in the paper "Evaluating the Interrelationship between Actions of Latvian Commercial Banks and Latvian Economic Growth" and emphasize that that the empirical link between bank retained earnings and GDP growth is more robust that between credit growth and GDP growth, although this does not mean that credit growth is not important. The relationship is bidirectional – GDP growth has a significant effect of bank retained earnings and vice versa. The implication for banks is to continue optimizing their asset and liability structure and adjust to both current unprecedented monetary accommodation and its eventual unwinding (Saksonova S., Koļeda O., 2017).
A. Berke-Berga and I. Dovladbekova claim that capital structure is the proportional combination of equity and debt that is used to finance and business activity of any company (A. Berke-Berga and I. Dovladbekova, 2019). Now in banking sector this proportion is adjusted with leverage ratio, which was introduced by Basel III. Capital adequacy is also used in an aggregate measure of bank stability. The authors of the article "Stability of the Banking Sector: Derailing Stability Indicators and Stress-Testing" have developed an aggregate indicator of banking stability, which is assessed on the basis of such independent sub-indices as capital adequacy ratio (CA), asset quality (AQ), profitability (P) and liquidity (L). Additionally, banking stability was evaluated using vulnerability assessment and stress testing (Mayis G. Gulaliyev et al. 2019). In the Financial and Capital Market Commission's regulations Capital Adequacy Ratio (Tier I and Tier II) is defined as the amount of provisions to cover a bank's operating losses. They also elaborate that a capital requirement is an estimate of probable losses based on information available at the moment such estimate is made. The amount of a capital requirement depends on the amount of a bank's assets and their structure, as well as risks assumed by the bank. Almost all unmanaged risks cause losses, which, in their turn, cause volatility of capital adequacy. Thus, to determine the amount of capital needed to cover risks a bank identifies risks included in the capital adequacy evaluation. A bank must evaluate all risks inherent to its business, including risks, for which minimum regulatory capital requirements are set, and the risks, for which no such minimum requirements exist (FCMC, 2012). After the introduction of Basel III requirements, banks began to increase the volume of capital. Capital management is affected by dividend policy. Authors Renata Legenzova, Otilija Jurakovaite and Agne Galinskaite in paper "The Analysis of Dividend Announcement Impact on Stock Prices of Baltic Companies" write: "In general, two main dividend strategies exist: not to pay dividends (zero dividend strat-egy) – value for shareholders comes from additional gain due to increased stock prices; and to pay dividends" (Legenzova R., et al. 2017). Those banks that refuse to pay dividends reinvest part of their profits in development of bank and increasing of capital, and thus use internal sources of capital growth. It should be noted that after the crisis of 2008, the countries of Eastern Europe, including Latvia, showed a trend of mergers and acquisitions of banks and firms. These issues have been investigated by the authors Saksonova S. and Kantāne I. In the paper "Mergers and Acquisitions: Examples of Best Practice in Europe and Latvia" they concluded that in evaluating decisions on the possibilities for mergers and acquisitions Latvian firms and banks have to be guided by the most important results of this process: possible increases in foreign direct investment and the growth in market share (Saksonova S., Kantāne I., 2016). This will

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allow banks to increase a capital value and to become more stable and competitive. All conditions above mentioned confirm that bank capital management is important function for successful bank activity.

3. Analysis of capital adequacy and capital safety margin in banking sector of Eastern European countries

In order to analyze and manage capital, it is necessary to maintain the required divisions between different levels and constituents of capital. Thus, for effective capital management, the Basel Committee recommends dividing all capital of a bank to 2 levels: Tier 1 capital and Tier 2 capital and establish appropriate proportions between them and their constituents (Figure 1).

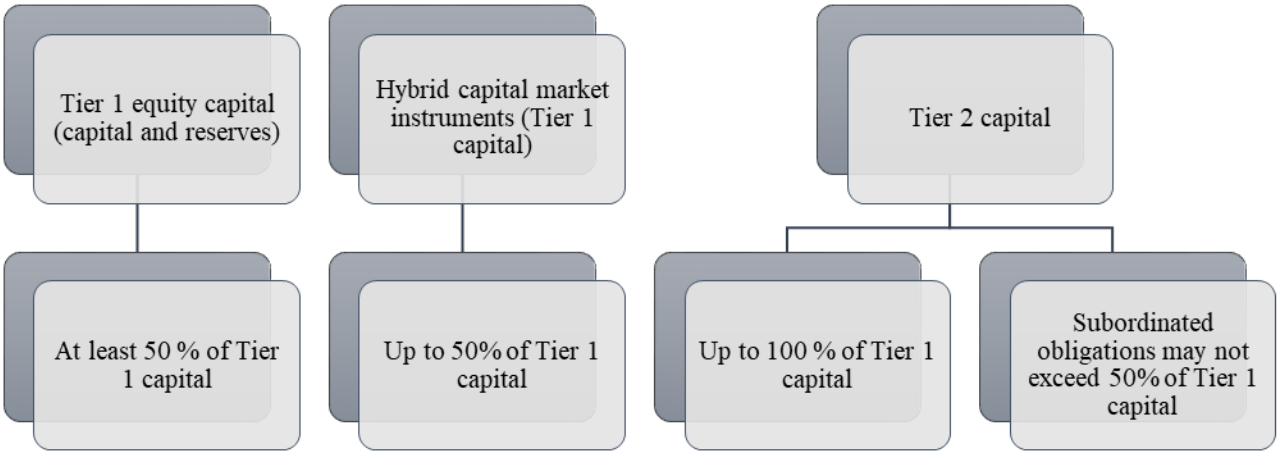

Figure 1. Division of capital and relations ratios between its constituents
(FCMC, 2012)

Since 2013, a staged implementation of new capital ratios has begun, which was fully completed by 2019. Capital conservation buffer, which started in 2016 with 0.625% and amounted 2.5% in 2019. How are Basel III requirements being implemented in the banking sector of Eastern Europe countries? The behavior of various capital ratios and their fulfilment by the banks of countries such as Poland, Czechia, Slovakia, Hungary, Romania, Lithuania, Latvia and Estonia wiil be examined (Tables 1-2). The analysis of the capital adequacy ratios behavior in the banking sector of Eastern European countries within the period 2006 to 2019 has demonstrated that the strongest and most protected banks during the crisis period were in Czech Republic, Slovakia and Romania. Their capital (both Tier 1 and total equity) adequacy within 2007 and 2009 consistently exceeded 10%. Polish and Hungarian banks also held strong enough positions (their total capital base in most dramatic 2009 was above 11%). However, in 2008 the tier 1 capital adequacy ratio in Polish banking sector was the lowest – 4.5% (at that time norm value was 4%). Alas, Polish banks have managed to withstand the crisis events and demonstrated their stability by ensuring the overall capital adequacy due to the increase in Tier 2 capital elements. The banks of Eastern Europe countries were the most vulnerable during the crisis period. In addition, if Estonian banking sector somehow stayed afloat by providing a relative adequacy of the capital base, the banks of Lithuania and Latvia were really threatened and hardly covered ever-growing losses during the crisis and post-crisis periods.

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Table 1. Tier 1 capital ratios in banking sector of some Eastern European countries, Basel III (calculated by the authors)

Period	Poland	Czech Republic	Slovakia	Hungary	Romania	Lithuania	Latvia	Estonia
2006	14,3	10.1	14.1	9,1	13,5	9.7	7.8	10.2
2007	12.8	10.3	13.8	9.5	10.7	9.8	9.8	10.7
2008	4.5	11.8	10.6	10.3	11.8	10.2	9.6	13.5
2009	12.0	12.7	11.0	11.0	13.5	10.3	10.8	16.0
2010	12.5	14.1	11.6	10.9	12.1	11.6	10.9	16.5
2011	11.7	14.2	12.4	11.2	12.0	12.0	14.2	17.8
2012	13.1	15.9	14.7	13.8	12.8	14.0	15.2	19.3
2013	14.1	16.9	14.4	14.1	13.0	15.2	17.3	21.0
2014	13.5	17.5	16.0	15.5	13.5	15.4	18.3	25.5
2015	15.1	17.9	16.5	13.2	13.9	17.9	19.7	27.8
2016	15.7	17.1	16.2	13.9	14.2	18.0	19.3	27.1
2017	15.8	17.5	16.7	14.0	14.3	17.8	18.7	28.3
2018	16.1	17.8	16.7	16.2	18.6	19.8	19.7	28.7
2019	16.3	18.1	17.2	16.8	18.2	19.9	19.3	28.8

It should be noted that many banks of Eastern European countries have increased their capital even before implementation of Basel III requirements (Tables 1-2) and currently pay more attention to the quality of the capital in its management. It means that the capital structure in the banks is changing for the benefit of its stable part – the core capital (CET 1 – Common Equity Capital) and tier 1 capital (T1C - Tier 1 Capital). As evident from Table 1, Tier 1 capital and its adequacy ratio are growing rapidly since 2011. The highest Tier 1 capital adequacy growth rates are observed in Estonian banks. In 2019, Tier 1 capital adequacy in Estonian banking sector was 28.8%. All other analyzed banks of Eastern European countries have a good Tier 1 capital safety margin (Table 1). It should be noted that Romanian banks are operating in conditions of a broad gap between the Tier 1 capital adequacy and the core capital adequacy. It means that the Romanian banking sector has a high share of tier 2 capital compared to the most stable capital elements and Romanian banks will still have to consolidate their capital base.

Table 2. Total capital ratios in banking sector of some Eastern European countries, Basel III (calculated by the authors)

Period	Poland	Czech Republic	Slovakia	Hungary	Romania	Lithuania	Latvia	Estonia
2006	14.9	14.8	12.5	12.7	13.9	10.3	9.7	10.5
2007	12.4	15.5	16.3	13.7	13.0	10.1	10.7	10.6
2008	11.6	19.3	13.1	11.0	17.3	10.2	8.2	15.5
2009	14.7	19.1	15.5	15.6	20.8	10.7	9.2	16.2
2010	15.1	20.8	15.3	17.1	23.7	10.7	9.3	16.7
2011	14,4	20.6	18.6	17.0	25.8	13.2	14.4	21.1
2012	15.8	22.7	17.4	17.9	26.2	18.1	17.6	21.6
2013	16.9	16.5	16.5	17.4	15.5	17.6	19.9	20.0
2014	16.4	17.0	17.3	16.9	17.6	21.3	21.1	35.7
2015	16.2	17.6	17.8	16.9	19.2	24.8	22.3	28.0
2016	16.0	17.7	18.0	18.0	19.7	19.4	21.5	31.8
2017	16,7	18.1	18.8	18.1	20.0	19.1	21.4	29.2
2018	18.3	18.3	18.4	18.5	21.7	20.1	21.6	29.5
2019	18.4	18.4	18.7	18.4	21.9	20.3	21.7	29.3

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The preparatory period for the transit to Basel III was featured in Eastern European countries not so by the growth in the capital volume as by the improvement of its quality. Thus, it is evident from Fig. 2 that most banks had considerable capital growth rates just in the pre-crisis and crisis periods, which is explained by the banks' endeavour to withstand the growing risks. Considerable slowdown in capital growth rates in the banking sector of Latvia, Lithuania and Estonia during the period 2009 – 2010 was caused by great losses incurred by the banks of these countries, which has resulted in the reduction of equity capital and its adequacy. Slowdown in capital growth rates and even decreasing capital growth rates in Hungary (2014 – 2019) and Estonia (2011 – 2019) as well as a slowdown in capital growth rates in Slovakia (2011 – 2019) is associated with the subordinated debt substitution and subsequent transition to more qualitative and stable elements of equity capital.

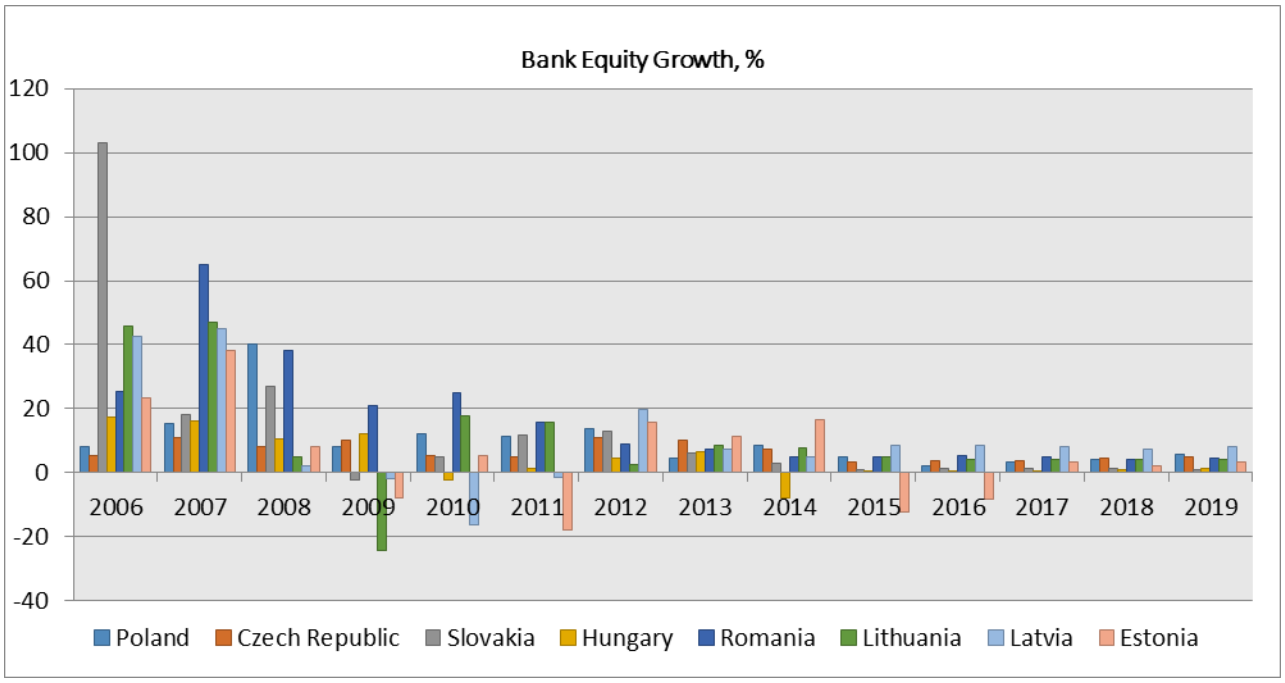

Figure 2. Bank equity growth in banking sector of Eastern European countries (prepared by the authors)

The question is how do Eastern European banks meet the financial leverage? The leverage ratio of banks indicates the financial position of the bank in terms of its debt and its capital or assets and it is calculated by Tier 1 capital divided by consolidated assets where Tier 1 capital includes common equity, reserves, retained earnings and other securities after subtracting goodwill. Since the financial leverage is defined as a ratio of the common equity to the aggregate assets and off-balance-sheet liabilities (without risk adjustment), it can be expressly said that this ratio will have the biggest impact first of all upon banks having considerable off-balance-sheet items and a big share of assets with a low risk level. Banks using the internal rating based system (IRB) for the credit assessment may also be negatively affected by this ratio since they will have a lower share of risk-bearing assets in total assets volume compared to banks assessing the credit risk based on external ratings. Financial leverage does not reflect the level of risk and only shows the general ratio. Thus, the financial leverage ratio will be the same for both banks carrying out a conservative or moderate policy and banks pursuing a high-risk aggressive policy. Although certain banks of Eastern European countries experienced problems when achieving the required level of this ratio, for the whole of the system the aggregate financial leverage ratio is observed and has a strong reserve (Fig. 3). Thus, 3%-limit of the financial leverage is generally observed in all analyzed Eastern Europe countries during the period

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2006 to 2019. In 2019, the highest financial leverage level (9%) was achieved in the banking sector of Poland, Slovakia, Latvia and Estonia.

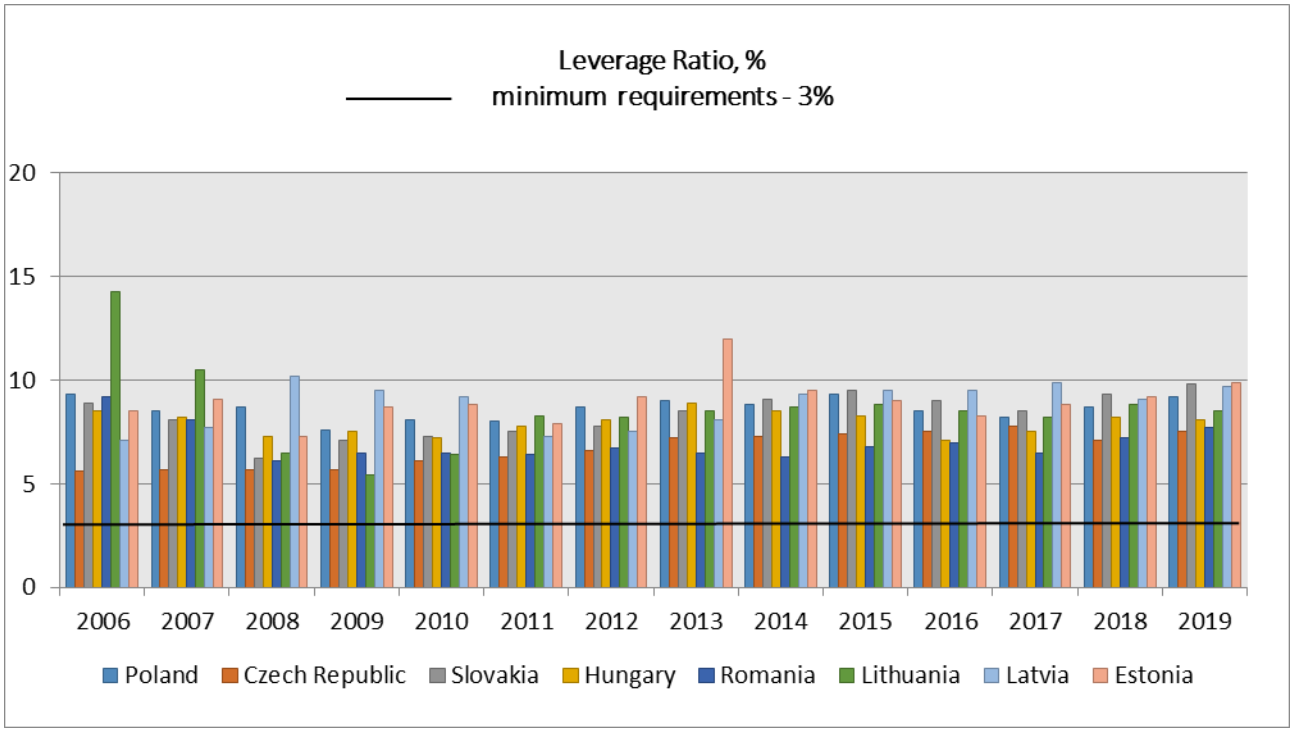

Figure 3. Leverage ratios in banking sector of Eastern European countries, % (calculated by the authors**)**

In the next step will be examined how strong and stable the capital base of commercial banks in Eastern European countries was within the period 2006 to 2019. To assess the stability of commercial banks, the concept of "capital safety margin" is introduced, which is defined as an excess of the actual capital tier above the minimal requirement established by a supervisory body. Assessment of "capital safety margin" in the banking sector of Eastern European countries includes the analysis of complete fulfilment of requirements for establishment of the capital buffer (+ 2.5%) in accordance with Basel III (Figure 4).

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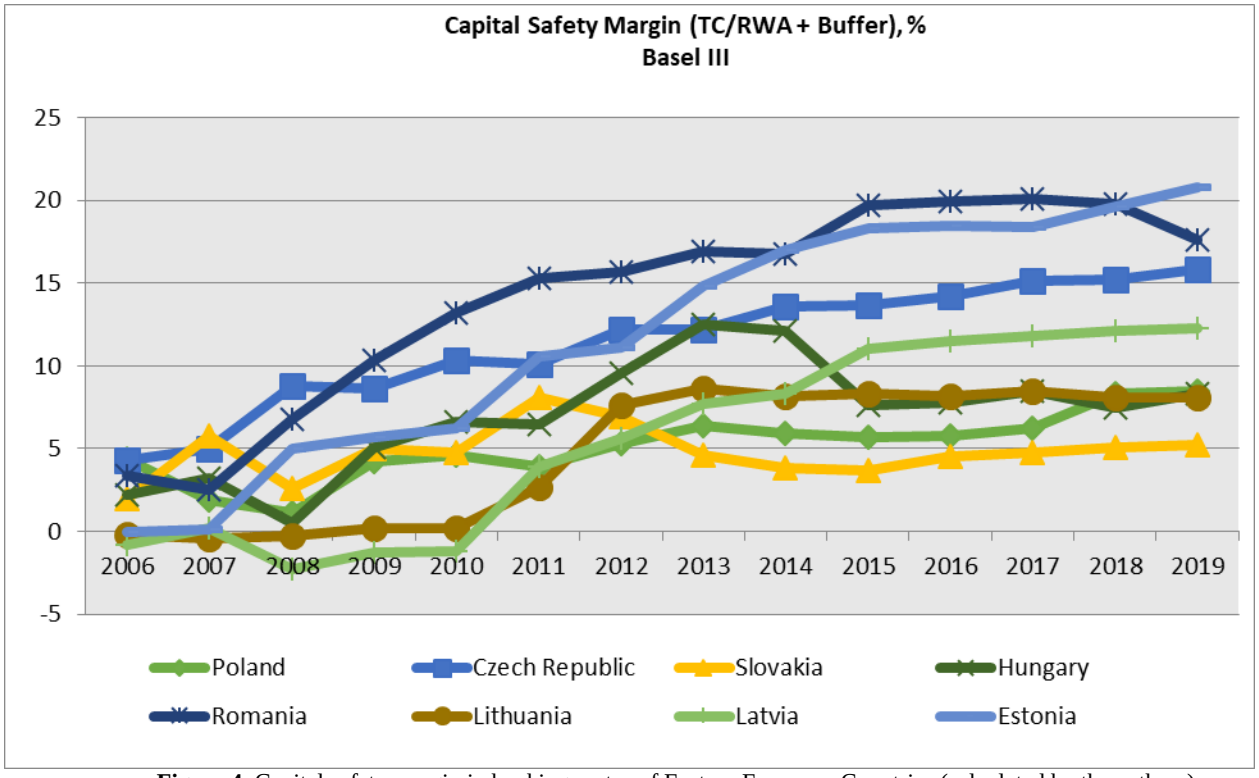

Figure 4. Capital safety margin in banking sector of Eastern European Countries (calculated by the authors)

Thus, as a result of the analysis it was found out that the banks had the minimum capital safety margin during the crisis period. The Latvian banking sector in this period appeared to be especially vulnerable. During the period 2006 to 2010 Latvian commercial banks had a negative safety margin in accordance with Basel III, therefore the transit to the new standards became especially complicated for Latvia. However, by 2011 Latvian banking sector already had a positive capital safety margin and demonstrated its consistent upward trend. Stable, progressive and even behavior features the capital safety margin of Czech banks. Czech banks had an adequate safety of the capital base and were ready to withstand the financial shocks during the crisis period. In Romanian banking sector the safety margin is largely ensured at the expense of tier 2 capital while the banks of Poland, Czechia, Slovakia, Hungary and Estonia provide the capital safety margin mostly due to the increase in the share of the equity capital.

4. Regression analysis as a method of banks capital management

As Latvian banks were the most vulnerable during financial crisis, a regression analysis of capital for Latvian commercial banks was carried out. For purposes of regression analysis, data for the period 2006 – 2019 with quarterly distribution were used. The modelling was carried out in SPSS statistical program. The regression analysis was performed by *stepwise* method with natural logarithm of bank capital amount being the independent variable (*capital*). To carry out the modeling by means of economic analysis, the following 9 indicators were selected: annual inflation rate (*infl*); natural logarithm of gross domestic product (*gdp*); natural logarithm of assets Latvian commercial banks (*size)*; natural logarithm of credit portfolio amount of commercial banks (*cr_portf);* natural logarithm of securities portfolio amount of commercial banks (*sec_portf*); natural logarithm of deposits amount at commercial banks (*deposits*); natural logarithm of subordinate capital of commercial banks (*sub_cap*); natural logarithm of net interbank position of commercial banks (*interbank)*; ratio of credit provisions to gross credit portfolio (*provisions*).

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The task of the regression analysis is to confirm the hypothesis about influence of factors selected by the method of economic analysis upon value of bank capital. In order to check the hypothesis on absence of autocorrelation of balances the Durbin-Watson test was performed. Statistics of Durbin-Watson coefficient equal to 2.388 witnesses that the absence autocorrelation of balances can be stated with 95% probability. The summarized results of the regression analysis are presented in Table 3.

Table 3. Model Summary for regression analysis of banks' capital (calculated by the authors)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	0.983	0.968	0.968	0.1683	2.297
2	0.987	0.979	0.977	0.1458	
3	0.992	0.981	0.982	0.1271	

Three models were obtained in the result of modeling, of which all demonstrate a high determination ratio. In the table 4 each model is considerated individually and asses the significance of factors (Table 4).

Table 4. Regression ratios of factors influencing the amount of banks' capital (calculated by the authors)

Model	Unstandardized Coefficients		Standardized Coefficients Beta	t	Sig.
	B	Std.Error			
1. (Constant)	0.478	0.301		1.596	0.000
size	0.819	0.028	0.986	42.208	0.000
2. (Constant)	-0.254	0.287		-0.825	0.000
size	0.857	0.021	1.034	46.214	0.000
provisions	1.879E-02	0.03	0.109	4.877	0.000
3. (Constant)	-5.827	1.331		-4.375	0.000
size	0.462	0.095	0.558	4.834	0.000
provisions	1.907E-02	0.02	0.108	5.567	0.000
gdp	0.821	0.193	0.485	4.278	0.000

0.000 p-values of all factors witness that the selected factors are statistically significant with probability higher than 99.9%. The performed correlation analysis of factors influencing the result (see Table 5) showed that the assets of commercial banks had the strongest correlation dependence with the result – the amount of bank capital.

Table 5. Correlation coefficients of factors influencing the amount of bank capital (calculated by the authors)

	Capital	Provisions	Size	GDP
Capital	1			
Provisions	-0.368	1		
Size	0.988	0.468	1	
GDP	0.899	0.008	0.987	1

Meanwhile, the factors of commercial banks' assets and GDP are tightly intercorrelating (correlation ratio = 0.987) which is evident since within the analyzed period the banks increased their assets at the expense of crediting in pre-crisis period which, in turn, contributed to the increase in GDP. Banks' credit activity is slowed down in crisis period and in the first 5 years in post crisis period that led to slowdown in growth rates of banks' assets and to slowdown in GDP growth rates. To avoid the presence of two tightly correlating factors in the model, the one of them which correlates more strongly with bank capital – the amount of assets was left off. Thus, the second one of the three obtained models was chosen, because this model describes 97.7% of variations in the

amount of bank capital at Latvian banks. The results of dispersion analysis demonstrate that the model is statistically significant with 99.9% probability.

Summary

Growing requirements for the capital will increase the borrowing power and solvency of banks and, therewith, the sustainability of the entire banking sector. The banking system and economy in general will be more resistant to financial shocks. The regulations based on Basel III are contributions to reduction in systemic risk and prevention of systemic crises in future.

Basing on obtained findings, the following proposals can be concluded for commercial banks:

1. Ensure continuous control and monitoring of capital adequacy and changes in indicators Tier 1 capital ratio and total capital ratio.
2. Review the capital management policy not rarer than once a year.
3. Estimate the capital demand of banks in stress situations as well as taking into consideration long-term strategy.
4. Timely reveal reasons and factors having impact upon changes in capital indicators.
5. Use regression analysis for management of bank capital.
6. Continuously search for possibilities to increase equity capital through emission of shares.

The banks' equity plays a substantial role in the formation of banking resources. Regarding this would be interesting to investigate banks capital management in total banks resources management, especially the impact of a financial leverage on the results of banking activity. Further research also may be devoted to the study of regulatory requirements influence on economic growth. These issues can be investigated in banking sector of different countries.

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TRANSNATIONAL CORPORATIONS IN PRIVATE INTERNATIONAL LAW: DO KAZAKHSTAN AND RUSSIA HAVE THE POTENTIAL TO TAKE THE LEAD?

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Abstract. The aim of this paper is to determine role of transnational corporations (TNCs) in a struggle of Kazakhstan and Russia towards leadership. Concepts and hypotheses from available literature on economic globalization, TNCs, their impact on national economies, and innovation-driven development were analyzed. Most Kazakh corporations have low nominal capitals and hold shares, total value of which does not meet minimum requirements for global competition. Kazakhstan and Russia fail to secure mutual benefit of participants in investment relationship, as well as national interests. Foreign investors professionally utilize all the gaps and weaknesses that can be found in the investment law. In this regard, TNCs are the most prepared, as they have substantial resources to create favorable conditions for market presence.

Keywords: transnational corporation; international investing; foreign direct investment; capital concentration; cross-border penetration; mergers and acquisitions; investment policy

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JEL Classifications: K33; P33.

Additional disciplines: law

1. Introduction

Under current conditions of international investing, transnational corporations are among the main participants in investment relationships. The term "Transnational Corporation" (TNC) emerged as a compromise during negotiations on the UN mandate restricting international monopolies in developing countries (Sagafi-Nejad and Belfield [2014)]. The United Nations use it to designate an organization that, regardless of its type of ownership

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(private or public), operates in two or more countries in accordance with a decision-making system that allows for coordinated policy and a common strategy. Transnational corporations operate their own facilities outside their countries of origin and without a centralized system to allocate resources, technology and to assign responsibilities (Khasbulatov [2015)]. The United Nations Conference on Trade and Development (UNCTAD) expands the definition with parent companies and their foreign affiliates. A transnational corporation refers to a corporation that carries out production and (or) marketing activities as long as these activities take place outside a parent country. TNCs have a great impact on host country's economy. Cross-border operations constitute a significant portion of foreign trade turnover even in large Western countries. Corporate globalization allows companies to transfer substantial resources from country to country for their own benefit. TNCs effect on national economy depends on economic power of subjects engaged in business relationship and on a status of companies established in a host country (Tauris 2011). TNC is a monopolist that undertakes foreign direct investments (FDI), operates outside its country of origin, has multiple affiliates and ventures, and influences host country's economy. It is a driving force behind crucial processes in world economy. A transnational corporation defines dynamics, structure, and competitiveness of goods and services in the global market and controls international capital movements. Because of their production and financial capabilities, TNCs engross knowledge-intensive units thereby contributing to technological progress in production (Sacher and Cooney 2018).

There are also other criteria for classifying a particular company as transnational. Among them, there is an annual income of over $100 million. Based on international investment experience, other criteria may include:

1. International coverage (countries in which a company operates, from 2 to 6 countries minimum);
2. Capacity (countries in which company's production facilities are located);
3. Company's size;
4. High proportion of voting shares (25% or more). This minimum ensures company's control over economic activities of a foreign enterprise and represents FDI;
5. Multinational staff.

TNCs have a constantly growing role in international production, trade, finance and other areas. The world economic system comprises about 100 transnational corporations that consolidate more or less unlimited economic power and secure about a third of all foreign investments (United Nations Conference 2011).

Today, there are many TNCs scattering across developing and developed countries. It is remarkable that both face the same problems, which are associated with a fast-economic growth, such as:

1. FDI policy liberalization, which opens up new opportunities for corporate development;
2. Advancements in the field of transport, communication and information, and technologies that create opportunities for managing integrated industrial relations with foreign affiliates;
3. Increasing competition between organizations, which encourages them to take advantage of new opportunities.

Current roles of transnational corporations in global economy are as follows:

– TNCs control approximately two-thirds of the world trade and 40% thereof takes place within TNCs. This means that trade occurs not at market but at transfer prices, which form under a long-term policy of a parent corporation;
– TNCs account for about a half of global industrial production;
– TNCs employ approximately 10% of non-agricultural workers (almost 60% of employers are parent companies);
– TNCs control approximately four-fifth of all patents, licenses and know-how existing in the world and thus have a significant role in global R&D (Tomasic [2017)].

From the legal point of view, one of the most distinguishing features of transnational corporations is an inconsistency between their economic content, their economic substance and their legal form. Legal construct of TNC itself implies a presence of multiple entities (parent company and foreign affiliates) with their own interests (Matsuzawa 2019). It is rather difficult to designate nationality of transnational corporations because their parent

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companies and subsidiaries may be established legitimately in other countries and have different legal identities. This suggests that the main characteristics of a transnational corporation that allow illuminating its legal side are: 1) legal multiplicity; 2) international focus; and 3) ability to affect economy of a host country.

TNCs are often known as multinational corporations or global companies but there is an ultimate difference between these three types of organization. Global companies have a marketing campaign that does not adapt to local norms, whereas multinational corporations adapt their marketing messaging to fit each culture group (Preston and Windsor 2013). Genuinely, the higher degree of cross-border penetration, the deeper integration of TNCs into a national market. Therefore, TNCs not only own income-gathering assets in other countries but also produce consistent services or products (sometimes with an optional local feature added to the standard range). Although TNCs may be considered international for their operation in a cross-border environment, they are neither importers nor exporters alone.

Since the declaration of independence, the Republic of Kazakhstan and the Russian Federation have been maintaining their focus on economic development and population well-being. At the same time, a full support and protection of foreign investments remain among the most important directions of national economic policy (Nukusheva and Kudryavtseva 2017).
From this perspective, actions to achieve a deeper penetration by TNCs into a market of a host country become a hot topic.
The main stages of this penetration are:
1. Market Presence
The company may either have a permanent office (representative office, branch office, subsidiary, joint venture) in the host country or produce large-scale services besides trade (engineering, consulting) without having such an office in the area;
2. Engagement in Production
Even if the company engages in production at the insignificant level, this commitment marks a new depth of penetration;
3. Dedication to R&D
Companies, especially representatives of new industries, set a high value to the potential of human resources and R&D in the host country. For hosts, such an interaction is a direct route to foreign experience in the field of technology (Berberoglu 2016).
Variously termed representative offices and branch offices, and subsidiaries, and joint ventures are mentioned in same contexts. The alternative use of these words is a reason for legal misinterpretation when it comes to market penetration by TNCs.

Subsidiaries or legal entity's set-apart subdivisions, performing all its functions or a part thereof (including functions of representation), appear due to production establishment and expansion (Civil Code of the Republic of Kazakhstan 1994). Representative offices form another case. Difference between a representative office and a joint venture is even more pronounced. Therefore, one my consider TNCs penetrating the economy of a host country through two stages: 1) market presence (implies international business activity, including through representative offices); and 2) production establishment (opening of a branch office, a subsidiary or a joint venture). Each stage may provide for both deal-specific actions and a whole range of legal actions to create a legal entity. It is obvious that the first stage is an initial step to gather information necessary for making a decision on deepening the penetration (on establishing production in the particular area). In terms of the third “main” stage of penetration, the company that dedicates R&D activities to different national markets does not deepen its penetration. In fact, dedication to R&D is likely to be a sign of engagement in production because R&D centers cannot be launched apart from production units.

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In the global context, transnational corporations have an effect on innovation and technology as powerful as on economy. In 2007, 1000 EU companies and 1000 non-EU companies invested a total of €372 billion in R&D or about 80% of global R&D investment. In the US, the share of TNCs in R&D reached 74% (Kordos and Vojtovic, 2016). In other words, TNCs use available resources of other countries to gain a competitive advantage. In recent decades, enterprises make a significant contribution to technology development. TNCs spend on R&D more compared to national governments. Thus, expenditures on R&D in Canada amounted to $7.2 billion in 1980s or 1.3% of GNP, whereas six TNCs allocated $2.1 billion for these purposes and there were more of transnational investors.

Small developed countries rely on technology in their competitive struggle and thus spend on R&D more. For example, Sweden spends $5.5 billion or 2.9% of GNP. Switzerland allocates less compared to TNCs: government expenditures amount to $3.9 billion or 2.9% of GNP, while transnational companies allocate $4.4 billion or 5.9% of their sales (Henderson 2014).

The 2016 Global R&D Funding Forecast foresaw the increase in global R&D investments by 3.5% in 2016 to a total of $1.948 trillion for more than 110 countries that had significant R&D investments (more than $100 million) at the time. As in previous years, Asian countries (including China, Japan, India and South Korea) account for more than 40% of all global R&D investments, with North American investments now less than 30% and European R&D only slightly more than 20% (2016 Global R&D Funding Forecast 2016).

R&D undertakings in the world focus on: 1) adapting goods and services produced by TNCs to local norms; 2) creating new products to meet local demands; 3) optimizing company's R&D through the involvement of foreign affiliates; and 4) monitoring achievements for competitive advantages. Corporations with most ambitions set additional goals – to shape a global corporate culture (IBM) and to contribute to global science (Sony).

On the UNCTAD's transnationality index in 2002, Russia reached only 19%, which is less compared to indicators of the neighboring countries (Estonia had 39%, Moldova – 30%, Lithuania – 23%) (Jones and Wren 2016). Russia found its place among the top holders of FDI stocks in 2004 with a total equity capital of $98.444 billion. Poland, Hungary, and the Czech Republic rose their inflow of FDI to $60 billion. The Republic of Kazakhstan lags behind with $22.399 billion, which still allows the country to occupy a second place among the CIS and Baltic countries. Kazakhstan is a recipient of higher investments compared to Central Asian countries (inflows into: Turkmenistan reach $1.464 billion; Uzbekistan – $1.057 billion; Kyrgyzstan – $568 billion; Tajikistan – $495 billion). Another evidence on favorable investment regime in Kazakhstan is its consideration by the World Bank as one of the top 20 most attractive countries for investment. For countries in transition, FDI inflows decreased by 54% due to conflicts and a decline in commodity prices (Khasbulatov 2015).

This study aims to determine the role of TNCs in the struggle of Kazakhstan and Russia towards leadership.
The purpose of the study is to identify the legal specifics of TNCs in the markets of Russia and Kazakhstan. The research tasks are as follows:
- assessment of penetration of TNCs in the markets of Russia and Kazakhstan;
- analysis of interaction of TNCs with infrastructure elements of the economies of Russia and Kazakhstan;
- systematization of examples of conflict situations' legal resolution between TNCs and local companies;
- finding the most vulnerable areas of local market regulation;
- outlining judicial experience of Russia and Kazakhstan in procedural cases involving TNCs.

TNCs remain among the factors of markets' significant transformation. Therefore, it is especially important to monitor the state of legal relations between TNCs and the host state, since such relations directly determine medium-term macroeconomic perspective of the local market. Russia and Kazakhstan, as developing countries with a fairly high level of purchasing power, are of particular interest to transnational corporations. These

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countries, due to imperfection of existing regulatory frameworks, can become whether a zone for rapid trade and industrial growth or a risk zone for structural crises. The said directly affects sustainability of socio-economic development of the region and thus determines relevance and importance of the current study.

This article is structured as follows. Section 1 provides the description and definition of TNC as a notion together with characteristics thereof, presents an overview of literature on TNCs both globally and with relation to Kazakhstan and Russia, defines actual questions and tasks of the study. Section 2 contains sources and methods used to analyze collected data together with the scheme of the research. The results of the study together with discussion thereof are presented in Section 3. Conclusions and recommendations of the research are provided in Section 4, and, finally, Section 5 contains study limitations.

2. Methodology

Theoretical and methodological framework includes concepts and hypotheses from available literature on economic globalization, TNCs, their impact on national economies, and innovation-driven development.
All speculations and conclusions are justified using a systematic approach and specific methods, such as synthesis, historical-logical analysis, inductive-deductive analysis, structural-functional analysis, and comparative analysis.
The following sources were used to collect data for the purposes of this research:

- previous studies (relevant references are indicated for each study in the text);
- World Investment Reports of the United Nations Conference on Trade and Development;
- Civil Code of the Republic of Kazakhstan (RK Civil Code);
- Pig Books of Citizens Against Government Waste;
- Speeches of the President of the Republic of Kazakhstan;
- Speeches of the Prime Minister of the Republic of Kazakhstan.

Data and information were used for the purposes of this study, as follows:

- figures and data of TNCs operating in Kazakhstan;
- figures and data on TNCs operating globally and on country level;
- figures of FDI, return on foreign investment on global and country level;
- figures and data reflecting TNCs' influence in the USA;
- US and Canada tax incentives;
- Kazakhstan governmental incentives;
- information on agreements signed by Kazakhstan on implementation of projects with major investors;
- figures and data of cross-border M&A deals, including strategic alliances;
- figures and information on TNC-related court proceedings and decisions;
- other data and information analyzed for the study purpose.

The scheme of the research is given in Figure 1.

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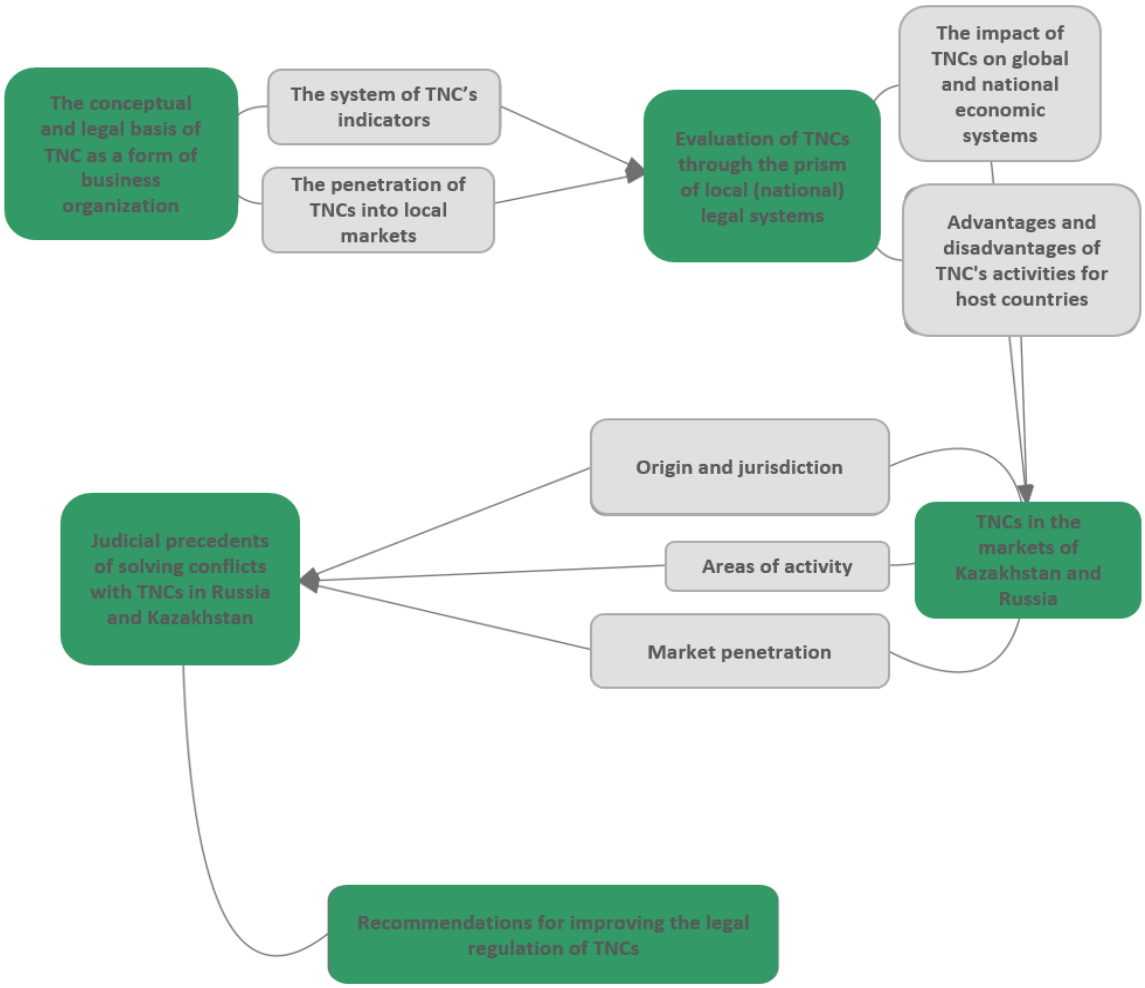

Figure 1. The scheme of the research

As shown in Figure 1, the research has five main stages (colored in green). First, TNC as form of business organization was examined from conceptual and legal points of view. Second, TNCs were evaluated in the view of local markets' legislation, including that of Kazakhstan and Russia. Third, various aspects of TNC operations on local markets were surveyed. Fourth, TNC-related legal proceeding held in Kazakhstan and Russia to resolve conflicts were analyzed. Based on legal precedents, recommendations of improving TNC regulation were developed as the fifth and final stage of the research. As intermediate stages, TNC indicators, markets penetration, impact on global and national economies, advantages and disadvantages for host countries, as well as TNCs' origin, jurisdiction and areas of activity were also investigated in course of the survey.

3. Results and Discussion

Today, there are about 40 thousand TNCs, with about 180 branch offices in 150 countries. By the beginning of the 21st century, the world's 500 largest TNCs have reached dominant market presence, accounting for 61% of global GDP. They control at least 70% of world trade and sell 80% of electronics and chemical products, 95% of medication, and 76% of engineering goods (Mudacumura et al. 2017). Among them, 100 TNCs control $14 trillion in assets or one-third of global FDI (Perrone 2018).

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There are about 30 projects with TNC participation in Kazakhstan and companies like Danone, Lotte Group, BTM, and Coca-Cola even opened their production facilities there. Companies like Samsung, LG Electronics, General Electric, Volkswagen etc. have also opened their representative offices and production facilities but mostly for local development support through different initiatives and job creation, rather than for product nationalization (Motohashi [2015)]. In Kazakhstan, the largest TNCs are particularly active in an oil industry. In 1992, the Republic of Kazakhstan and Agip (Italy) and British Gas (the UK) companies signed an agreement on development of the Karachaganak oil and gas field. A year later was a starting point of cooperation between Kazakhstan and American oil companies when the contract was signed with Chevron Corporation for a period of 40 years (Stopford 2011).

The following are among the largest oil companies successfully operating in Kazakhstan today:
1. European companies:
British Gas (the UK);
Eni. (Italy);
Total SA (France);
Royal Dutch Shell (Germany);
Repsol YPF (Spain);
OMV Petrom S.A. (Romania);
Maersk Oil (Denmark);
2. US companies:
ExxonMobil;
ConocoPhillips;
3. Russian companies:
Lukoil and Rosneft;
4. Asian companies:
China National Petroleum Corporation (China);
Mittal Investments (India);
ONGC Videsh Ltd (India);
Kazakhturkmunai (Turkmenistan).

According to the 2018 World Investment Report, FDI flows to transition economies declined by 27%, to $47 billion, the second lowest level since 2005. This decline reflects geopolitical uncertainties and sluggish investment in natural resources (UNCTAD, 2018).

This downward trend was due to sluggish FDI flows to four major CIS economies (the Russian Federation, Kazakhstan, Azerbaijan and Ukraine). By contrast, flows from developing economies fell by 6% to $381 billion, while those from transition economies rose by 59% to $40 billion. As a result, flows declined, especially to the Russian Federation (by 32%, to $25.3 billion). Thus, most FDI inflows in Russia come to natural resources sector. A decrease in rates of return is a key contributor to an investment downturn. Global average return on foreign investment is now 6.7%, from 8.1% in 2012. Return on investment is in decline across all regions, with the sharpest drop in Africa, Latin America and the Caribbean. The lower returns on foreign assets may affect longer-term FDI prospects (Lederman et al. 2013).

Many countries continued policy efforts aimed at attracting FDI. In 2017, 65 countries and economies adopted at least 126 investment policy measures, of which 84% were favorable to investors. They liberalized entry conditions in a number of industries including transport, energy and manufacturing (UNCTAD, 2018). They also promoted and facilitated investment by simplifying administrative procedures, providing incentives and establishing new special economic zones (SEZs). Recently, an increasing number of countries have taken a more critical stance towards foreign investment. New investment restrictions or regulations in 2017 mainly reflected

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concerns about national security and foreign ownership of land and natural resources. Some countries have heightened scrutiny of foreign takeovers, in particular of strategic assets and technology firms. Several countries are considering tightening investment-screening procedures. Investment treaty making has reached a turning point (Morschett et al. 2015).

The US and Britain control about 30% of Caspian oil fields and 40% of natural gas fields and are not complacent. Today, Western companies control over 30% of oil fields and over 80% of gas fields in Kazakhstan, and over 35% of gas fields in Azerbaijan (Inkpen and Moffett [2011)]. An insufficiently effective production strategy that is currently in use in Kazakhstan resulted in the following division of subsoil users:

1. state-owned oil companies develop about 60 fields with residual recoverable reserves of approximately 800 million tons;
2. TNCs develop more than 10 fields with extractable reserves exceeding 1 billion tons (Platts 2017).

Therefore, it is necessary to take into account both positive and negative sides of cross-border penetration. TNCs in a market bring the following benefits to a host country:

– capital inflows and exports increase;
– management and marketing strategies update;
– technologies boost;
– proficiency enhancement and salary increase;
– advanced infrastructure formation (Jovanovic 2015);
– standard of living increase (through provision of goods and services);
– job creation (up to 53 million jobs);
– capital, goods and labor integration (Islam and Nag 2010).

The Kazakhstan's presence in the world market provides an increase in exports and budget receipts.
Among drawbacks:

– import dependence, which inhibits development of national processing sectors;
– employment imbalance within a country (Ocampo and Ros 2011);
– strong competition between TNCs and local companies;
– consumption standards imposed by TNCs that stimulate artificial needs;
– uneven development on a global scale (less developed countries lose competitiveness and become a natural-resource base for TNCs);
– TNCs may organize pressure on host government and engage it in confrontation; they may also bribe local politicians and finance conspiracies against the government (Whyte 2015). Aside from the above, host countries are at risk of becoming economically dependent upon TNCs, as they become owners of the main strategic resources and because of this acquire a real opportunity to define politically and economically important directions of national development (Omoteso; Yusuf 2017).

Transnational corporations have a significant development and production potential and control over economic, organizational, technological, and intellectual resources. TNCs utilize tight and sometimes aggressive strategies. This allows them to compete with many countries and even to a certain extent impose own interest upon their economic activities. Thus, one may notice a growth in TNC's influence not only in economic but also in political arena (Romashkin 2016). Individual countries and TNCs may find a common ground if TNCs purposely finance a sphere that is strategically important for these particular countries (e.g., campaigns). Thus, through the past 20 years, a cost of parliamentary elections in Japan grew 70-fold. Final price for presidential and congressional elections rose from $160 million in 1976 to $1 billion in 1980 and to $1.6 billion in 1984 (Citizens Against Government Waste 2013).

TNCs often prefer to finance election candidates so that to lead their way to the government or parliament. For example, during the presidency of Ronald Reagan, every fourth member of the government was a multimillionaire

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and many of them were entrusted with government posts in sectors where they had major financial interests prior to designation (Bodley 2015). During the presidency of George W. Bush, key politics and the president himself were previously engaged in large oil business. For example, the US Secretary of State Condoleezza Rice was the Director of the Chevron Corporation (the corporation even named one of its largest oil tankers in her honor). The US Vice President Dick Cheney served as Chairman of the Board and Chief Executive Officer of Halliburton, leading provider of oil field services in the Caspian (Pilisuk and Rountree 2015).

From the perspective of raw material security, of interest might be experience of US and Canada. They made the tax system stimulate small state-owned oil companies that together are capable of producing 30 to 40% of oil on economically acceptable competitive terms (Isser 2016; Begichev et al. 2019). However, capital of national companies should not be excessively increased, as it results in reduced control over their activities and reduced transparency. Instead of financing one or two monopolists, it is better to channel budget allocations to many small state-owned companies so that they could develop and improve production quality. It is also necessary to create an environment in which private companies could grow into TNCs, as any developed country owes its economic growth firstly to TNCs and only then to small and medium-sized businesses. Best experience shows that national capital will gain an opportunity to act as a competitive force if a country houses large transnational companies and a government supports and regulates them in an effective way (Pape 2012).
At present, a strategically important task of Kazakhstan is to re-focus from raw materials. Thus, the President of Kazakhstan has repeatedly instructed government to take control over attraction of TNCs to a processing sector. In his speech, he emphasized the important role of companies like Kazakh Invest and Kazakh Export (Nazarbayev at the enlarged session 2018).

So far, first steps towards this goal have been made. Therefore, non-petroleum sectors already house several large TNCs, including LG Electronics, Coca-Cola, Volkswagen Group, Knauf, Samsung Electronics, Mittal Steel, etc. In fact, a few corporations generate effective demand in real sector of economy. They are mainly large exporters of fuels and raw materials (e.g. KazakhOil, KazTransOil, Hurricane Kumkol Munai, Shymkentnefteorgsintez, the Kazakhstan Electricity Grid Operating Company, Ispat-Karmet, Kazakhmys Corporation, Kazzinc, Kazakhstan Aluminum, and Ust Kamenogorsk Titanium and Magnesium Plant). Financial sector produced two of national "champions" among corporate structures – Kazkommertsbank (sells securities, Eurobonds and GDR shares, in stock markets of Europe and Asia) and Halyk Savings Bank of Kazakhstan (accumulates two-thirds of retail deposits) (Lyutova and Suleymanova 2018). Country was engaged in cooperation with Basel to build a gas chemical facility. General Electric is planning to assemble locomotives inside the country and Samsung began production of sulfur concrete. Heaven House produces household and office furniture, while Skoda has a running car assembling plant. Kazakhstan plans to cooperate with Pilkington and Steinert to establish glass production in the country. There are also preparations made to launch a range of projects with HeidelbergCement AG and Cement Franze/Ital Cement (Litvintseva 2018).

Non-petroleum sector holds about 50% of FDI inflow and this positive trend remains to date. In 5 months in 2018, the Republic of Kazakhstan signed agreements on implementation of 69 new projects with major investors, including 10 TNCs from China, Turkey, the United States, the United Arab Emirates, the United Kingdom, the EU and other countries (Kazakhstan – the country for doing business 2018). As the President of Kazakhstan notes in his speech at the third Kazakhstan Investment Forum, inputs into the budget of Kazakhstan come from not just petroleum sector, as it is genuinely assumed. In fact, FDI inflow to this sector is below 25% and the main money-earners are mining industry, metal industry, ferrochrome production and exports (Rodriguez 2010).

Experience of developed oil exporting countries shows the need for developing an appropriate economic and political strategy. Selling shares on foreign stock exchanges is considered one way to boost national economy, but it also poses a threat of losing economic independence. Existing world order is now about to be remade and countries are expected to pass their roles of main players on to leading transnational corporations (Bulatov, 2016).

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Therefore, it is advisable to search for new ways of mutually beneficial cooperation with TNCs to integrate Kazakhstan into the world economy.Thus, forming transnational corporations for capital increase is an appropriate and economically sound solution. However, it should be ensured that FDI flows do not make a host country economically dependent, as the history knows such cases (Alheet 2019).

To date, world-class corporations are not to be found in Kazakhstan, although the country makes specific steps in this direction. Most Kazakh corporations have low nominal capitals and hold shares, total value of which does not meet minimum requirements for global competition (market capitalization is below $1 billion) (Thomsett 2014). With that, refocusing large domestic corporations and enterprises towards transnational is one of main prerequisites for effective market presence.

According to Russian experts, the majority of Russian industrial enterprises have an outdated structure and operate in the context of financial uncertainty. Foreign investors are not accustomed to conducting business with such enterprises because climate of financial uncertainty restricts their financial instruments (Yakupov, 2013). They will not cooperate also due to a high risk of not fulfilling assumed obligations or fulfilling them improperly. It is also worth noting that in some cases, it is far profitable to establish a new enterprise than to reanimate the old one. These cases involve tax arrears, arrearage of wages, loan debts, outdated equipment, low-skilled personnel, and many other problems that require investing. For a long time, this scenario has been the most likely one but a situation takes a turn for better – newly equipped enterprises appear and business interconnections are being made with foreign partners. Generally, a domestic investor creates a positive model of long-term, productive and mutually beneficial cooperation. Under such conditions, foreign investors are given new opportunities, while domestic investors may face new risks (e.g., less competitive investors may be easily absorbed or otherwise outcompeted by foreign investors). These prospects are true for TNCs, which can be in a competitive relationship only with other TNCs, and other market participants should not even bother engaging in it.

TNCs come in their strategic standing and reach corporate goal not only through mergers and acquisitions (M&A) but also through special inter-firm agreements called strategic alliances (Van Geenhuizen and Nijkamp, 2012). In the market, M&A between companies occur on a constant basis, but in recent years, they acquire a form of strategic alliances.
Significant cross-border M&A deals of recent years are:

– British company Vodafone joined forces with American company AirTouch Communications in 1999 in a deal worth $60 billion;
– Vodafone AirTouch and the German company Mannesmann reached a $203 billion merger in 2000;
– France Telecom won the UK based mobile company Orange in 2000 in a deal worth $46 billion;
– Deutsche Telecom bought the American corporation VoiceStream Wireless Corp. for $29 billion in 2001 (Nolan 2014).

The world's top telecommunication companies include companies from the US, the UK, Germany and France. Companies in Hong Kong also take an active part in cross-border mergers and acquisitions, unlike Japanese companies, which are rather slow to engage. For example, NTT Docomo Inc., predominant mobile phone operator in Japan, won 15% stake in KPN Mobile (Netherlands). This recent acquisition can be considered a strategic alliance to split expenses for creation of third-generation (3G) mobile services (Khosrow-Pour 2008).

Cross-border M&A increasingly occur in the field of Internet services because companies are interested in expanding the range of services provided to mobile users, including e-mail services, etc., and thus, attract more consumers. This sphere of IT&T (information technology and telecom) is rapidly developing on a global scale, but major M&A occur only in developed countries, barring some cases when similar processes start in developing countries (China, India, Singapore, Turkey, and Mexico). In this regard, petroleum companies of the Russian

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Federation have the greatest potential due to a significant amount of resources in their hands, which allows them to compete with world leaders in this industry, sell raw materials and permit an extraction operations in the company-controlled area. Besides, many global TNCs have divisions in the Russian Federation (Nosova and Ronshina 2017).

Strategic alliances involve the latest software developers and manufacturers of communication devices, in particular, Microsoft (USA), Motorola (USA), Psion (Great Britain), Nokia (Finland), Ericsson (Sweden), and Sony (Japan). Between 1992 and 1996, several strategic alliances were established between leading transnational corporations in telecommunication sector. Telecommunications companies in Sweden, the Netherlands and Switzerland ventured together in the first alliance Unisource. Subsequently, Unisource united with the WorldPartners alliance, which had 25 members at the time (Robinson, 2014). The third telecommunication alliance is known as the Concert Communications. The latter was formed as a joint venture of British Telecom and MCI Communications. By 1998, it had grown to 50 participants. In 1996, the Global One alliance was created and included Sprint, France Telecom and Deutsche Telecom. In the late 90s, these strategic alliances split up. For example, British Telecom began to cooperate with AT&T; WorldPartners almost ceased to exist; Global One had financial problems; and German and French partners had disagreements regarding Deutsche Telecom/Telecom Italia venture (Welfens et al. 2012).

The major difference between M&A and strategic alliances formed in the host country is the form of control. Cross-border M&A provide almost unlimited control in a certain segment of economy and push aside undesirable competitors in the market. A strategic alliance is more flexible when it comes to influencing the economy of a host country within a framework of business cooperation between economic entities. Its main advantage is a redistribution of risks between members, whereas a disadvantage is that all members are co-dependent and their efforts must be well coordinated (otherwise, losses are inevitable). In turn, M&A allow benefiting from market dominance but require long-term planning, as they need extensive amounts of financial resources and time to cover initial costs.

Despite a rather significant FDI inflow, there are not enough cross-border M&A in Kazakhstan. Generally, cross-border M&A deals involve purchase and sale agreements. Between 2002 and 2004, total sales amounted to $936 million (5.8% in CIS countries and 52% in Russia), while total purchases were $170 million (1.6% in CIS countries and 97% in Russia). However, M&A market in the Russian Federation may feel the influence of the US sanctions (Sharipov, 2012). With that, judicial practice shows that TNCs have a significant and not necessary positive impact on the economy of Kazakhstan. Thus, the Commercial Court judge of the Republic of Kazakhstan brought on a case concerning a suit of the Deputy Prosecutor General representing a list of companies vs. Trans-World Group. The claim was to invalid sale and purchase contracts and credit agreements. The companies involved in the case are the Aluminum of Kazakhstan OJSC, the Sokolovsko-Sarbaysky Mining and Production Association, the Aksu Ferroalloys Plant (the branch of Kazchrome Transnational Company), the Ferrochrome OJSC, and the Don Mining and Enrichment Plant. The case was settled on January 27, 1999 (Case No. 809-37-7) (Didenko 1999).

The Court found unproven planned "enslavement" of Kazakhstan enterprises by individual companies in the list of defendants. Among them, Trans-World Group PLC, Trans-World Metals International Limited, Trans-World SA, Trans-World (UK) Ltd, Trans-World (Allous) Limited, Indalo Trading Company Ltd, Global Enterprises Limited, Japan Chrome SA, Krasalao Limited, Neep, Trans-World Land Co. Limited, Eurasian Aluminum Consortium, Alkos Investment Syndicate S.A., Allied Intertrade S.A., Euro Utilities S.A., Transmetal Limited, Nippon Chrome Corp. The Court did not foreclose belonging of listed companies to TWG but pursuers did not prove these companies' direct participation in causing damage through a conclusion of unconscionable contracts, ineffective management, and actions that violate interests of Kazakhstan enterprises. Therefore, these defendants were delisted.

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Thus, the judicial decision concerning the Trans-World Group was to not recognize the TNC as an independent participant. Table 1 presents the final list of management companies, banks and traders that amounted to defense.

Table 1. Final list of management companies, banks and traders

Defendant	Address
Tykaz Chrome Corporation	Panm Chambers 3, P.O. Box 3152, Road Town, Tortola, British Virgin Islands
Landal S.A.M.	Les Acanthes, 6, Avenue des Citronniers, Monte Carlo, 98000 Monaco
Japan Chrome Corporation	Panm Chambers 3, P.O. Box 3152, Road Town, Tortola, British Virgin Islands
Whiteswan Worldwide Limited	Panm Chambers 3, P.O. Box 3152, Road Town, Tortola, British Virgin Islands
Ivedon International Limited	Panm Chambers 3, P.O. Box 3152, Road Town, Tortola, British Virgin Islands
United Global Bank Limited	Les Acanthes, 6, Avenue des Citronniers, Monte Carlo, 98000 Monaco
Zalogobank CJSB	Pogodinskaya Street 24, building 1, Moscow, Russian Federation
Eurasian Aluminum Consortium	94 Dowdeswell Street, P.O. Box 7521, Nassau, Bahamas; P.O. Box 659, Road Town, Tortola, British Virgin Islands
Transmetal Management Limited	Panm Chambers 3, P.O. Box 3152, Road Town, Tortola, British Virgin Islands
Minamet Investments Corp.	Cumberland Street, P.O. Box 529 Nassau, Bahamas
Whiteswan Limited	25 Harley Street, London W1N 2BR, England
Metallurg JSC	12 Bryanskaya Street, Moscow, 121059 Russian Federation
VIZEL LLC	Room 505, build. 249, Lenina Street, Elista, Russian Federation
Trans-World Metals International Limited	Panm Chambers 3, P.O. Box 3152, Road Town, Tortola, British Virgin Islands
Base Metal Trading Ltd.	Genesis Building, P.O. Box 813, Grand Cayman
General Products Inc.	Les Acanthes, 6, Avenue des Citronniers, Monte Carlo, 98000 Monaco; Panm Chambers 3, P.O. Box 3152, Road Town, Tortola, British Virgin Islands
Mineral Trading Resources Corp.	94 Dowdeswell Street, P.O. Box 7521, Nassau, Bahamas
Intermetal Group Ltd.	International Building, Wickhams Cay, Road Town, Tortola, British Virgin Islands
Swiss Aluminium Consortium	Panm Chambers 3, P.O. Box 3152, Road Town, Tortola, British Virgin Islands
Tradalco Ltd	14-15 Parliament Street, Dublin 2, Republic of Ireland
Alastro Management Corporation	Postfech 583, Aeulestrasse 38, FL-9490, Vaduz, Liechtenstein
Westdean Metals Inc.	Genesis Building, P.O. Box 813, Grand Cayman

Individual trade contracts and credit agreements were found to be invalid due to unfair and unacceptable terms. Documents imposed unprecedented terms of payment (180 days), as well as unfavorable loan conditions and precluded opportunity to search for and select best buyers and banks. The Court found these conditions to be artificially created and forcing Kazakhstan enterprises to enter into oppressive contracts (Didenko 1999). According to the Court, credit agreements were made to screen actual sale-purchase deals by changing a system and the amount of payment taken as a settlement in the form of a loan (Oshionebo 2018). Such actions were

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regarded as a violation of business ethics under the paragraph 2 of the Article 160 of the RK Civil Code. The Court came to a decision that Trans-World Group deprived enterprises of their freedom of business action, forcing them to enter into contracts with its companies on unfavorable conditions, thereby creating unfair competition and violating requirements of business ethics. According to paragraph 2 of Article 159 of the RK Civil Code, this is a good reason for an invalidation of transactions.
Thus, defendants were obligated to pay (Figure 2):

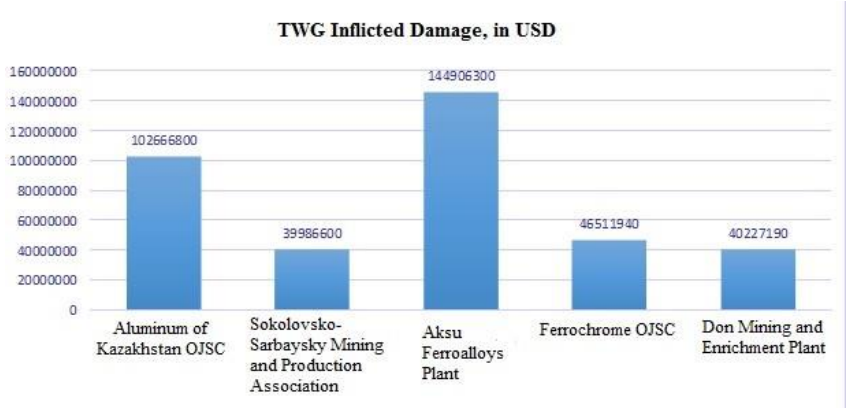

Figure 2. TWG Inflicted damage, in USD

Aluminum of Kazakhstan, OJSC:
the damage of $102.666.800. Restitution covered a debt under credits allocated by UGB ($13.262.000) and Zalogobank ($9.041.000) and compensation was $80.363.800;
Sokolovsko-Sarbaysky Mining and Production Association:
the damage of $39.986.600. Restitution amount included $24.927.000 in compensation for credit debt and $15.059.600 in compensation for damage.
Aksu Ferroalloys Plant:
the damage of $144.906.300. Restitution amount covered debts owed to UGB ($56.561.000) and Zalogobank ($14.319.000) and compensation for damage was $55.426.300.
Ferrochrome OJSC:
the damage of $46.511.940. Restitution covered a $33.818.000 debt and the company received additional $12 693 940 in compensation.
Don Mining and Enrichment Plant: the damage of $40.227.190. Restitution covered a debt under credits allocated by UGB ($14.325.000) and compensation was $25.902.190 (Picciotto 2018). This decision of the Commercial Court is one of the few that has been subjected to a thorough analysis by scientists in Kazakhstan. The case is most indicative of mistakes and a lack of professionalism among state authorities that failed to select suitable partners for Kazakhstan enterprises, to conclude beneficial contracts, to articulate conditions for early termination, and to ensure proper management. Prosecutor's office and the court attempted to repair what was damaged by following the sense of justice and the black letter law. While Kazakhstan enterprises were making efforts towards justice, their foreign partners were more interested in their own benefit from this relationship. The emerged conflict proves an imperfection of Kazakhstan legislation. Despite struggles that TNCs have in Kazakhstan, global situation is somewhat favorable. In the climate of crisis and market narrowing, investors are forced to look for candidates for capital injection. FDI deals are rather successful than unsuccessful (Basin and Greshnikov 2003). However, Kazakhstan and Russia fail to secure mutual benefit of participants in investment relationship, as well as national interests. Foreign investors professionally utilize all the gaps and weaknesses that can be found in the investment law (Aristova 2018). In this regard, TNCs are the most prepared, as they have substantial resources to create favorable conditions for market presence.

4. Conclusions

Transnational corporations and their business activities should be provided with a legislative framework. For this purpose, a special act – the Law on Foreign Investment Regulation in Strategic Sectors of Economy – is required. The document should have a separate section specifically devoted to a regulation of cross-border mergers and acquisitions in strategic sectors of the economy. Crucial aspects that need special legal regulation involve core principles of cross-border mergers and acquisitions; entities engaged in cross-border mergers and acquisitions, their rights and obligations; guarantees provided to participants in cross-border mergers and acquisitions; and the government control in the field of cross-border mergers and acquisitions.

5. Study Limitations

Since the conducted analysis is retrospective, recommendations and forecasts are valid and have high implementation value only in those economic and legal conditions that are discussed in the study (namely, in Russia and Kazakhstan).

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THE SUPREME AUDIT INSITUTIONS READINESS TO UNCERTAINTY*

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Abstract. The inefficient fight against the COVID-19 pandemic and earlier insufficient readiness to counteract terrorist attacks raise the question about the role of the supreme audit institutions (SAIs) in the situation, in which decision-makers take decisions in uncertainty conditions. The states did not prove themselves in conditions of uncertainty. In all countries, the situation is the same, too late decisions regarding anti-epidemic quarantine, lack of necessary measures to protect doctors and patients, too few respirators. Based on the analysis of several randomly selected SAIs from different parts of the Globe, this study found that the audit methodology tailored to a predictable environment became inappropriate in uncertainty conditions. Most of analysed SAIs did not find weak signals and wild cards related to pandemic. Those who found such signals did not use them in foresight, which results that parliaments, governments and the public are not ready for global threats. It creates risks for entrepreneurs.

Keywords: institutions and entrepreneurship; supreme audit institutions; uncertainty; risk; foresight; weak signals

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Additional disciplines (besides field of economics reflected in JEL classifications): management

1. Introduction

In most countries, modern SAIs started their activities at the beginning of the 20th century. Initially, SAIs carried out only financial audits, and after II World War also performance and compliance audits. SAIs guarded public finances and helped governments spend money wisely in times of economic prosperity and welfare policy (c.f., Mosher, 1979; Kożuch & Dobrowolski, 2014; the European Court of Auditors, 2019). Researches showed SAIs role in a stable environment (c.f., Pollitt et al., 1999; González-Díaz & Fernández, 2008; Blume & Voigt, 2011; González-Díaz et al., 2013; Bringselius, 2014; Jeppesen et al., 2017; Van Acker & Bouckaert, 2018; Cordery &

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Hay, 2019; Dobrowolski & Sułkowski, 2020). However, the environment has changed from predicable to uncertainty. There is a research gap do SAIs ready to carry out their audit service in uncertainty conditions. This study filled this research gap. Based on the analysis of several randomly selected SAIs, it was found that the audit methodology tailored to a predictable environment became inappropriate in uncertainty conditions.
The paper proceeds as follows: First, the previous research on supreme audit institutions reviewed. After that, the research method is discussed, followed by the analysis of several SAIs from all inhabited continents. Based on study results one may offer the potentially radical suggestion that SAIs should change their current auditing methodology; otherwise, they will be useless for states, firms and societies; This paper ends conclusion and opportunities for further research.

2. Theoretical Framework

2.1. Forecasting, Foresight, Weak signals and Wild Cards

The most crucial challenge for organisations operating in conditions of uncertainty is the ability to respond to unpredictable situations actively. Such unpredictable situations, beyond the realm of rational expectations, have become known as "Black Swans" (Löfberg & Olsson, 2014). One may generalise that "Black Swans" are unknown events with very low-probability and extremely high-impact, or extreme risk events (Ivantsov, 2016). The organisation can work in an unpredictable environment when is based on the structure and content of social relations (c.f. Coleman, 1990; Prusak & Cohen, 2001; Adler & Seok-Woo, 2002). Risks and uncertainties are an integral part of all organisations (Laloux, 2014). The importance of trust in organisations has been recognized for some 2,500 year ago (Newton et al., 2018). Trust enables the exchange of information (Luchman, 2017) and plays a crucial role in economy interactions (Hawlitschek et al., 2018). An organisation needs trust capital, which facilitates innovation, and this is possible thanks to the easy exchange of information (Hargadon & Sutton, 1997; Gabbay & Zukerman, 1998; Hansen, 2002). Trust favours the ability to mobilise in the face of challenges, and it promotes agility (Chung & Gibbons, 1997; Walker, Kogut & Shan, 1997; Dobrowolski & Sułkowski, 2020). However, uncertainty facilitates dichotomic situation, where social capital protects the organisation in conditions of uncertainty and is simultaneously destroyed by uncertainty. In such circumstances, social capital needs to be strengthened (Kraatz, 1998; Koźmiński, 2004; Kożuch & Dobrowolski, 2014).

Entrepreneurs have long been ready to adapt to changes in their business environment continually. The ability to identify future trends and anticipate changes in a dynamic environment, as well as the ability of companies to cope with uncertainty is becoming a vital (Varum & Melo, 2010). Decision-makers of public organisations, including country-level, should also have the same skills. Foresight can help tame many unknowns and identify the event horizon.

Foresight is broadly presented in literature. Researchers have pointed out that foresight approach goes further than forecasting, because not only looks into the future but also includes utilising implementations for the present (c.f., Ansoff, 1980; Martin, 1995; Barker & Smith, 1995; Miles, 2008; Cuhls, 2008; Liebl & Schwarz, 2010; Cuhls, 2003; Georghiou et al., 2008; Kayser & Blind, 2017; Iden et al., 2017; Greenblott, O'Farrell, & Olson, 2018; Cuhls, 2019). Cuhls (2003) cited Gordon and Helmer (1964), Bright and Schoeman (1973), Linstone and Thuroff (1975), Martino (1983) aptly noticed that in forecasting, the area to be observed or the research questions have to be known in advance. Forecasting normally ends with the identification of the possible future. Meanwhile, foresight is more than prognosis or prediction. Foresight leads to the selection of one of the different future options and creation conclusion for the present, and decision for one of the options. It holds the promise of managing uncertainty.

Foresight is not the planning. It can be seen as the bridge between past experiences, current and the future (Cuhls, 2003; Andriopoulos & Gotsi, 2006; Georghiou et al., 2008; Popper, 2008, Popper, 2008a). Martin (1995) defines

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foresight as the process involved in systematically attempting to look into the longer-term future of science, technology, the economy and society to identify the areas of strategic research and the emerging of generic technologies likely to yield the most enormous economic and social benefits. This definition assumes the positive effects of this process. However, this does not have to be the case if one considers the fact that totalitarian governments can use foresight. Cuhls (2012) defines foresight as the systematic debate of complex futures. In the undertaken, though brief, attempt to conceptualise the concept of foresight one can formulate a generalisation that according to Coates foresight is the overall process of creating an understanding and appreciation of information generated by looking ahead. Foresight is, therefore, closely tied to planning, but it is not planning—merely a step in planning (Ansoff, 1980; Cuhls, 2003).

Foresight includes identification of weak signals and wild cards. Weak signals are early, often inaccurate, signs of impending events. These events, after the occurrence, affect individuals, groups and organisations and their environment in the very indefinite future (Botterhuis et al., 2010). Weak signals are precursor events or can be described as early warnings, namely slight changes in the current state of affairs or existing trends that–if observed and correctly interpreted–may hint at a growing likelihood of occurrence of a specific Wild Card. These signals may be unclear at the beginning, but they may become more precise in time (if monitored) or more reliable, perhaps in combination with other signals. Wild Cards are potential future events with a low likelihood of occurrence but with high impact in the future, if they occur (Mendonca et al., 2004; Smith & Dubois, 2010; Hauptman, Hoppe & Raban, 2015; Qi & Tapio, 2018). Researchers (Mendonca et al., 2004) advocate the implementation of a weak signal methodology and identification of wild cards by scanning the decision environment. They suggest the nurture of improvisation capabilities, which help exist in an unpredictable environment. This approach may lead to organisational agility. In sum, the weak signals approach may be perceived by the context of strategic flexibility or peripheral vision (Ilmola & Kuusi, 2006). Weak signals can use to identify and prevent some pathologic phenomena. For example, lone-wolf terrorists leave digital traces on the Internet, which is the form of weak signals that can be gathered, fused, and analysed (Brynielsson, 2013).

2.2. Uncertainty and risk

Uncertainty differs from the risk. While, the risk is defined as the situation of winning or losing something important for individual, group or organisation, uncertainty is a condition where there is no knowledge about the future events. In opposition to uncertainty, risk can be measured and quantified, and the potential outcomes are known. Uncertainty is linked with the unpredictable future events. Risk can be mitigated if proper measures are taken to control it. On the other hand, uncertainty is beyond the control of the individual, group or organisation (Cook, 1988; Alaszewski & Coxon, 2008; Dobrowolski, 2008; Samson, Reneke & Wiecek, 2009; Renn, Klinke & van Asselt, 2011; Pástor & Veronesi, 2013; Surbhi, 2017; Clark, 2019).

Inability to determine risk and formulate scenarios has occurred in all countries. The importance of risk assessment presents many researchers (Simunic & Stein, 1990; Friedlob & Schleifer, 1999; Reamer, 2000; Chang et al., 2008; Phillips, 2011; Wang & Li, 2011; Christensen, Glover, & Wood, 2013; Amir, Kallunki & Nilsson, 2014; Gramling & Schneider, 2018). There is a lack of research on SAIs role in foresight.

2.3. Supreme audit institutions

Analysed SAIs basically are not the part of the judiciary. In some countries like Greece or Portugal, SAIs are part of the judiciary. In others, even if SAIs (e.g., France, Italy, Spain) perform the jurisdictional function, they do not belong to the judiciary. SAIs are not part of the executive branch of the State. Finally, SAIs are not part of the legislative branch of State, although they are subject to parliaments. SAIs review and evaluate the public organisations and other financed from public funds. The manner, in which the SAI carries out its audit derives from the SAIs Laws enacted by the Parliaments. SAIs establish the facts based on audit evidence, determines the

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cause and effects of irregularities or best practices, and makes proposals to eliminate irregularities in and or improve auditees' activities. SAIs publish audit reports but do not disclose classified information. The possibility of SAIs influencing audited entities is not the result of their authority over the audited, but because they act on behalf of Parliaments and because they disclose information to the public through the media (González, López & García, 2008; González-Díaz, García-Fernández & López-Díaz, 2013; Bringselius, 2014; Kożuch & Dobrowolski, 2014; the European Court of Auditors, 2019). SAIs promote the concept of New Public Management and Good Governance (Dye & Stapenhurst, 1998; O'Donnell, 1998; Contact Committee of Presidents of the SAIs of the European Union, 1998; Pollitt et al., 1999; Stapenhurst & Titsworth, 2001; Tores & Pina, 2002; Kożuch & Dobrowolski, 2014; Jeppesen et. at., 2017; Johnsen, 2019; the European Court of Auditors, 2019; Dobrowolski & Sułkowski, 2020).

SAIs perform several functions. First, the control function. They act on behalf and for the benefit of their parliaments by auditing and assessing the implementation of public policies and programs. SAIs do not question political goals but evaluate their implementation by public organizations. The information function is crucial for the effectiveness of SAIs. SAIs except in a few cases do not have authority over the audited. It means that they audit their activities and formulate audit conclusions and recommendations, which are not obligatory. The audited may or may not follow SAIs' recommendations. Informing not only the audited but also their decision-makers and the public about the audit results increases the impact of SAI on the audited. This issue is well recognized in the literature (c.f., González, López & García, 2008; González-Díaz, García-Fernández & López-Díaz, 2013; Bringselius, 2014; Dobrowolski, 2017; Cordery & Hay, 2019). SAIs also perform other functions, including preventive, training, investigation, standardization and advisory. The latter function deserves special attention. This function is a natural consequence of the control function. SAIs have a significant amount of information obtained during audits of a wide range of organizations, including private ones using public funds. In such a situation, formulating audit conclusions and recommendations, SAIs may indicate not only the causes and effects of systemic shortcomings but also examples of best practices that can be applied more widely in the public sector.

3. Methodology

Literature studies and observation of the scale of countries' problems with supplying healthcare equipment and materials necessary to combat COVID-19 pandemic leads to the following hypothesis: SAIs ineffectively perform an advisory function due to the audit methodology is not tailored to the uncertainty conditions. The study aims to determine whether SAIs using foresight help their parliaments, governments and decision-makers from audited entities take decision wisely in the uncertainty conditions? To achieve this goal and to verify the hypothesis, the SAIs audit methodology presented in their webpages were analysed. This analysis aimed to determine whether the SAIs identified weak signals and wild cards regarding a coming pandemic that threatened life, health and the economy. The SAIs from following countries were randomly selected for the study: Germany, Austria, Finland, Belgium, Netherlands, France, Estonia, Bulgaria, Bosnia and Herzegovina, Ireland, Slovenia, Sudan, Denmark, Dominican Republic, Serbia, Sri Lanka, Indonesia, Georgia, Trynidad and Tobago, China, Vietnam, Thailand, Uruguay, Kyrgyzstan, Ghana, Japan, Guatemala, India, Fiji, Liberia, Papua New Guinea, Australia and the USA. The research includes years 2015-2019 and 2020 (before the occurrence of COVID-19 in China). The sample of all 33 examined SAIs was 17% of the total of 195 full members of the International Organization of Supreme Audit Institutions (INTOSAI). Consistent with an abductive approach (Lukka, 2014; Lukka & Modell, 2010), the insights in this paper have emerged iteratively through consideration of both theory and the empirical case.

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4. Results

Analysed SAIs have statutory rights to determine audit topics and audited entities. They use audit methodology based on risk assessment and ex-post audit approach. SAIs audit the completed activities of audited entities and formulate conclusions regarding future audited activities based on an analysis of past operations. SAIs inform public opinion about audit results and provide conclusions and recommendation in audit reports. Besides, the President of German SAI shall serve ex officio as Federal Performance Commissioner (Mosher, 1979; Dobrowolski, 2004; Dobrowolski, 2017; the European Court of Auditors, 2019; ANAO, Legislation and Standards; Bundesrechnungshof, Legal Bases; Bundesrechnungshof, The President of the Bundesrechnungshof as Federal Performance Commissioner; SAI of Guatemala, legislación; Belgium Court of Audit, Competences; NAOF, Legislation; SAI of Japan, Audit Activities; SAI of India, Our Mandate; Algemene Rekenkamer, Organisation; SAI of Fiji, Legal and Professional Frameworks; SAI of Liberia, Audit mandate; SAI of Papua New Guinea, About the Auditor-General's Office; Ghana Audit Service, The Auditor-General's Reports; SAI of China, Laws and Regulations; SAI of Bulgaria, National Audit Office Act; SAI of Bosnia and Herzegovina, Law on Audit of the Insitutions of Bosnia and Herzegovina; SAI of Sudan; SAI of Dominican Republic, Marco Legal Institucional; SAI of Republic of Serbia, Audit the State Audit Institutions; SAI of Sri Lanka; SAI of Georgia; SAI of Indonesia, Legal Framework; SAI of Trynidad and Tobago, Mandate; SAI of Vietnam; Legal status; SAI of Thailand, State Audit Act; SAI of Kyrgyzstan; SAI of Uruguay).

There is a lack of information about SAIs analysis of pandemic threat (before COVID-19 occurrence in China in 2020) on the SAIs' webpages from the following countries: Germany, Austria, Finland, Belgium, Netherlands, Bulgaria, Ghana, Japan, Guatemala, India, Fiji, Liberia, Papua New Guinea, Bulgaria, Bosnia and Herzegovina, Ireland, Slovenia, Sudan, Denmark, Dominical Republic, Serbia, Sri Lanka, Georgia, Indonesia, China, Vietnam, Thailand, Uruguay, Kyrgyzstan, Trynidad and Tobago.

Four analysed SAIs (from USA, Australia, France and Estonia) carried out an ex-post evaluation of government operations related to pandemic risk. Two analysed SAIs (from USA and Australia) showed the risk related to pandemic threat. In 2005 the American SAI named the U.S. Government Accountability Office (GAO) aptly pointed out that if avian influenza strains directly infect humans and acquire the ability to be readily transmitted between people, a pandemic could occur. GAO found real threat stating that modelling studies suggest that pandemic effect in the United States could be severe, ranging from 89,000 to 207,000 deaths and from 38 million to 89 million illnesses. GAO underlined the fact the Department of Agriculture, and the Food and Drug Administration have made efforts to enhance their coordination of surveillance efforts for diseases that arise in animals and can be transferred to humans, such as SARS and certain strains of influenza with the potential to become pandemic. In 2000, GAO recommended complete the national plan for responding to an influenza pandemic, but the plan has been in draft format since August 2004. Absent a completed federal plan, key questions about the federal role in the purchase, distribution, and administration of vaccines and antiviral drugs during a pandemic remain unanswered. Other challenges with regard to preparedness for and response to an influenza pandemic exist across the public and private sectors, including challenges in ensuring an adequate and timely influenza vaccine and antiviral supply; addressing regulatory, privacy, and procedural issues surrounding measures to control the spread of disease, for example, across national borders; and resolving issues related to an insufficient hospital and health workforce capacity for responding to a large-scale outbreak such as an influenza pandemic. Based on this analysis one may formulate the conclusion that GAO found risk areas in the functioning of the State and different organisations (GAO, 2005).

In 2007 American SAI – U.S. Government Accountability Office (GAO) aptly identified crucial problems. Analysis Federal Executive Boards' (FEBs) ability to contribute to Influenza Pandemic preparedness GAO found examples of inconsistent funding for the FEBs nationwide, which create uncertainty for the boards in planning and committing to provide emergency support services. (GAO, 2007).

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Australian National Audit Office (ANAO) aptly showed that an influenza pandemic might have enormous social and economic consequences. Besides the potential human suffering and death caused by pandemic, ANAO presented the World Bank estimation concerning the economic losses resulting from a human influenza pandemic. It could be as high as USD 800 billion a year. ANAO pointed out that it is not possible to predict when the next pandemic will occur or how long it will last. The new threat can spread rapidly across the globe, causing a worldwide crisis with high numbers of cases and deaths (ANAO, 2007). This statement shows that ANAO pointed to the unpredictability of the environment in which states and other organizations operate.

Based on audit review, ANAO stated that Australia had undertaken considerable planning and preparedness activities over the last three years to prevent, prepare for and respond to an influenza pandemic. Essential plans have been developed that coordinate a whole of government response at the national level, supported by the State and Territory governments and healthcare systems. Australia has established national disease surveillance programs, an onshore laboratory capability, case investigation and contact management processes. Infection control measures and guidance on clinical management practices that target the containment and management of an influenza pandemic have also been developed. ANAO determined that all regions have pandemic plans, either as stand-alone plans or included in general health emergency plans. However, a pandemic will place increased demand on existing healthcare systems. Therefore, the critical factor in managing the Stockpile is ensuring that items can be deployed to those in need when they need it (ANAO, 2007).

In 2017 ANAO stated that responsible public organisation did not clearly define in their plans what circumstances and to what extent the appropriate public organisations will become involved in a communicable disease emergency. ANAO also showed that administrative process and public communications need to be improved. The departments learnt from the past but did not record or assess their progress towards implementation (ANAO, 2017). Both SAIs (from the USA and Australia) did not advice how to select one of the different future options and create conclusion for the present, and decision for one of the options.

In 2001 the French Court of Auditors made public the report (article 58 of the LOLF, 2nd paragraph) on the use of the funds for the fight against the influenza A (H1N1) V pandemic. SAI pointed out despite the existence since 2005 of a plan to prepare for an H5N1 influenza pandemic inspired by World Health Organisation recommendations, the management of the A (H1N1) V pandemic cannot be considered as totally satisfactory. The previous health crisis generated the need to set up for the first time the new interministerial organization for crisis management, led by the Ministry of the Interior. Generally, the Interministerial Crisis Cell (CIC) ensured effective coordination of the actions of the various ministries and agencies concerned, even if all the duplicates of work could not be eliminated. SAI ex-post reviewed the government activities and found, that the public authorities conducted, in secret and with urgency, unprecedented negotiations with pharmaceutical laboratories. These negotiations have reduced the negotiating margins of the State. SAI focused on previous government activities and did not carry out foresight and did not recognize the weak signals of the upcoming pandemic, although SAI has had a clear picture of the State preparedness to the previous pandemic (Cour des comptes, 2010).

The National Audit Office of Estonia has evaluated the Estonian preparedness for several scenarios – an outbreak of avian influenza, an influenza pandemic, and other disasters, and found that the State institutions were not ready to deal with emergencies quickly and effectively. For example, decisions were not being made systematically regarding the need for examining risks. SAI audit was based on the evaluation of former threats and did not show does the State identify weak signals and make proposals to reduce uncertainty (Mattson, 2007).

Conclusions

This research was, in many cases, pioneering because the SAIs' role in foresight was not the subject of research. The aim of this research was achieved. States, entrepreneurs and consumers live in more uncertainly environment. In such circumstances, the risk-based audit approach is not sufficient. There is a need to use foresight methods. SAIs should not only evaluate the correctness of data and methods used in foresight but also advise decision-makers through promoting and using foresight and how to use the foresight properly. The study showed that SAIs through risk-based approach and ex-post audits realised preventive functions showing the causes and effects of improper audited public activities. They publish audit results informing stakeholders which areas of government activities are proper against established audit criteria. 29 out of 33 analysed SAIs did not provide any information about their analysis of pandemic threat on their webpages (before COVID-19 occurrence in China in 2020). It seems that they did not recognise weak signals related to the pandemic threat, and they did not use foresight. Two analysed SAIs (from the USA and Australia) aptly showed the risk related to the pandemic threat but it was based on risk assessment and not on foresight. Two SAIs (from France and Estonia) evaluated previous government operations related to a pandemic threat, but they did not show how do their governments identify weak signals of severe upcoming pandemic.

This study shows that any SAIs did not audit governments' foresight related to the pandemic and did not advise decision-makers how to use foresight in uncertainty conditions. Therefore, this research confirmed arguments of Christensen, Glover, and Wood (2013) that the overall uncertainty has increased in recent decades, but the related audit methodology, based on risk assessment, have changed very little. The study confirmed the hypothesis that SAIs ineffectively perform an advisory function due to the audit methodology is not tailored to the uncertainty conditions.

This article can be useful for practitioners. The proposed article can form a source for an inquiry process at any SAI, thus contributing to a better contextual diagnosis of the stage where SAI is in the process of building the quality of its process.

Limitations and future research

The author conducted research mostly within the SAIs, which have webpages in English. All analysed SAIs, belong to INTOSAI and declared fulfilment of INTOSAI auditing standards and guidelines. Due to the lack of detailed information on how do SAIs follow the INTOSAI requirements the author thus needs to show modesty towards the generalizability of findings and encourage future researchers to tests whether research findings hold in other SAIs, which belong to INTOSAI.

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ENTREPRENEURSHIP EDUCATION, INTENTION, AND SELF EFFICACY: AN EXAMINATION OF KNOWLEDGE TRANSFER WITHIN FAMILY BUSINESSES*

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Abstract. The problems in family business focus more on the issues of leadership and ownership transfer. Therefore, it is essential to carry out a specific survey on the process associated with intergenerational knowledge transfer between entrepreneurship education, self-efficacy, and entrepreneurial intentions for future next generation. This study examines and analyses the effect of entrepreneurship education in families on self-efficacy and to test its impact on entrepreneurial intentions on future generations. According to the study's findings, entrepreneurship education has a major impact on entrepreneurial intentions self-efficacy. The resulting implication is that entrepreneurship education ought to be started and advanced in the family setting, with knowledge being transferred to the next generation by their predecessors. Further, it can foster awareness of the coming generations to amplify their abilities and interests. This is an explanatory research with a quantitative approach and a sample population, which consists of 1455 family businesses in the Makassar city, with a total sample of 150 running for at least two generations. The results show that entrepreneurship education has a significant effect on self-efficacy on entrepreneurial intentions. The implication of this finding shows that entrepreneurship education needs to be started and developed in the family environment, with the transfer of knowledge from the predecessor to the next generation. It also has the ability to foster awareness of future generations to increase their interests and abilities.

Keywords: entrepreneurship education; entrepreneurship intention; self-efficacy; knowledge transfer

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1. Introduction

Family businesses, according to recent empirical examinations, have contributed immensely in the creation of employment as well as generate income for the community (Musa & Hasan, 2018; Park et al., 2019; Chirapanda, 2019; Gubic & Farkas, 2019). However, several studies have reported that these businesses do not necessarily provide efficient means of organizing business practices because instead of focusing on economic goals such as business growth and profits, they focus more on personal and social goals such as nepotism and control. Thus, the question of whether family ownerships are efficient remains unsolved (Salmon & Allman, 2019; Teixera et al., 2020).

Generally, these types of businesses are prevalent in Indonesia; however, most of them are unsuccessful, while only a few tend to survive to date. It is often argued that the main impediment to the success of these businesses is succession. Internal conflicts hinder the growth of these companies, and most of them fail during or before the third generation (Broekaert et al., 2018; Kubíček & Machek, 2020). In addition, it is posited that inadequate entrepreneurship knowledge has an impact on the coming generations (Ahmad & Yaseen, 2018; Duarte & Kok, 2018).

According to numerous researches, the improper management of succession planning is the primary cause of failure (De Massis et al., 2018). However, it does not guarantee continuity because other factors affects such as knowledge of predecessors which is considered as an integral aspect in improving the performance of family businesses (Cabrera-Suárez et al., 2018; Alshanty & Emeagwali, 2019; Williams Jr., & Mullane, 2019).

In the family enterprise milieu, knowledge transfer is typically through informal and or formal entrepreneurship education. This education or knowledge transfer is integral in the growth and advancement of entrepreneurial competencies, skills, and attitudes. Consequently, it impacts self-efficacy and increases an individual's resolve to continue the family business. Knowledge transfer via entrepreneurship education provides important insights relative to entrepreneurial education as well as self-efficacy. Additionally, it makes a substantial difference during the business succession process (Li & Wu, 2019; Vamvaka et al., 2020).

This study reports a divergent approach towards knowledge transfer with respect to entrepreneurship education, and which is intended to promote entrepreneurship intention and self-efficacy of the family business to the coming generation. From a pedagogical perspective, knowledge transfer has diverse variations, both formally, nonformally, and informally (Inanna et al., 2020). Wang et al. (2019) reported that entrepreneurship education facilitates the success of any business. Consequently, failure is usually encountered when an entrepreneur relies more on personal experience. However, there is no need to undermine an entrepreneur's experience because; depending on only education also leads to failure. Hence, the mixture of education and entrepreneurial experience is the key element that dictates the success rate of any entrepreneur (Shepherd et al., 2020).

2. Literature review

2.1 Entrepreneurship education and transfer of knowledge

This study was established on the theory of social learning by Albert Bandura (1986), which states that the environment influences behavior, and vice versa. According to Bandura, human nature needs to be described in terms of mutual interactions relative to cognitive, behavioral, and environmental factors. Furthermore, its social cognitive theory (SCT) focuses on the concepts of reinforcement and observation. In this research, the SCT model was used to observe the parents of business actors who were imitated by their children. In this context,

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entrepreneurship education occurred in the form of knowledge transfer through the process of observing others or modelling to develop a certain behavior.

There are two main knowledge categories that include explicit and tacit knowledge (Nonaka et al., 1995; Polanyi, 1966). Polanyi (1996) posits that tacit knowledge, otherwise termed as implicit knowledge, is the knowledge acquired through an individual's experiences. This knowledge is hard to transfer, and as such, it is different from explicit/expressive knowledge. It is critical to note that the latter can be systematically or formally transferred (Nonaka et al., 1995). When these two categories are combined, the resulting knowledge is termed as idiosyncratic knowledge. This knowledge is helpful because it allows businesses to reduce risk and at the same time, gain superiority (Jassimuddin et al., 2005). Most families have been noted to have idiosyncratic skills that encompass tacit knowledge (Higginson, 2009; Lee et al., 2003). Lee et al. (2003) further argue that knowledge is characteristically personal, and thus, it can only be accessed by employees who can be trusted or members (Lee et al., 2003). (See Figure 1).

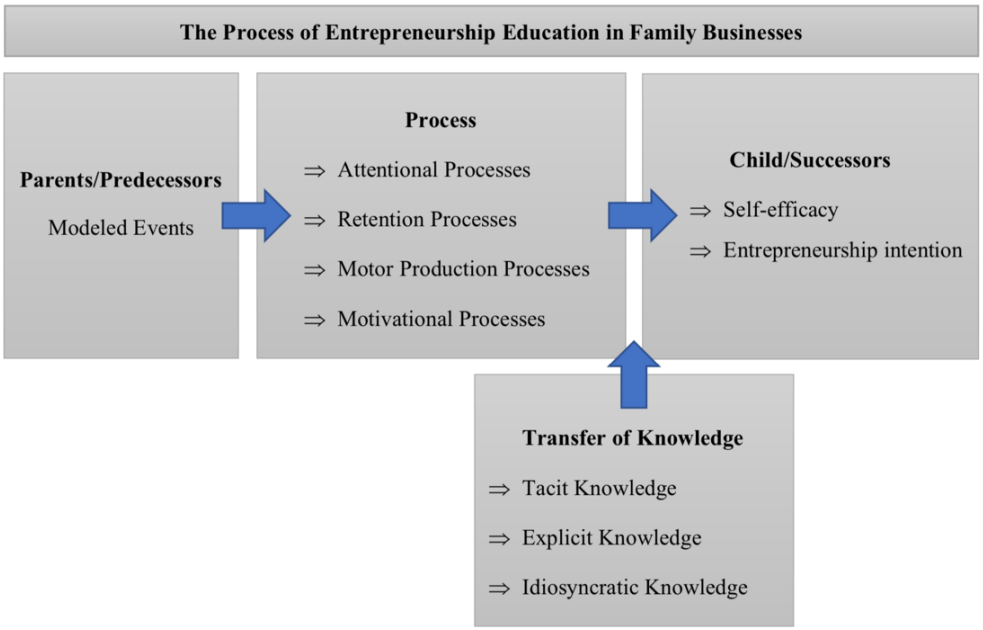

Fig. 1. Process of Entrepreneurship Education in Family Business

2.2 Entrepreneurship education, self-efficacy, and entrepreneurship intention

Recently, it has been established that many factors govern entrepreneurship traits. They include risk-taking tendencies, personality traits, self-efficacy, gender, and entrepreneurial activity risks (Brändle et al., 2018; Haeruddin, & Azis, 2018; Haeruddin & Natsir, 2016; Matthews & Moser, 1996; Vamvaka et al., 2020; Zhao et al., 2005). Additionally, entrepreneurship education appears to be the primary determinant since previous studies identify that there exists an imperative relationship between entrepreneurial activity and entrepreneurship education (Galloway & Kelly, 2009). This is generally defined as a never-ending practice of imbibing skills and concepts to people to assist them in identifying business opportunities often ignored by others, and to have appropriate insights as well as self-esteem to work accordingly (Shepherd et al., 2020).

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Self-efficacy, which is strongly related to entrepreneurial education, is described as a personal belief in one's capacity and expertise to execute particular duties (Bandura, 1986). Whereas persons with little self-efficacy generally elude responsibilities, those with high efficacy are relentlessly enthusiastic to perform assigned tasks (Newman et al., 2019). Previous researches show that in entrepreneurship, self-efficacy is used to forecast entrepreneurial intention (Bacq et al., 2017). Numerous studies have posited that it is a dependable predictor of the significance of entrepreneurship intention and education (Drost & Mcguire, 2011; Hasan et al., 2019; Obschonka et al., 2018).

Whereas entrepreneurship education is a vital determinant, there are only a few empirical studies that have been conducted on its effect in the family environment (Shepherd et al., 2020; Eang et al., 2019; Zhao et al., 2005). It is dissimilar from the general education that may be either formal or informal (Hasan et al., 2019; Inanna et al., 2020). Byabashaija & Katono (2011) emphasize this by pointing out that the impact of general education is widely covered. They further explain that a limited number of studies have been directed towards entrepreneurship education. However, to an extent, informal entrepreneurship education has been somewhat identified in the family environment. Thus, the proposed hypothesis is as follows:

H1 Entrepreneurship education has a significant effect on self-efficacy.
H2 Entrepreneurship education has a significant effect on entrepreneurship intention.
H3 Self-efficacy has a significant effect on entrepreneurship intention.
H4 Self-efficacy acts as a mediator between entrepreneurship education and entrepreneurship intention.

The conceptual framework of the relationship between entrepreneurship education, self-efficacy, and entrepreneurship intention is shown in Figure 2.

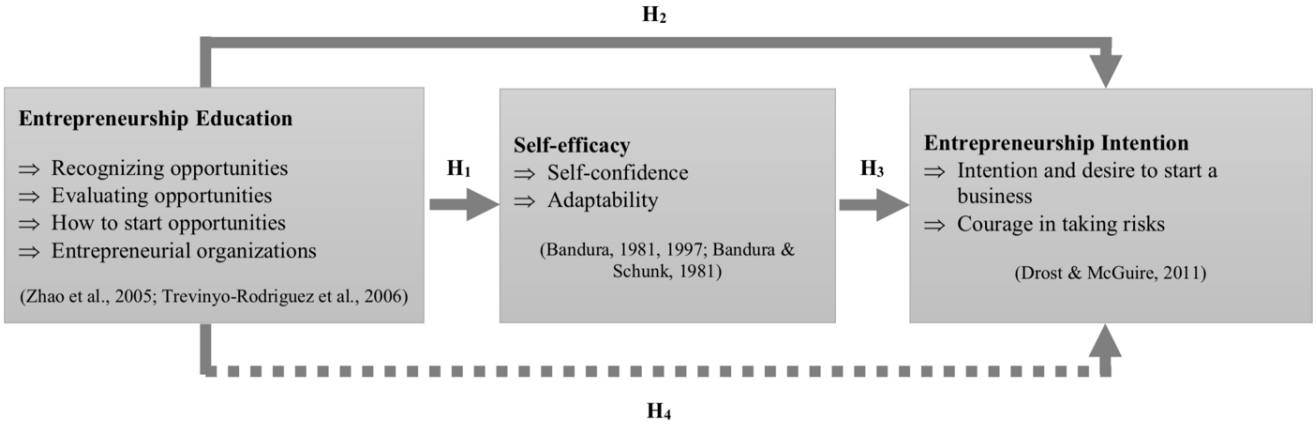

Fig. 2. The Conceptual Framework

3. Methods

3.1 Research design and variables

The study is non-experimental and explanatory, and it is aimed at determining the relationship between self-efficacy, entrepreneurship intention, and education in Makassar City's family businesses. The study used a quantitative approach that employed the use of a questionnaire to obtain data on the necessary variables.

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3.2 Data collection and sample design

The research involved various family businesses across Makassar City's sub-districts. The activities are grouped according to the industry sector such as food and beverage, basic metal and handcraft, and timber, and rattan. These businesses conducted their marketing activities nationally, domestically, or were involved in exportation. Furthermore, the chosen businesses were required to have been in existence across 2 generations or more, and the entire population totaled to 1455. The requirements for data analysis were considered, and this produced a sample size that was nearly 5 times the quantity of indicators used for the measurement process and there was 126 samples. To minimize the chances of errors occurring during measurement, the small samples were ignored. Cooper & Schindler argued that the research sample needed to be increased to 150 family businesses obtained proportionally in line with the distribution.

3.3 Measurement of variables

To attain precise data, the questions in the questionnaire were close-ended. Entrepreneurship education involves indicators for knowledge transfer optimization such as identifying and assessing opportunities, establishing start-ups, and entrepreneurial businesses using ordinal scales (Trevinyo-Rodriguez, 2006; Zhao et al., 2005). Self-efficacy encompasses adaptability and self-confidence and it also uses an ordinal scale (Bandura, 1981, 1997; Bandura & Schunk, 1981; Musa, Hearuddin, & Haeruddin, 2018). On the other hand, entrepreneurship intention is comprised of the intent and need to establish a business and also the capability to incur risks by the use of an ordinal scale (Drost & McGuire, 2011).

3.4 Data analysis methods

To verify the study's hypotheses and to determine the indirect and direct impact of the endogenous and exogenous set, statistical tests technique were used (McQuitty, 2018).

4. Results and discussion

This study utilized 150 respondents with various characteristics such as gender, age, level of education, business experience, and generation involved in the business.

Table 1. Characteristics of respondents

Characteristics of Respondents	Category	Frequency	%
Gender	Male	80	53.33
	Female	70	46.67
	Total	150	100.00
Age	20 - 30 years	15	10.00
	31 - 40 years	35	23.30
	41 - 50 years	87	58.00
	> 50 years	13	8.70
	Total	150	100.00
Level of Education	Primary schools	6	4.00
	Junior high school	35	23.33
	Senior high school	75	50.00
	College	34	22.67
	Total	150	100.00
Business Experience	5 - 10 years	20	13.33
	11 - 15 years	115	76.67

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	16 - 20 years	13	8.67
	> 20 years	2	1.33
	Total	150	100.00
Generation Involved in Business	Second generation	92	61.33
	Third generation	58	38.67
	Total	150	100.00

Based on gender, the respondents consist of 80 (53.33%) males and 70 (46.67%) females. Furthermore, majority of them were in the productive age, 87 (58.00%) people were between the ages of 41-50 years, 35 (23.30%) persons were aged between 31-40 years, 15 (10.00%) individuals were between the ages of 20-30 years, and 13 (8.70%) people were over 50 years. There were variations in their level of education. This category was dominated by 75 (50.00%) persons that attended senior high schools, 35 (23.33%) people attended junior high schools, 34 (22.67%) individuals attended college, and only 6 (4.00%) respondents had primary schools education. Based on business experience, 115 (76.67%) respondents have 11-15 years' experience, while 20 (13.33%) have 5-10 years' experience, 13 (8.67%) individuals have 16-20 years' experience, while 2 (1.33%) of them have over 20 years' experience. In the generation category, 92 (61.33%) respondents are from the second generation, while 58 (38.67%) respondents (38.67%) are from the third generation.The instrument validity test is shown Table 2.

Table 2. Validity Test

Variable	Dimension	Indicator	R	Information
Entrepreneurship education (X_1)	Recognizing opportunities ($X_{1.1}$)	$X_{1.1.1}$	0.765	Valid
		$X_{1.1.2}$	0.720	Valid
		$X_{1.1.3}$	0.711	Valid
		$X_{1.1.4}$	0.812	Valid
		$X_{1.1.5}$	0.740	Valid
		$X_{1.1.6}$	0.720	Valid
		$X_{1.1.7}$	0.701	Valid
		$X_{1.1.8}$	0.821	Valid
	Evaluating opportunities ($X_{1.2}$)	$X_{1.2.1}$	0.808	Valid
		$X_{1.2.2}$	0.801	Valid
		$X_{1.2.3}$	0.780	Valid
		$X_{1.2.4}$	0.759	Valid
		$X_{1.2.5}$	0.789	Valid
		$X_{1.2.6}$	0.799	Valid
		$X_{1.2.7}$	0.820	Valid
	How to start opportunities ($X_{1.3}$)	$X_{1.3.1}$	0.826	Valid
		$X_{1.3.2}$	0.864	Valid
		$X_{1.3.3}$	0.861	Valid
		$X_{1.3.4}$	0.745	Valid
		$X_{1.3.5}$	0.798	Valid
		$X_{1.3.6}$	0.790	Valid
	Entrepreneurial organizations ($X_{1.4}$)	$X_{1.4.1}$	0.814	Valid
		$X_{1.4.2}$	0.798	Valid
		$X_{1.4.3}$	0.807	Valid
		$X_{1.4.4}$	0.889	Valid
Self-efficacy (X_2)	Self-confidence ($X_{2.1}$)	$X_{2.1.1}$	0.832	Valid
		$X_{2.1.2}$	0.750	Valid
		$X_{2.1.3}$	0.789	Valid
		$X_{2.1.4}$	0.845	Valid
		$X_{2.1.5}$	0.744	Valid
		$X_{2.1.6}$	0.732	Valid
		$X_{2.1.7}$	0.820	Valid

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	Adaptability ($X_{2.2}$)	$X_{2.2.1}$	0.765	Valid
		$X_{2.2.2}$	0.877	Valid
		$X_{2.2.3}$	0.744	Valid
		$X_{2.2.4}$	0.854	Valid
		$X_{2.2.5}$	0.752	Valid
Entrepreneurship intention (Y_1)	Intention and desire to start a business ($Y_{1.1}$)	$Y_{1.1.1}$	0.709	Valid
		$Y_{1.1.2}$	0.854	Valid
		$Y_{1.1.3}$	0.841	Valid
		$Y_{1.1.4}$	0.803	Valid
		$Y_{1.1.5}$	0.745	Valid
	Courage in taking risks ($Y_{1.2}$)	$Y_{1.2.1}$	0.798	Valid
		$Y_{1.2.2}$	0.744	Valid
		$Y_{1.2.3}$	0.835	Valid
		$Y_{1.2.4}$	0.867	Valid
		$Y_{1.2.5}$	0.745	Valid
		$Y_{1.2.6}$	0.798	Valid
		$Y_{1.2.7}$	0.821	Valid

Source: Computed by authors

From Table 2, the intention, self-efficacy, and entrepreneurship education exemplified a Pearson's correlation of above 0.30. The correlation coefficient showed that the validity requirements were satisfied. Further, the instrument reliability is shown in Table 3.

Table 3. Reliability Test

No.	Variable	*Cronbach's Alpha*	Information
1.	Entrepreneurship education (X_1)	0.897	Reliable
2.	Self-efficacy (X_2)	0.786	Reliable
3.	Entrepreneurship intention (Y)	0.807	Reliable

Source: Computed by authors

This research scrutinizes the direct and indirect consequences of entrepreneurial education, self-efficacy as well as entrepreneurship intention in the family business. The summary is shown in Table 4.

Table 4. Path Analysis Coefficient

Direct effects			
Path Analysis	**Path Coefficient**	**Prob.**	**Sig.**
Entrepreneurship Education → Self-Efficacy	0.481	0.002	Significant
Entrepreneurship Education → Entrepreneurship Intention	0.243	0.015	Significant
Self-Efficacy → Entrepreneurship Intention	0.356	0.025	Significant
Indirect effects			
Indirect paths	**Path Coefficient**		
Entrepreneurship Education → Self-Efficacy → Entrepreneurship Intention	0.481 x 0.356 = 0.171		

Source: Computed by authors

According to the result obtained through data processing, the entrepreneurship education path and self-efficacy coefficient is 0.481, and the probability value is 0.002. Thus, this implies that entrepreneurship education significantly affects self-efficacy by a 0.243 intention coefficient and a 0.015 probability value. Additionally, entrepreneurship education has a substantial effect of 0.356 coefficient and 0.025 probability value on

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entrepreneurship intention. Self-efficacy, subsequently, has a substantial impact on entrepreneurial intention as well as a 0.171 indirect effect coefficient.

The results prove that entrepreneurship education has an impact on self-efficacy. This confirms that its implementation via knowledge transfer that involves establishing and assessing opportunities, entrepreneurial organizations, and how to create start-ups foster confidence in the next generations to grow businesses started by the preceding generations (Newman et al., 2019).

Based on the results, it is evident that entrepreneurship education conducted in the family settings fosters future generations' entrepreneurship intention via idiosyncratic knowledge. This knowledge is transferred to children by their parents to build up their interest, desire, and intention to delve into the business. Additionally, this knowledge develops their ability to take possible risks. Thus, it has a considerable impact on entrepreneurship intention as explained by Cardella et al. (2020).

It was also established that self-efficacy has a considerable impact on entrepreneurship intention. It conciliates entrepreneurship education in the direction of entrepreneurship intention, particularly in the family enterprise context. It implies that adaptability and self-confidence develop the desire and intent to establish a business. It also establishes the courage necessary to absorb any risks and continue the family enterprise (Cardella et al., 2020).

Accordingly, the path analysis results reveal that entrepreneurship education substantially influences intention, and the mediator, in this case, is self-efficacy. Therefore, entrepreneurship education, naturally, should be commenced and advanced in the family. It is also vital to note that the achievement or non-peformance of a family business is hugely determined by knowledge transfer from older generations to the younger ones. Besides creating awareness for future generations, entrepreneurship education improves their capacity to establish and run the business (Lauto et al., 2020).

Within the family enterprise context, the forerunner has sound tacit knowledge because of experience buildup (Williams Jr & Mullane, 2019). This knowledge is very essential and it plays an imperative role in family enterprise performance (Marchiori & Franco, 2020). Trevinyo-Rondriguez et al (2006) argue that forerunners' know-how is supposed to be transferred to the subsequent cohorts. Additionally, the predecessor has tacit knowledge about the enterprise (Higginson, 2009). Hence, family enterprises should possess this knowledge to mobilize, integrate, and harmonize the enterprise resources to enhance its performance (Medase & Abdul-basit, 2020; Cabrera-Suarez et al., 2018; Zainal et al., 2018).

Conclusions

From the research, it is evident that entrepreneurship education notably impacts both intentions and self-efficacy. According to the path analysis, entrepreneurship education impacts significantly on intentions, and self-efficacy serves as the mediator. Nonetheless, certain implications are connected to the significance of informal or unofficial entrepreneurship education within the family setting which is a component of the succession process. This is with particular regard to knowledge transfer to future generations to improve their adaptability and self-confidence. Consequently, it develops the desire and intention to shoulder various family businesses' responsibilities. Further, the theoretical implication provides insight into how self-efficacy aspects explore the subject of entrepreneurship education.

This research provides key facts on the use of the qualitative method to acquire appropriate data on the transfer of knowledge to future generations. However, it is necessary to conduct research to determine the ability of future generations' to continue with the family legacy.

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CONDITIONS OF THE FUNCTIONING OF OUTSOURCING IN ENTERPRISES*

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Abstract. The objective of the study is to present the underlying conditions of the functioning of outsourcing at various levels of company operations. In addition, it shows a detailed analysis of the purposes of outsourcing, the scope of outsourced services and outsourcing selection criteria. What is more, it includes an assessment of the level of company satisfaction with outsourcing performance and the risks involved. The research materials comprise data regard-ing 140 manufacturers and service providers located in Eastern Poland which have outsourced some of their activities. The survey performed allowed the researchers to evaluate the scope of use of outsourcing services in company operations. The descriptive, comparative and graphic methods were all applied to analyse the re-sults of the study. The statistical analysis and the calculation of the correlation coefficient were employed to assess the level of dependence of company size on the scope of use of out-sourcing services. The conducted analyses show that the main objective of outsourcing use appears to be the focus on core competencies and the reduction of operating costs (75.7% and 60.7%, respectively). The most frequently indicated areas outsourced by the companies are the organization of supply, distribution, transport services and renovation-repair services. More than a half of the analysed enterprises pointed at the above listed areas. The factors of major importance when selecting outsourcing services providers are experience, market recognition, price, quality, and the application of the principles of sustainable development. The last element was crucial, above all, in the case of companies employing over 250 people. This is because in their case cooperation with companies holding relevant certificates

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and permits in the field of sustainable development translates directly into the development of a good company image and an increase in company value.
Keywords: outsourcing, sustainable development, core competencies, company management.

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1. Introduction

Enterprises are facing serious challenges posed by the complexity, changeability and uncertainty of environment's conditions. As a result, organizations must follow a novel ap-proach and adjust their strategies to new conditions of company operations (Choi, 2016). The changes in the reality in which enterprises function cover several areas, including the political, social, market and technological zones and, now more than ever before, environmental issues.

Given the current conditions, enterprises begin to seek real methods of gaining a com-petitive advantage. One effective method is to reduce fixed and personal costs. Another measure is an adjustment of company organizational structure so that it can meet new market challenges (Borowska et al., 2020). This allows companies to focus on their leading business activities. Outsourcing appears to be a solution to attain the goals mentioned (Brown, Wilson, 2005).

Continuous growth of competitiveness involves a considerable challenge associated with the need to tailor one's structure and activities to novel market standards (Ai et al., 2019). Companies wishing to survive on such a demanding market must constantly develop and introduce innovations, not only in the field of product manufacturing, but also with re-spect to other aspects, particularly organization and management. An undertaking involving a mother company separating certain functions from its organizational structure and passing them over to other business entities is referred to as outsourcing. The Polish equivalents of the terms outsourcing may be: separate or isolation (Trocki, 2001).

Management boards find it imperative to select one of the below two options. The first one is to conduct operations in-house, with the use of company resources and powers, whereas the second is to purchase external operations from an independent third party (Zoghbi-Manrique-de-Lara & Ting-Ding, 2017). In the case of each option, the cost of production and transaction are assessed by the board and, subject to such cost estimates, the option generating lowest costs is selected.

Outsourcing is a renowned instrument, both in the theory and practice of management (Dominguez, 2005). The concept assumes that the company focuses on its core competencies and skills, whereas any auxiliary and supplementary activities are outsourced. This means that there is a need of establishing a long-term partnership-based cooperation with an external body (Kopczyński, 2020; Duening, Click, 2005).

The aspects of sustainable development also become significant in the field of out-sourcing (Cai et al., 2020). More and more often, enterprises can see positive effects of envi-ronmental practices on gaining a competitive edge (Tvaronavičienė, 2014). Environmental responsibility contributes to the creation of new business undertakings and improves interac-tions with the stakeholders. Consequently, the effectiveness of natural resource

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use in the economy amps up and the negative impact of human activity on the environment decreases (Abbas & Sağsan, 2019). Involvement in environment protection facilitates the winning of acceptance of local communities and interest of future investors. Practical actions show that investors are willing to cooperate with companies which can boast not only of good financial results but also of achievements in the fields of sustainable development and environmental friendliness (Agrawal et al., 2016). Given the foregoing, it can be said that, at present, envi-ronmental corporate responsibility in the area of outsourcing is not only beneficial but also, and above all, strongly required (Niu et al., 2019).

2. The role and place of outsourcing in company management – literature review

When examining the nature of the outsourcing concept, it is important to determine the etymology and sense of the term. The word outsourcing originated from the phrase 'outside resource using'. It stands for the transfer for use of some of the assets of a business organiza-tion to an external body. M.F. Greaver defines outsourcing in a similar fashion. He describes it as a contractual passing over of internal areas of company activities and the rights to make decisions to the disposition of external bodies (Greaver, 1999). At the same time, it must be emphasised that outsourcing is not simply contracting, a phenomenon which is highly popular in company activities (Nowicka, 2016).

As a result of outsourcing, changes occur also in company management and include focusing on the primary activities of an enterprise and ongoing partner cooperation among companies (Gurtu et al., 2016). Considerations to date demonstrate that outsourcing is a term composed of two elements. The first element has the form of an undertaking as part of which a certain area is transferred to an external supplier, whereas the second one pertains to a long-term partner cooperation with an outside body. This is when it should be approached as a pro-cess (Milberg, Winkler, 2013).

When carrying out a more complete outsourcing, companies dispose of some tasks which they can give up on, perform cheaper or, oftentimes, better externally. This is when they can focus on their primary activities, i.e. the activities where they have a competitive advantage. Simultaneously, the areas which fail to provide such a competitive advantage, con-stituting an auxiliary or supplementary activity, are singled out from the processes of operation of a business activity and performed by outside companies. The application of outsourcing is justified whenever the functions passed over are completed better or, at least, not worse than before. Furthermore, when outsourcing, the costs should be lower than those generated by the enterprise before the separation of a given function (Grossmann, Helpman, 2002).

Outsourcing changes organizational structures. The number of organizational cells, positions and the levels of management decreases. In addition, also the headcount may be reduced. Consequently, the enterprise becomes increasingly flexible and reacts more promptly to changes in the environment (Song, Platts, Bance, 2007). At the same time, it should be not-ed that against the background of the now thriving deconcentrating tendencies, outsourcing is a crucial concept (Gierszewska, Romanowska, 2007). It is of fundamental importance for the development of a new business model related to the construction of value chains. The enter-prise becomes a coordinator, developing a new quality by combining its activities with the competencies of other enterprises.

Considering the effectiveness of outsourcing, it must be highlighted that it is a com-plex concept which increases company operational efficiency in numerous areas of activity (Brewer et al., 2013). In addition to economic aspects associated with cost reduction, it is also related to strategic, organizational and market changes.

Changes in the organizational structure resultant from the application of outsourcing lead to the creation of new organizational systems within the enterprise. However, both the effects of outsourcing activities and the process of change take different courses, depending on the type of outsourcing (Greaver, 1999).

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Capital outsourcing should be treated as an organizational-management-type solution aimed at facilitating the management of large enterprises. This is even more important when the company's internal growth related mainly to investment in tangible assets causes man-agement expansion and a rise in the number of hierarchical levels in the organizational struc-ture and the spread of the levels of management (Chaabane et al., 2018). Internal cells often grow to reach the size of independent companies operating on the market. The holding organ-izational structure arising from outsourcing is an alternative to a multi-plant enterprise (Grossmann, Helpman, 2005).

Contract outsourcing leads to the formation of yet another method of company organi-zation. Material potential of the enterprise linked to the performance of business activities is subject to liquidation or transfer to an outside company. As a result of the above, the organi-zational structure of a mother company becomes leaner and simplified, while new contract-based connections with external units thrive. Contract outsourcing features contract rather than capital relations. Arrangements of that type may be made by a variable number of organ-izations and pertain to activities of both minimal and cardinal importance for the enterprise (Yan et al., 2019).

Nonetheless, outsourcing increasingly more often extends to cover strategic activities and involve agreements with multiple outside partners. The traditional organizational structure gives way to the web-like organization composed of units interrelated by various transactions and contracts (Burden, 2018). Nowadays, when all processes are accelerating, enterprises are expected to show more flexibility, necessary to survive on the marketplace (Bals & Turkulainen, 2017). Network organizations focus on the strategic, production and technologi-cal processes, communication and organization (Karamouzis, 2016).

Along the development of economic functions, the approach to company management is shifting. The said changes involve the transformation from the vertical functional structure to the process-based one (Bitkowska, 2013). The process-based action determines that value is generated by accumulating resources and skills in different functional areas (Kasiewicz et al., 2009). As a result, the term Business Process Outsourcing (BPO) more and more often comes into view in subject literature. K. Vitasek, M. Ledyard and K. Manrodt define BPO as entrusting an external service provider with the performance of a given process (Vitasek et al., 2011). Similarly, the described type of outsourcing is described as shifting orders, production, services or, generally, complete or parts of business processes to another company. D. Brown and S. Wilson define BPO as the transfer of a certain process to an external supplier who spe-cializes in its performance and can accomplish the tasks more effectively than the client him-self (Brown, Wilson, 2005). A certain point of reference for outsourcing in this context will be the focus on core competencies and long-term relations with an outside supplier to supply top quality products or services to consumers and ensure maximum client efficiency (Kehal, Singh, 2006; García-Vega & Huergo, 2019).

Thus, BPO involves the transfer of whole processes covering several areas of company operations to third parties (Krysińska et al., 2018). The objectives of BPO are, above all, the ability to focus on the completion of those processes in which the company has achieved operational perfection and which are of fundamental importance to its operations (Lacity, Willcocks, 2015).

3. Material and methods

The objective of the study is to present the underlying conditions related to the func-tioning of outsourcing at various levels of company operations. In addition, the research shows a detailed analysis of the purposes of outsourcing, the scope of outsourced services and the selection criteria. What is more, it includes an assessment of the level of company satis-faction with outsourcing performance and related risks.

The scope of conditions related to the functioning of outsourcing in the enterprises was analysed based on business entities operating across Eastern Poland. The studies conducted in the second half of 2019 covered 140 enterprises with areas of operation passed over to outside professionals. The selection of research subjects was

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intentional. The objects were selected on the basis of an analysis of the literature on the subject and statistical data relating to the region of Eastern Poland. It was important to preserve the diversity of objects characteristic of the area of research.

The main source of information of primary nature was a special survey designed for the purpose of the study. The survey contained questions regarding the characteristics organi-zational, economic and productive features of the enterprises. It was composed of two parts. The survey allowed the researchers to evaluate the scope of use of outsourcing services in company operations.

The descriptive, comparative and graphic methods were all applied to analyse the re-sults of the study. The descriptive method incorporated a detailed description of the features and events which are the object of the research with the help of numerical and verbal data. In the comparative method, the analysed objects and their constituents became also the objects of comparison. As a result of these comparisons, we could show significant differences and similarities between facts, processes, and phenomena.

4. Results and disscussion

Enterprises participating in the research differed in terms of number of employees. The largest group included companies employing between 50 and 250 people. They accounted for 56.4% of all companies. The second largest group was made up of enterprises employing be-tween 10 and 49 people (24.3%). The least numerous group (19.3%) were enterprises with over 250 employees. The above distribution was typical of the area covered by the research.

The group of employees targeted by the survey was not homogeneous. The most popu-lous group was middle management (59.3% respondents). People making up senior manage-ment constituted 26.4% of all analysed respondents. The least numerous group was made up of independent specialists (14.3% of all the studied population). The selection of respondents was an intentional selection. The questionnaire (survey) was designed to address senior man-agement, middle managements and independent specialists. They were the most competent persons when it came to the functioning of the organizational structure of the enterprise. Thanks to this, the level of insight into the use of outsourcing in each company could be ex-amined more thoroughly.

Of 140 respondents participating in the study, 72.1% were men and 27.9% were wom-en. The fact that more men than women participated in the study may be because more men than women were employed at senior positions in the studied enterprises.

The second part of the survey referred to the use of outsourcing in the company. This section focused on eliciting opinions from managers and top managements on the issue of the effects of outsourcing on company operations.
Services play a vital role in the implementation of outsourcing in businesses. They constitute the basis for determining the tasks which the company wishes to pass over to out-side operators (Kłos, 2009). The respondents had a chance to tick any number of services which have been contracted to external entities.

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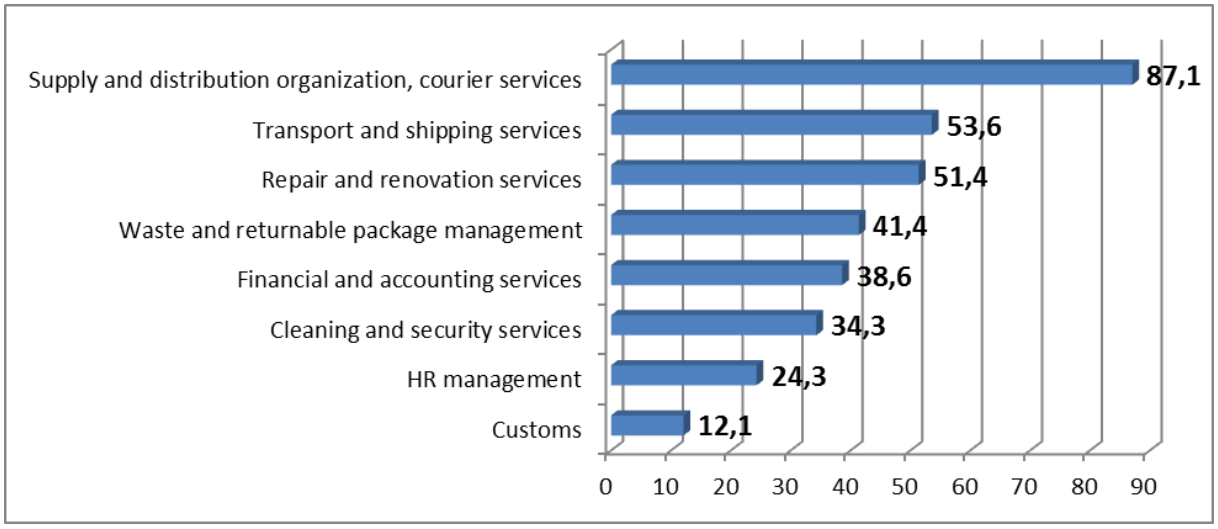

Fig. 1. The scope of outsourced services (in % of replies)
Source: compiled on the basis of own research

The analysis of data in Figure 1 demonstrates that the services most often handed over to outside companies were those related to the organization of supply and distribution (87.1%). Enterprises readily use courier services of companies operating both locally and globally. The evidence of common use of courier services is the growth dynamics in the cou-rier service industry in Poland. In the year 2019, the whole courier business grew twice as fast as the country's GDP. The organization of supply and distribution in large companies is sub-contracted to logistic operators (Ocieka, 2012). They tackle cooperation with suppliers and co-operators, often providing their own storage facilities or distribution centres (Kroes, Ghosh, 2010; Yuan et al., 2020).

Other areas willingly outsourced are transport and shipping (53.6% indications). A crucial scope of correlations related to this type of services was found in the groups of enter-prises employing between 50 and 250 people and over 250 people. It was observed that along the growth of the enterprise's size grew the frequency of use of transport and shipping ser-vices. It was further confirmed by the statistical analysis carried out based on the calculation of correlations.

What is more, 51.4% of the companies outsourced repair and renovation services. This is the consequence of either liquidation of repair departments and workshops or resignation from their creation in over a half of the studied companies. Activities related to waste and returnable package management were outsourced by 41.4% of the companies, finance and accounting services – by 38.6% and cleaning and security services – by 34.3%. Relatively less popular services performed by outside companies were HR management and customs. Only 24.3% (HR management) and 12.1% (customs) of the analysed enterprises outsourced the listed services.

Determining the goals that outsourcing entities wish to attain helps enterprises pursue objectives for which they had determined to cooperate with outside companies (Gołembska, 2009; Law, 2018). The distribution of responses regarding goals of logistic outsourcing is presented in Figure 2. The respondents could check a maximum of three answers.

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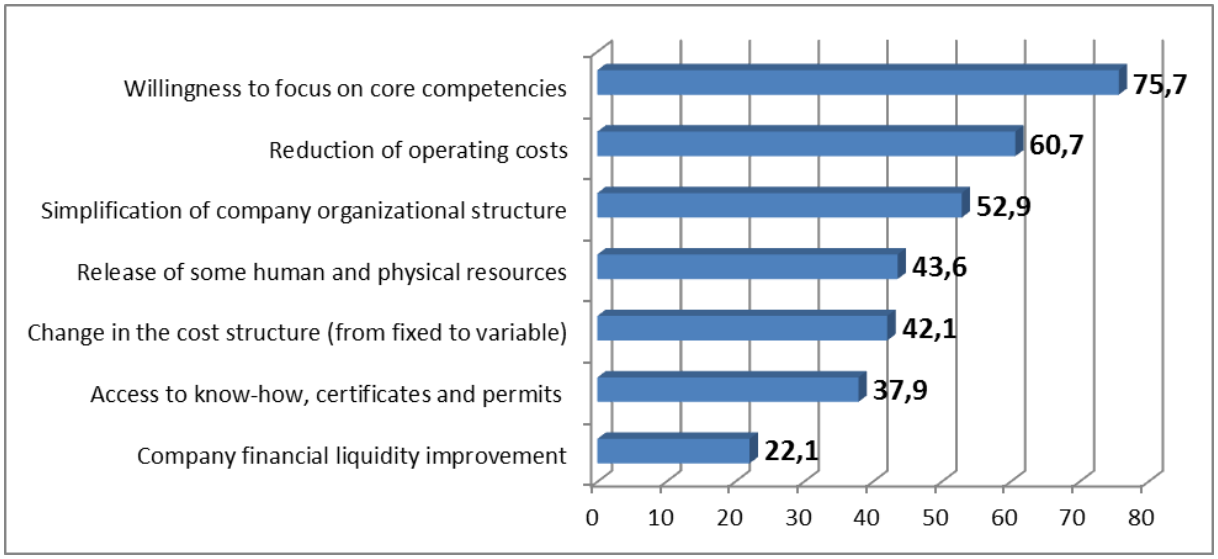

Fig. 2. Major objectives of outsourcing (in % of answers)
Source: compiled on the basis of own research

The most significant objective of outsourcing declared by the respondents was the willingness to concentrate on core competencies. This purpose remains the most important reason for which outsourcing decisions are made for 75.7% of the studied enterprises. A core competency is a set of special skills which ensues from the nature of company operations. The term was introduced in the early 90s and became key for the enterprise. The concept originates from the analysis of the sources of competitive advantage and assumes that the true source of a competitive advantage is the ability of managers to create technologies and productive skills ensuring individual strategic company units to promptly adapt to changing opportunities (Appiah-Adu et al., 2016). These skills are indeed referred to as core competencies that allow one to create a company's competitive advantage over a long period (Ai et al., 2019).

In relation to the analyzed enterprises, a correlation was observed that higher acceptability of outsourcing practices was among younger people. This demonstrates a greater willingness to take risks by young people belonging to the management of enterprises. Expectations for positive effects of changes were also greater for young people than for those with more experience.

The economic organization may try to win a strategic advantage based on either its own resources and skills or outsourcing – use of an outside supplier's services (Kim et al., 2018). The final decision is with the decision-makers in the enterprise, i.e. those who should be guided by rational action and take into consideration core competencies (Kabiraj & Sinha, 2016). For it is crucial that the enterprise creates its competitive edge on special skills that are difficult to copy, which will decide about the competitive advantage, and which will establish a stable basis for the operation of the organization (Höglund & Sundvik, 2016). The areas of lesser significance for the enterprise may, in turn, be transferred to an outsourcing unit to ben-efit both sides.

The cost reduction aspect plays an essential role in the taking of decisions to cooperate with external units and outsource (Kroes & Ghosh, 2010; Liu & Tyagi, 2017). Among the management staff of the analysed enterprises, 60.7% indications concerned the ability to re-duce operational costs. This signifies that the effectiveness calculation is of central importance when making decisions about outsourcing some of company activities.

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The singling out or separating some activities and passing them over to a third party had a direct impact on the simplification of company organizational structure (Rosar, 2017). This objective was selected by over a half of the respondents (52.9%).
Among the hierarchy of objectives, another ground for outsourcing was the ability to release some parts of material and human resources. It is of critical importance in the situations of limited human resources on the marketplace and difficulties in HR acquisition. This goal was selected by 43.6% of the respondents.

Together with the transfer of some activities to an outside operator, there was a possi-bility of modifying the cost structure (Verwaal, 2017). The participation of fixed costs in the total costs of business operations decreased. This will ultimately allow a smoother cost man-agement suited to production volumes (Williams & Durst, 2019). Approximately forty-two percent (42.1%) of the respondents indicate that the above action is vital. Some less important objective of outsourcing use was access to know-how, certificates and permits of an external operator (37.9%), and improvement in company financial liquidity (22.1%).

The presented multiplicity and diversity of the reasons behind outsourcing show its high value and considerable impact on many areas of company operations. This has not been without the consequences for increasing concept's popularity and the broad scope of its use in economic organization of the countries with developed market economy (Ding et al., 2018).

The respondents could check maximum three answers when responding to the question about the underlying criteria on the basis of which they select an outside operator. The distribution of their answers is presented in Figure 3.

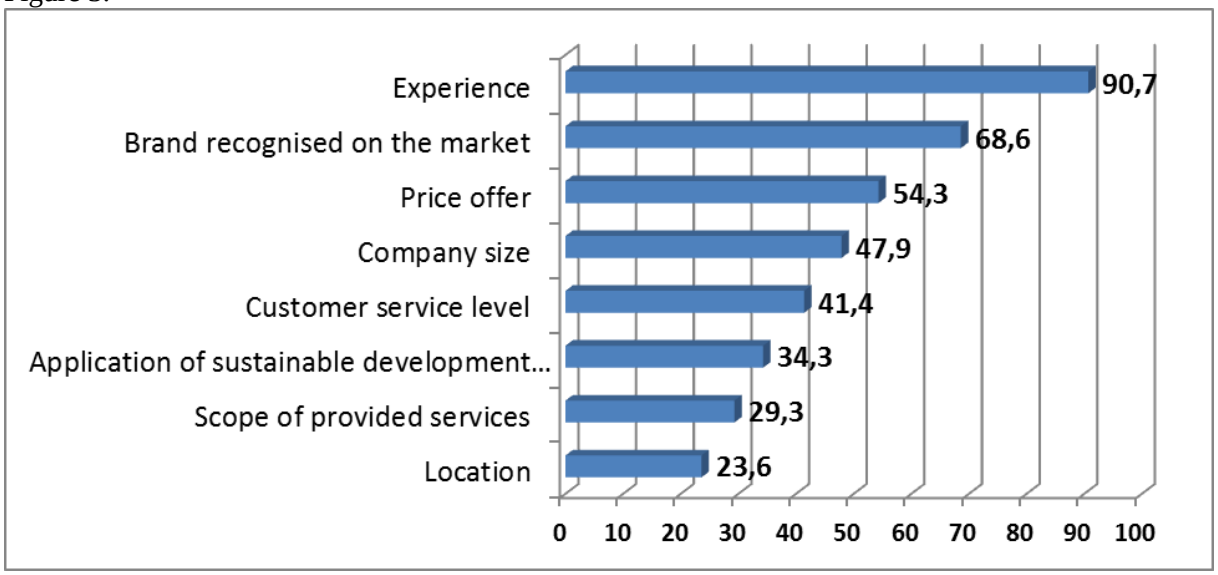

Fig. 3. Factors determining the choice of an outside operator (in % of answers)
Source: compiled on the basis of own research

The most crucial factor (90.7% of answers) determining the selection of an outside op-erator in the opinion of the studied group of respondents was operator's experience. This is not good news for enterprises who are now only planning to become an outsourcing service supplier. Market renown and attractive price offer were crucial criteria for 68.6% and 54.3% of the respondents, respectively. The size of outsourcing service providers (47.9%) and cus-tomer service quality (41.4%) were of slightly less importance to the respondents.

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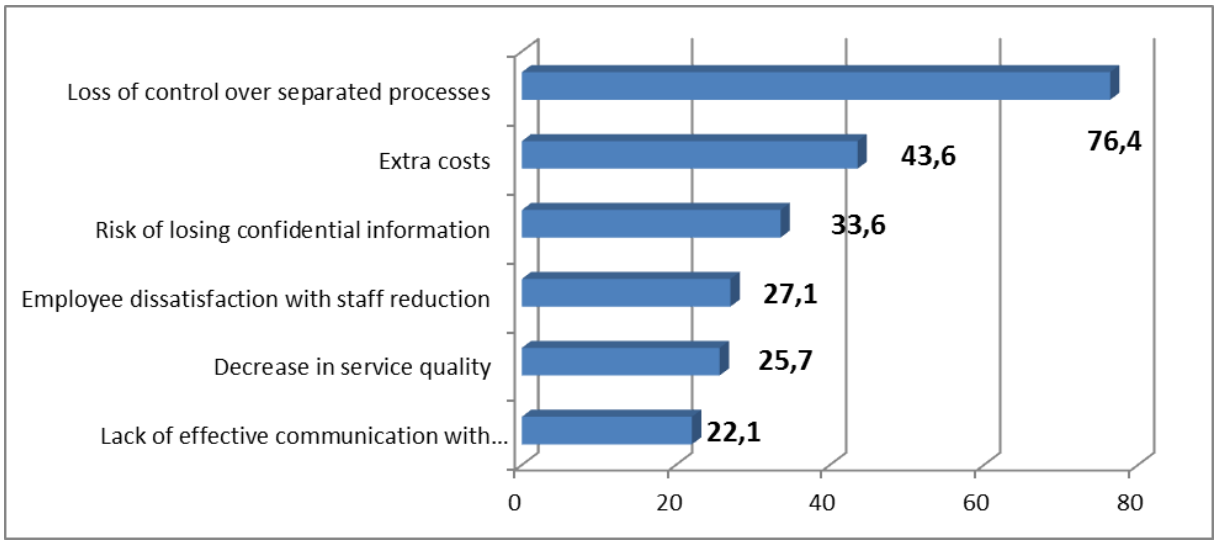
The factors of major importance when selecting outsourcing services providers were experience, recognition, price, quality, and the application of the principles of sustainable development. More than one-third of the respondents (34.3%) emphasised the meaning of the above elements in the case of companies employing over 250 people. Environmental aware-ness and compliance, conducting activities in accordance with nature and using renewable energy sources is becoming increasingly popular (Chams & García-Blandón, 2019). Coop-eration with outside companies operating along the principles of sustainable development, holding relevant certificates and permits in the field, translates directly into the development of good company image and increase in company value (Heydari et al., 2019). The less signif-icant selection criteria in the case of choosing an outside operator were the scope of provided services (32.1%) and enterprise's location (23.6% selections).

The risks involved with outsourcing play a vital role for on their basis enterprises con-sider whether to accept or reject offers of cooperation with external operators (Brdulak, 2012; Aron et al., 2005). The respondents could check a maximum of three answers (Fig. 4).



Fig, 4. The risks involved with outsourcing (in % of answers)
Source: compiled on the basis of own research

The distribution of answers relating to the risks involved with outsourcing shows that more than three quarters of the studied business entities (76.4%) are afraid of the loss of con-trol over a separated process. Moreover, the respondents fear additional costs and potential loss of confidential information (43.6% and 33.6%, respectively). In the opinion of the man-agement staff of the studied business entities, outsourcing is associated also with employee dissatisfaction related to personnel reduction (27.1%) or a drop-in service quality (25.7%). The lowest risk involved with outsourcing according to the surveyed staff is outsourcing be-coming the source of disruption to effective communication on the part of the service provid-ed (22.1% of answers). The scope of risk related to outsourcing presented here can also be treated as a set of disadvantages pointed out by Polish entrepreneurs in relation to outsourcing.

Yet another question in the survey referred to the degree of company satisfaction with outsourcing performance. The distribution of responses regarding the issue is presented in Figure 5.

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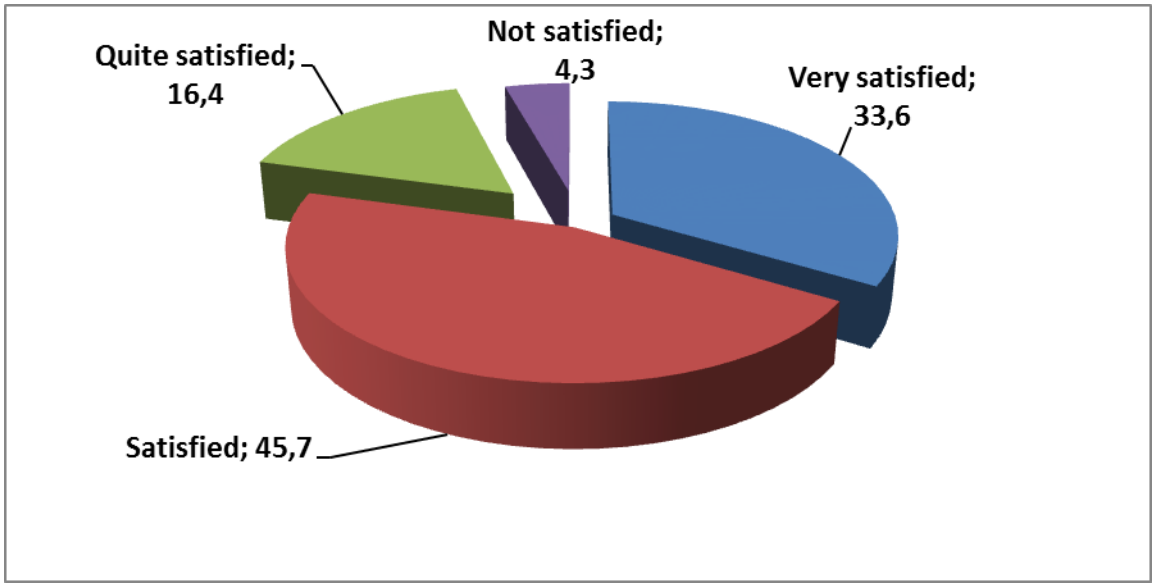

Fig. 5. Level of company satisfaction with outsourcing performance (in % of answers)
Source: compiled on the basis of own research

The analysis of data presented in Figure 5 demonstrates that one-third of the analysed businesses (33.6%) were very satisfied with the cooperation with outsourcing service provid-ers. Around forty-five percent (45.7%) of the respondents were satisfied with the cooperation. In total, over three quarters of the studied entities (79.3%) highly valued the cooperation with external operators. This indicates that the process of selecting an outsourcing partner is thor-ough and the decisions regarding the singling out or separating activities to be transferred to an external operator are well-considered. There were 16.4% of respondents who were quite satisfied. And only 4.3% of the respondents said that their organizations were not satisfied with cooperation with an outside operator. Next, the respondents were asked to evaluate the set of factors determining success in the performance of outsourcing activities. The distribution of responses is presented in Figure 6.

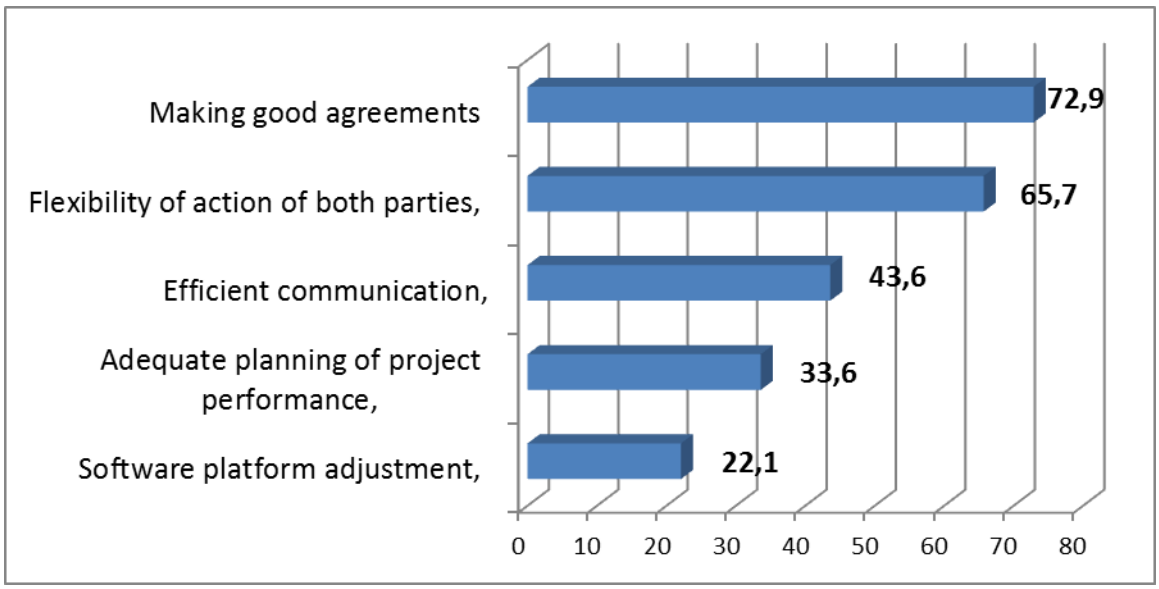

Fig. 6. Factors determining success in outsourcing process performance (in % of answers)
Source: compiled on the basis of own research

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Among the factors determining success in the passing over of actions to an outside op-erator, the respondents found good agreement making and readiness of both parties to be flex-ible to be most crucial (72.9% and 65.7%, respectively). Other element which appeared to be of great importance in succeeding with outsourcing was efficient communication. This factor was selected by 43.6% of the respondents. Relatively less important appeared to be project performance planning (33.6%) and software compatibility between the outsourcing service supplier and the customer (22.1%). Correct adjustment of software platforms was highly val-ued in large companies employing over 250 people. Finally, the respondents in the studied business entities were asked about their opin-ions regarding the use of elements of sustainable development by outsourcing service provid-ers (Fig. 7).

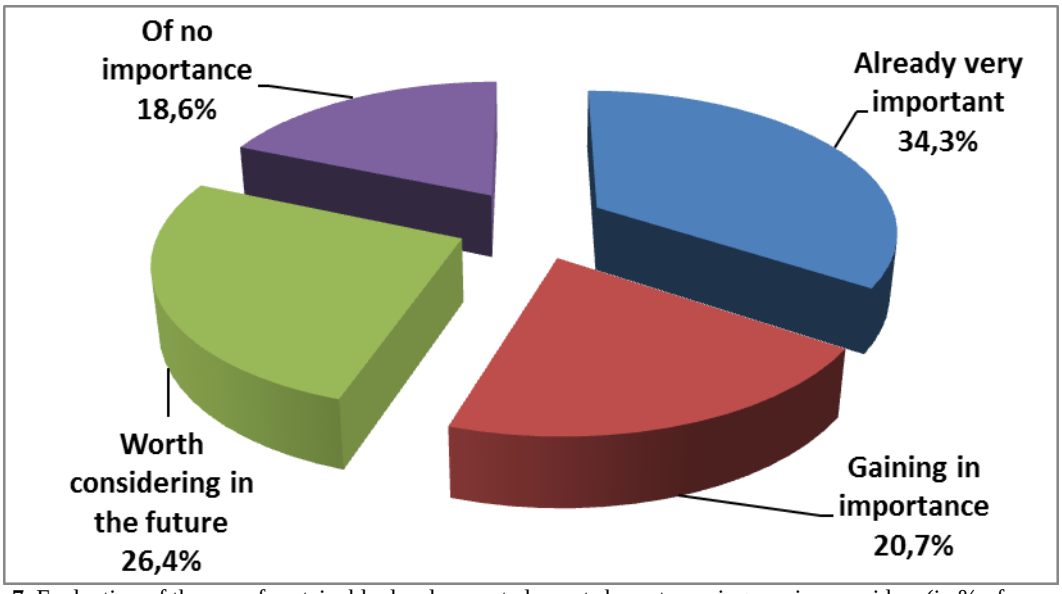

Fig. 7. Evaluation of the use of sustainable development elements by outsourcing service providers (in % of answers)
Source: compiled on the basis of own research

The significance of introducing sustainable solutions by an outside operator appeared to be very important for 34.3% of the analysed business entities. Another 20.7% of the re-spondents indicated that environmental aspects in the operations of an outsourcing service provider could be seen and were continually growing in importance. More than one-quarter of the analysed entities (26.4%) was interested in them and wanted to consider them in the future when selecting an external operator. Only 18.6% of the respondents considered the fact of external company's involvement or involvement with sustainable development principles to be of insignificant. The presented distribution of answers is evidence of high awareness of the importance of aspects of sustainable development for both the economic and social life (Tvaronavičienė, Černevičiūtė, 2015; Chen et al., 2019).

Conclusions

Outsourcing is an essential business tool in company operations which facilitates smooth management and faster development of organizations. It is worth to approach third-party professionals who may guarantee a constant supply of top-quality services in a sector the mother company is not familiar with.

Outsourcing is a tool used more and more frequently by companies operating in East-ern Poland. The use of outsourcing is seen as a popular business solution. Outsourcing has become not only a fashionable, nonstandard, rapid economic effect-oriented solution, but a common practice.

The conducted research revealed that the areas claimed to be most frequently out-sourced by the companies were: organization of supply, distribution, transport services and renovation-repair services. More than a half of the analysed enterprises pointed at the above listed fields.

The main objective of outsourcing use appears to be focus on core competencies and reduction of operating costs (75.7% and 60.7%, respectively). Another important reason of outsourcing processes appeared to be willingness to simplify the company's organizational structure and the ability to release some human and physical resources.

The factors of major importance when selecting outsourcing services providers were experience, recognition, price, quality, and the application of the principles of sustainable development. The last element was crucial, above all, in the case of companies employing over 250 people. This is because in their case cooperation with companies holding relevant certificates and permits in the area of sustainable development translates directly into the de-velopment of good company image and increase in company value.

The evaluation of satisfaction of the analysed organizations with logistic outsourcing performance demonstrates optimism. In total, over three quarters of the studied entities (79.3%) highly valued the cooperation with external operators. This indicates that the process of selecting an outsourcing partner is thorough and the decisions regarding the singling out or separating activities to be passed over to an external operator are well-considered. In addition, in the future these entrepreneurs plan to expand outsourcing activities in their units. They wish to do it while respecting the aspects of sustainable development, which are either already very important or gaining in importance for more than a half of the analysed entities.

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THE ASSOCIATION OF ENTREPRENEURIAL EDUCATION AND SUPPORT WITH ENTREPRENEURIAL INTENTION AT NORTHERN BOARDER UNIVERSITY: THE CASE OF STUDENTS FROM COLLEGE OF BUSINESS ADMINISTRATION

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Abstract. This study aims at empirically examining the association of entrepreneurial education and support with entrepreneurial intention among students in College of Business Administration at the Northern Boarder University for the academic year 2019-2020. Using data from a self-administered survey with a final sample of 266 students, the simple regression result indicates to a significantly positive association of the entrepreneurial education and support with entrepreneurial intention among College of Business Administration's students at Northern Boarder University. The results of this study should be useful to policy makers in Saudi Arabia at the country, ministry of education, the College of Business Administration, Northern Boarder University and elsewhere, as the KSA is aiming at achieving the ambitious KSA 2030 Vision.

Keywords: Entrepreneurial education and support; entrepreneurial intention; students from College of Business Administration; Northern Boarder University

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1. Introduction

Much evidence has demonstrated that there is a significant positive correlation between entrepreneurship and economic growth (Navarro, et al., 2009; Abdieva et al. 2019; Chienwattanasook & Jermsittiparsert, 2019; Otache 2019a; Lopes et al., 2020; Velilla & Ortega, 2020; Mukwarami et al., 2020). Entrepreneurship is regarded as one of the key elements to economic success, making a significant contribution to resolving unemployment problems, critically important at a time when a number of countries, both developed and emerging, are facing difficulties with graduate unemployment (Ahmad & Xavier, 2012; Ndofirepi, 2016; Farrukh et al., 2019). Sternberg and Wennekers (2005) and Ferrandiz et al. (2018) specifically state that economic growth is extremely dependent upon effective innovators and large numbers of entrepreneurs.

Schulte (2004), Vicens and Grullón (2011), Wells (2014), Saji and Nair (2018), Kim and Park (2018), Che Embi et al. (2019), Bazan et al. (2020), and Lopes et al. (2020) all agree that universities, both now and in the future, have an important part to play in encouraging entrepreneurs by providing the students with the requisite skillsets to join their ranks. It is agreed that universities are at the center of critical thinking, leadership, creativity, and innovation, and through producing graduates with these qualities they have a direct influence on society as a whole. It is crucial that students have educational experiences that allow them to exercise informed decision-making in the real world. Matlay and Carey (2006) and Teixeira et al. (2018) state that in contemporary developing and developed nations the concept that entrepreneurship education can help save a stagnating or declining economy has become extremely popular. Research by Charney and Libecap (2000) demonstrated that emergent companies with entrepreneurship graduates either as owners or employees experienced 500% more employment growth and sales than companies where entrepreneurship graduates were not present. Additionally, Arrif et al. (2010) state that entrepreneurship education, and entrepreneurship as a whole, is one of the most effective ways of solving problems of graduate unemployment. Matlay (2006) states that entrepreneurship education always correlates to both the amount and standard of entrepreneurial activity being enhanced.

A wide-ranging report produced after the UNESCO World Conference, 1998, laid great stress on how important entrepreneurship education is and demanded that national economies should think about how they could develop entrepreneurial skills (Greene et al., 2015). Entrepreneurship education encourages multifaceted thinking, allowing individuals to recognize where new opportunity exists and to convert concepts into reality. Kuratko (2004, quoted in Fitriati and Hermiati (2011)) regards entrepreneurship education as “a dynamic and social process in which a person, both as individual and in a collective group, identifies opportunities for innovation and action by transforming ideas into practices and activities with well-defined targets within social, cultural and economic contexts" (Luc, 2018). Entrepreneurship education has also been proposed as the optimal means of transferring the expanding number of graduates from education into the world of work, either salaried or self-employed (Matlay & Westhead, 2005; Alessa 2019; Che Embi et al., 2019).

This transfer is facilitated by entrepreneurial education by producing graduates who are more confident in their entrepreneurial skills and with taking risks (e.g., Otache 2019a;2019b). Promoting entrepreneurship in tertiary education is a way of increasing self-employment, risk-taking, and confident entrepreneurs (Segal et al., 2005). Richardson and Hynes (2008) states that entrepreneurship education in a broad application of the term offers crucial benefits. Wilson (2008) and others have stated that innovation and entrepreneurship must be thoroughly embedded in the curriculum to encourage students to adopt entrepreneurial ways of thinking. Essentially, entrepreneurial education is important as it promotes entrepreneurship (Barba-Sánchez & Atienza-Sahuquillo, 2018), and this is beneficial to the individual, companies, and wider society (Alberti et al., 2004; Arias et al., 2018).

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Saudi Arabia is the largest economy in the Middle East (World Bank, 2019) and the world's 18th largest economy, with plans to be ranked higher by 2030 in line with the KSA 2030 Vision; the promotion of entrepreneurship is central to this. Saudi Arabia wants to gradually wean itself off depending on oil and creating a more diversified economy rooted in services like tourism, recreation, infrastructure, education, and health. Targets encompass boosting non-petroleum trading with other countries in consumer goods, boosting investment, and increasing government spend on the Armed Forces and equipment. A crucial element of KSA Vision 2030 is the reduction of unemployment. Because of this, Saudi universities, particularly business schools, have acknowledged that they must increase the promotion and teaching of entrepreneurship, and many entrepreneurship centers have been created for this reason, Northern Border University's amongst them.

The Entrepreneurship Center was established in 2018 to offer consultancy, feasibility studies, and project support for entrepreneurs, facilitating financing for startups and innovators. A course in entrepreneurship is now available in every academic department of the College of Business Administration as an elective. The purpose of these initiatives is to provide entrepreneurship education that will create sustainable businesses. Entrepreneurial intentions have been shown to be one of the most significant predictors for entrepreneurial behaviors (e.g., Gelaidan & Abdullateef, 2017; Che Embi et al., 2019; Otache 2019a; 2019b; Otache et al., 2020; Thomassen et al. 2020). Gelard and Saleh (2011) states that the entrepreneurial intention of students must be carefully considered. While much research has been undertaken regarding entrepreneurship education, research regarding its influence is both limited and varied in its findings; indeed, there is little understanding about this area. The majority of research that has been undertaken as being in a variety of developing and developed nations, but not Saudi Arabia. Because of this, this research will assess the correlations between entrepreneurial education/support and entrepreneurial intention for students enrolled in the College of Business Administration at Northern Border University in the academic year 2019-2020.

This research adds to the knowledge base through assessing what promotes entrepreneurial intentions amongst students in Saudi Arabia in a specific State University, Northern Border University. The outcomes of this research will be of value to the academic community as there is little formal research looking at entrepreneurship in Saudi Arabia's universities. This research will provide a significant amount of data regarding entrepreneurship in Saudi Arabia's universities and make future predictions. As well as adding to the research regarding entrepreneurship, this research aims to inspire future researchers to investigate same subject. This research will offer practical direction that will be of assistance to both the University and the Ministry of Education, in that the results will help to inform University plans for enhancing the entrepreneurship intention of students regarding the achievement of KSA 2030 Vision both by improving the contemporary opportunities on offer and also by offering solutions to a number of challenges that exist for entrepreneurship within Saudi Arabia. Some challenges for the 2030 Vision program are to boost the proportion of GDP contributed by small and medium-sized enterprises (SMEs), to bring higher education and employment market closer together by helping students make better career choices, and to develop the talents of young people, making investments in their productivity in ways that will benefit them and society and the economy as a whole by, for example, decreasing unemployment.

This paper is organized as follwos. Section 2 reviews the literature and hypothesis development, section 3 discusses the research methodolody, section 4 highlights the results and discussions, and the final section introduces the conclusions and implications.

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2. Literature review and hypothesis development

Schulte (2004), Vicens and Grullón (2011), Wells' (2014) Saji and Nair (2018), Kim and Park (2018), Che Embi et al. (2019), Bazan et al. (2020), and Lopes et al. (2020) state that universities play a key part in encouraging entrepreneurship by providing students with the requisite skill set. All these researchers are in agreement that universities are central to critical thought, leadership, creativity, and innovation, and that the top graduates they produce have an influence on society as a whole. This makes it crucial that students are properly educated so that they can make the correct decisions in the future. Promoting and developing entrepreneurship/entrepreneurship education is a very "hot topic" in education in the majority of nations both as a social and political question (Ruskovaara & Pihkala, 2013; Hoppe et al., 2017; Teixeira et al., 2018). Entrepreneurship education is regarded as central to encouraging the development of future entrepreneurs (Shamsudin et al., 2016) which in turn is essential for addressing many modern social, economic, and political problems (Gibb, 2002; Henry et al., 2005; Fulgence, 2015; Che Embi et al., 2019; Thomassen et al. 2020; Otache et al., 2020), which makes it an important topic for students from every discipline. Many contend that student perceptions of entrepreneurship are being changed due to college courses in entrepreneurship that give credit towards qualifications.

Entrepreneurship has spread from business schools into other academic programs. Recently entrepreneurial programs/courses have appeared in other areas of the curriculum, e.g., business studies (Parcell and Sykuta, 2005; Miller, 2007; Curry, 2012). Matlay and Carey (2006) and Teixeira et al (2018) both state that in the current era entrepreneurship education is regarded in both developing and developed countries as being a crucial way of resolving economic stagnation and decline. Charney and Libecap (2000) state that new companies that either employ or are owned by entrepreneurship graduates enjoy sales and employment expansionthat is five times higher than comparable firms without entrepreneurship graduates. Additionally, Ariff et al (2010) state that entrepreneurship, especially entrepreneurship education, is one of the best ways of moving a larger quantity of graduates into employment.

Matlay (2006) states that entrepreneurship education invariably leads to enhancements in both amounts and levels of excellence for entrepreneurial activities. A thorough report prepared after the UNESCO World Conference in 1998 emphasized how important entrepreneurship education is and demanded that national economies should promote developing entrepreneurial skills (Greene et al., 2015). Entrepreneurship education encourages multifaceted ways of thinking, allowing entrepreneurs to recognize novel opportunities and implement their ideas in practical ways. Kuratko (2004) (quoted in Fitriati and Hermiati (2011)) states that entrepreneurship education is "a dynamic and social process in which a person, both as individual and in a collective group, identifies opportunities for innovation and action by transforming ideas into practices and activities with well-defined targets within social, cultural and economic contexts." Entrepreneurship education has also been recognized as the best way of finding sufficient employment/self-employment for the needs of the expanding graduate population (Matlay & Westhead, 2005; Alessa 2019; Che Embi et al., 2019; Bazan et al., 2020).

Entrepreneurship education helps this move to employment through promoting entrepreneurial confidence and making graduates more open to taking risks (e.g., Otache, 2019a, 2019b). Encouraging entrepreneurship in higher education is seen as a likely way of boosting entrepreneurial confidence, risk-taking behavior, and promoting self employment (Segal et al., 2005). Richardson and Hynes (2008) state that there are many advantages in the wider interpretation of entrepreneurship education across the curriculum. Agreeing, researchers like Wilson (2008) state that innovation and entrepreneurship must be thoroughly integrated to the curriculum to develop entrepreneurial enthusiasm and skills among students. Essentially, entrepreneurial education is important as a promoter of entrepreneurship (Barba-Sánchez & Atienza-Sahuquillo, 2018), and this has a positive influence for the individual, business, and wider society (Alberti et al., 2004; Arias et al., 2018).

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The part played by entrepreneurship education in fostering entrepreneurial behaviors has attracted increased academic attention in recent years (Bae et al., 2014; Fayolle & Gailly 2015; Martin et al., 2013; Entrialgo & Iglesias, 2016; Che Embi et al., 2019; Otache 2019a; 2019b). This is unsurprising because a central aim of entrepreneurship education is the generation of positivity regarding entrepreneurship and to develop thinking skills (Fayole et al, 2002), assisting students in recognizing, screening, and perceiving opportunity, a central part of entrepreneurship (Busenitz et al., 2014). Learning about entrepreneurship encompasses conceptualizing, creativity, making choices, and problem-solving (e.g., Anne & Liisa, 2011; Luc, 2018; Che Embi et al., 2019; Thomassen et al. 2020; Otache et al., 2020).

Entrepreneurship education means creating an environment for students that encourages entrepreneurship, which includes designing curricula satisfies the students' needs for entrepreneurship training. The more entrepreneurship education students are exposed to, the keener they will become on entrepreneurship (Ooi et al., 2011). In order to boost entrepreneurship, students should be offered programs/curricula that are relevant to this area (Shamsudin et al., 2017; Alessa 2019). Designing a relevant curriculum covering every area of entrepreneurship is a significant challenge for academia and specifically for universities (Fayoille et al, 2007). Thus, the following hypothesis is developed to be tested by this study:

H_1: Entrepreneurial education and support are related to the entrepreneurial intention.

3. Research methodoldoy

3.1 Questionnaire design

This study uses the quantitative method as the most popular and useful format of conducting a field or survey research. The collection of the data using the questionnaire survey is an appropriate data collection instrument to answer the identified research questions: “To what extent does the entrepreneurial education and support are associated with the entrepreneurial intention among College of Business Administration students at Northern Boarder University?” The model of this study is adopted and adapted from several previous studies to fit in the Saudi Arabian setting (Aneizi, 2009; Luthje & Franke, 2003; Ajzen, 2002; Nabi & Holden, 2008; Kolvereid 1996; Scholten, et al., 2004; Fayolle, et al., 2006; Kolvereid, 1996). The level of entrepreneurial education and support is, empirically, tested with the level of entrepreneurial intention in order to identify the extent to which the entrepreneurial education impacts the degree of the entrepreneurial intention. The dependent variable for the model is the entrepreneurial education and support and the independent variable is the entrepreneurial intention. The questionnaire was distributed out in Arabic language to the sample of the study after conducting a translation from English. A survey is chosen because it involves surveying students and recording their responses for analysis.

The strength of the survey as a primary data collecting approach is that it does not require a visual or other objective perception of the information sought (Cohen, 1992). The questionnaire is divided into two section. Section A is designed to obtain demographic information of the respondents. Questions were asked in this part relate to gender, age, specialization and level of study. Section B of the questionnaire consisted of two parts. The first part measures the student intention to become an entrepreneur in the future. The second part measures the extent to which the university education and support are a good preparation for entrepreneurship.

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3.2 Instrument of measurement

3.2.1 Demographic information

Section A in the questionnaire includes demographic information of the respondents. The demographic variables included in the survey are: gender, specialization, study level and age. In terms of the gender variable, a nominal value of 1 is assigned to "male," and 2 is assigned to "female." With respect to specialization, a nominal value of 1 is assigned to "accounting," 2 is assigned to "law," 3 is assigned to "human resource," 4 is assigned to "finance" and 5 is assigned to "marketing." As for the study level, a nominal value of 1 is assigned to "first level," 2 is assigned to "second level," 3 is assigned to "third level," and 4 is assigned to "forth level." In terms of the age, a continuous value is assigned to the variable's measurement.

3.2.2 Entrepreneurial Intention and entrepreneurial Education and Support

Entrepreneurial intention is one of the concerns of this study. This variable is a 1-item that is measured using a four-point Likert Scale and is used to measure the extent of the students' intention towards entrepreneurship. The four-point Likert Scale is ranging from 1 (very improbable), indicating to the lowest entrepreneurial intention, to 4 (very probable), indicating to the highest entrepreneurial intention. In specific, the four-point Likert Scale and the measured data have been transformed into four categories: "1" (very improbable) indicates to the very low entrepreneurial intention, "2" (quite improbable) indicates to a low entrepreneurial intention, "3" (quite probable) indicates to a high entrepreneurial intention, and "4" (very probable) indicates to a very high entrepreneurial intention. The one specific entrepreneurial intention item used to measure the respondents' level of agreement towards their inclination to start with an entrepreneurial project in the future is "I plan to become self-employed in the foreseeable future after graduation." If a significant level of the given item "entrepreneurship" is at 0.05 or low, it is considered a significant relationship, otherwise it is not.

The variable "entrepreneurial education and support" consists of 8-items to measure the extent to which the "entrepreneurial education and support" prepare the students to the entrepreneurship. A three-point Likert Scale is used to measure the level of agreement towards whether the university activities are deemed a good preparation for entrepreneurship. The Likert Scale is ranging from 1 (very accurate), indicating the highest agreement towards the contribution of the "entrepreneurial education and support" in preparing the students for the entrepreneurship, to 3 (not at all accurate), indicating the lowest agreement towards the contribution of the university activities in preparing students for the entrepreneurship.

In specific, the three-point Likert Scale and the measured data have been transformed into three categories: "1" (very accurate) indicates to a high level of agreement towards the contribution of the "entrepreneurial education and support" in preparing students for the entrepreneurship, "2" (somewhat accurate) indicates to the moderate level of agreement towards the contribution of the "entrepreneurial education and support" in preparing the students for the entrepreneurship, and "3" (not at all accurate) indicates to a low level of agreement towards the contribution of the "entrepreneurial education and support" in preparing the students for the entrepreneurship. However, this variable is subjected to reliability test before it was used for further analysis. There are eight specific "entrepreneurial education and support" items used to measure the respondents' level of agreement towards whether the "entrepreneurial education and support" are considered a good preparation for entrepreneurship. Statements in the questionnaire include:

- My university's creative atmosphere encourages the development of new business ideas.
- The University's curriculum encourages the leadership/social skills entrepreneurs require.
- The University's curriculum teaches students how to set up new companies.
- The University is supportive of creating multidisciplinary groups among students.

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- The University helps students to contact venture capitalists.
- The University plays an active part in promoting creating new companies.
- My university education will help me be an independent entrepreneur.
- My university education has encouraged me to consider taking risks.

If the significance level for particular items and for the whole "entrepreneurial education and support" category is 0.05 or lower, this is regarded as a significant correlation.

3.3 Model specification and analysis

This study applies a Simple Regression (SR) model. Nominal and continuous values were assigned to measure the value of the independent variables. In particular, the Model can be expressed as
follows:

$$SR\ (Y) = \beta 0 + \beta 1\ X1 + e \quad \ldots\ldots (1)$$

Where the dependent variable is:

SR (Y) = entrepreneurial intention (significance at level 0.05).

Where the independent variables are:

X1 = entrepreneurial education and support
e = Error term.

The analysis of data was completed using the SPSS version 20 for Windows. A descriptive statistical analysis using frequencies and percentages were used to describe the demographic variables. The research question was addressed using a simple regression.

3.4 Data collection

As for the sample to be selected for distributing out the questionnaire, the simple random sampling is applied to select sample subjects that represent the most suitable ones in providing data about the dimensions of the study. This technique is used in order to select the right sample to represent the whole population. Google Forms are used to design an electronic survey that is easily to be distributed out to a large number of the students. The electronic survey's link is then given to the students and faculty members in College of Business Administration to distribute it out to as many student as they could. The students were given a period of two weeks to return back a filled in survey. This technique resulted in a sample of 1400 selected students to obtain data from. These students are the most suitable respondents to provide data about the dimensions of the study. The sample subjects include students specialized in accounting, finance, marketing, human resource and law in College of Business Administration at Northern Boarder University for the academic year 2019-2020. The questionnaires returned were 326 questionnaires that represent 23% response rate from which 266 questionnaires were valid for analysis as shown in Table 3.1.

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Table 1. Sample selection

	Male section	Female section	Totals
Department of Law	271	170	441
Department of Accounting	85	164	249
Department of Human Resource Management	206	299	505
Department of Finance	39	102	141
Department of Marketing	26	38	64
Totals	627	773	1400
Returned respondents	151	175	326
Invalid surveys	(24)	(36)	(60)
Final sample	127	139	266

In the goals of this research, we considered such procedural elements as disclosure restrictions, data entry, and incomplete questionnaires. Every effort was made to complete incomplete questionnaires, but participants were not pressurized into providing data. Around 6% of the surveys had to be rejected due to not being properly filled; complete sections were left unfilled or a number of statements were not answered, rendering the surveys invalid.

4. Results and Discussions

4.1 Descriptive statistics

4.1.1 Profile of the respondents

A total of 266 questionnaires were gathered from the survey. As shown in Table 2, the majority of the respondents (52.3%) were male, and (47.7%) were female.

Table 2. Profile of respondents

Demographic information	Frequency (n = 266)		Percent %	
Panel A: Nominal variables				
Gender				
Male	127		47.7	
Female	139		52.3	
Specialization				
Accounting	105		39.5	
Law	121		45.5	
Human resource	27		10.2	
Finance	12		4.5	
Marketing	1		0.4	
Study level				
First level	10		3.8	
Second level	7		2.6	
Third level	43		16.2	
Fourth level	206		77.4	
Panel B: Continuous variable				
	Mean	Minimum	Maximum	St.Devation
Age	22	19	39	14.142

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4.1.2 Entrepreneurial intention

The students were asked whether they plan to become self-employed in the foreseeable future after graduation. Almost all the respondents indicate that they will "probable" (50%) or "very probably" (46.6%) become an entrepreneur some day in the near future. On the other hand, only (3%), "improbable," and (0.4%), "very improbable," are not thinking up to be entrepreneurs in the future as depicted in Table 3.

Table 3. Entrepreneurial intention (I plan to become self-employed in the foreseeable future after graduation)

Scale	Frequency (n = 266)	Percent %
Very probable	124	46.6
Probable	133	50
Improbable	8	3
Very improbable	1	0.4
Total	266	100

As shown by Table 3 that the students in College of Business Administration at Northern Boarder University have a high level of intention to be future businesspersons. This high degree of inclination gives a positive signal that the consequences on the economic growth would be great and positive (Sternberg & Wennekers, 2005; Navarro et al., 2009; Acs & Szerb, 2007; Audretsch & Thurik, 2001; Marchesnay, 2011; Kasseeah. 2016; Ahmad & Xavier, 2012). In addition, this entrepreneurial motivation would be the most powerful economic force in a manner that it contributes significantly to the unemployment problem (Ndofirepi, 2016; Ahmad & Xavier, 2012).

4.1.3 Entrepreneurial Education and Support

Respondents were asked to rate different items of entrepreneurial education and support they might find in the university as presented by Table 4.

Table 4. Entrepreneurial education and support

Statements		Likert scale		
		Very accurate	Somewhat accurate	Not at all accurate
1	The creative atmosphere in my university inspires to develop ideas for new businesses	50 (18.8%)	127 (47.7%)	89 (33.5%)
2	The courses foster the social and leadership skills needed by entrepreneurs	74 (27.8%)	141 (53%)	51 (19.2%)
3	The courses provide students with the knowledge required to start a new company	86 (32.3%)	140 (52.6%)	40 (15%)
4	My university supports building multi-disciplinary student teams	71 (26.7%)	113 (42.5%)	82 (30.8%)
5	The university provides a strong network of new venture investors	89 (33.5%)	130 (48.9%)	47 (17.7%)
6	The university actively promotes the process of founding a new company	77 (28.9%)	119 (44.7%)	70 (26.3%)
7	The university environment contributes to the enhancement of my personality toward independence in the profession	152 (57.1%)	101 (38%)	13 (4.9%)
8	The university environment contributes to the refinement of my personality toward risk trends	109 (41%)	124 (46.6%)	33 (12.4%)
	Overall	708 (33%)	995 (47%)	425 (20%)

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The percentage ratings of the "entrepreneurial education and support" of the respondents are measured using the three-point rating-scale. The "very accurate" rate indicates to a high agreement level to the item, the "somewhat accurate" refers to a moderate agreement level, and the "not at all accurate" indicates to a low agreement level. As for the first statement "the creative atmosphere in my university inspires to develop ideas for new businesses," the majority of the respondents indicate to a moderate agreement level (47.7%) to a low agreement level (33.5%). With regard to the second statement "the courses foster the social and leadership skills needed by entrepreneurs," the large portion of the respondents are moderately agreed (53%) with the statement to a high degree agreement (27.8%). Owning to the third statement "the courses provide students with the knowledge required to start a new company," the majority of the respondents are moderately agreed (52.6%) with the statement to a high degree agreement (32.3%).

In terms of the fourth statement "my university supports building multi-disciplinary student teams," the majority of the respondents indicate to a moderate agreement level (42.5%) to a low agreement level (26.7%). Regarding the fifth statement "the university provides a strong network of new venture investors," the higher portion of the respondents are moderately agreed (48.9%) with the statement to a high degree agreement (33.5%). In terms of the sixth statement "the university actively promotes the process of founding a new company," the majority of the respondents are moderately agreed (44.7%) with the statement to a high degree agreement (28.9%). As for the seventh statement "the university environment contributes to the enhancement of my personality toward independence in the profession," the majority of the respondents indicated to a high level of agreement (57.1%) to a moderate level of agreement (38%). Owing to the statement "the university environment contributes to the refinement of my personality toward risk trends," the highest portion of the respondents are moderately agreed (46.6%) with the statement to a high degree agreement (41%). Overall, the students are moderately (47%) to highly (33%) agreed that the entrepreneurial education and support at the Northern Boarder University enhance their entrepreneurial intention.

Table 5 ranks the items of the entrepreneurial education and support from the highest to the lowest. The range is between 95.1% to 66.5% indicating that the university entrepreneurial education and support enhance the students' entrepreneurial intention. Table 5 ranks the percentages for the 8 statements from the point of view that there is an entrepreneurial education and support for the students enrolled in College of Business Administration at the Northern Boarder University.

Table 5. Rank of responses (Entrepreneurial education and support)

Statements		Frequency	percent %
7	The university environment contributes to the enhancement of my personality toward independence in the profession	253	95.1
8	The university environment contributes to the refinement of my personality toward risk trends	233	87.6
3	The courses provide students with the knowledge required to start a new company	226	84.9
5	The university provides a strong network of new venture investors	219	82.4
2	The courses foster the social and leadership skills needed by entrepreneurs	215	80.8
6	The university actively promotes the process of founding a new company	196	73.6
4	My university supports building multi-disciplinary student teams	184	69.2
1	The creative atmosphere in my university inspires to develop ideas for new businesses	177	66.5
	Overall	1703	80

As shown by Table 5, the statement stating that "the university environment contributes to the enhancement of my personality toward independence in the profession" is ranked as the highest level of agreement. The statement "the university environment contributes to the refinement of my personality toward risk trends" appears in the second rank. In the third rank comes a view related to the statement states: "the courses provide students with the

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knowledge required to start a new company." The fourth rank indicates "the university provides a strong network of new venture investors." The fifth rank is given to statement stating that the courses foster the social and leadership skills needed by entrepreneurs." The sixth rank is pointed to the view of "the university actively promotes the process of founding a new company." The seventh rank points to the view that "my university supports building multi-disciplinary student teams." The eighth rank indicates to the point view that "the creative atmosphere in my university inspires to develop ideas for new businesses." Overall, the respondents indicate that the university entrepreneurial education and support enhance the entrepreneurial intention (80%).

4.2 Hypothesis testing

The objective of this study is to examine the degree of entrepreneurship education and support with the level of entrepreneurship intention in order to identify the extent to which the entrepreneurship education impacts the degree of the entrepreneurship intention. The dependent variable is the "entrepreneurial intention." The independent variable is the "entrepreneurial education and support" which consists of 8-items to measure the extent to which the "entrepreneurial education and support" prepares students to the entrepreneurship. A three-point Likert Scale is used to measure the level of agreement towards whether the "entrepreneurial education and support" is deemed a good preparation for entrepreneurship. The Likert Scale is ranging from 1 (very accurate) indicating the highest agreement towards the contribution of the "entrepreneurial education and support" in preparing students for the entrepreneurship, to 3 (not at all accurate) indicating the lowest agreement towards the contribution of the "entrepreneurial education and support" in preparing students for the entrepreneurship. The "entrepreneurial education and support" is 8 items and one overall "entrepreneurial education and support category" (computed by averaging those 8 individual items). The 8 specific items of the "entrepreneurial education and support" and the overall "entrepreneurial education and support category" are tested for their reliability. The reliability means the accuracy which concern on stability, dependability and consistency of an instrument. In this study, the Cronbach's Alpha coefficient used is based on the average correlation of items within a test if the items are standardized. The reliability test shows the Cronbach's Alpha coefficients. The instruments are reasonably accepted for the purpose of reliability as the depicted in the following Table 6:

Table 6. Reliability test

Items	The eight specific entrepreneurial education and support items	Alpha
Item 1	The creative atmosphere in my university inspires to develop ideas for new businesses	.785
Item 2	The courses foster the social and leadership skills needed by entrepreneurs	.782
Item 3	The courses provide students with the knowledge required to start a new company	.787
Item 4	My university supports building multi-disciplinary student teams	.788
Item 5	The university provides a strong network of new venture investors	.789
Item 6	The university actively promotes the process of founding a new company	.781
Item 7	The university environment contributes to the enhancement of my personality toward independence in the rofession	.849
Item 8	The university environment contributes to the refinement of my personality toward risk trends	.845
Overall entrepreneurial education and support category		
Reliability coefficients		.824

Simple Regression (SR) was used to evaluate the level of association of entrepreneurial education and support with entrepreneurial intention. As shown by Table 4.13, the R2 is 0.042 which means that this model has explained 4.2% of the total variance in the entrepreneurial intention.

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Table 7. Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.206	.042	.039	.562

Table 8 depicts that the F-value for the model is statistically significant at the 1% level which means that the overall model can be interpreted.

Table 8. ANOVA Analysis

	Model	Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3.683	1	3.683	11.649	.001[b]
	Residual	83.460	264	.316		
	Total	87.143	265			

Table 9 illustrates the Simple Regression results. As shown by Table 9 that there is a significantly positive association between entrepreneurial education and support with entrepreneurial intention (β = - .206, t = 3.413, P = .001, one-tailed significance). Therefore, hypothesis H1 is accepted.

Table 9. Simple Regression (n = 266)

Variables	Coeff.	*t*	*p*-value
(Constant)		7.639	.000
Test variable			
EES	0.206	3.413	0.001

This result gives support to what Schulte (2004), Vicens and Grullón (2011), Goedhuys & Sleuwaegen (2000), Ruiz et al. (2016), and Wells' (2014) documented that universities are playing and can play an important role in fostering entrepreneurship by equipping students with the right skills. They all agree that universities are hubs for innovation, creativity, leadership and critical thinking, which directly impact the wider society through their graduates. It is therefore imperative to ensure that students receive the right type of education to be able to make informed decisions afterwards. Entrepreneurship/entrepreneurial activity is a key way of assessing how any nation, economy, or sector is progressing, its quality, and how it may perform in future. They are essential for economic success, and any nation desiring a robust economic foundation should encourage the creation of small and medium-sized enterprises (SMEs).

5. Conclusions and implications

This study aims at testing the association of entrepreneurial education and support with entrepreneurial intention among students in College of Business Administration at the Northern Boarder University for the academic year 2019-2020. The results of this indicate that the students in College of Business Administration at Northern Boarder University have a high level of intention to be future businesspersons. This high degree of inclination gives a positive signal that the consequences on the economic growth would be great and positive (Sternberg & Wennekers, 2005; Navarro et al., 2009; Acs & Szerb, 2007; Audretsch & Thurik, 2001; Marchesnay, 2011;

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Kasseeah. 2016; Ahmad & Xavier, 2012). In addition, this entrepreneurial motivation would be the most powerful economic force in a manner that it contributes significantly to the unemployment problem (Ndofirepi, 2016; Ahmad & Xavier, 2012). The differences in the entrepreneurial intention by demographic variables (gender, age, specialization, and study level) indicated that there are no significant differences exist in the entrepreneurial intention based on the respondents' different demographic information. The result of this study indicates that entrepreneurial education and support are associated with entrepreneurial intention. It gives indication that universities are playing and can play an important role in fostering entrepreneurship by equipping students with the right skills. They all agree that universities are hubs for innovation, creativity, leadership and critical thinking, which directly impact the wider society through their graduates. Thus, hypothesis H1 is accepted.

Results from this study have several implications to the theory. First, the results of the descriptive statistics show that the students in College of Business Administration at Northern Boarder University have a high level of intention to be future businesspersons. This high degree of inclination gives a positive signal that the consequences on the economic growth would be great and positive. In addition, this entrepreneurial motivation would be the most powerful economic force in a manner that it contributes significantly to the unemployment problem. In addition, the positive association between entrepreneurial education and support with entrepreneurial intention gives indication that universities are playing and can play an important role in fostering entrepreneurship by equipping students with the right skills. They all agree that universities are hubs for innovation, creativity, leadership and critical thinking, which directly impact the wider society through their graduates.

Therefore, the results of this study extends the previous studies in the entrepreneurship by adding a new empirical evidence on entrepreneurial intention, and entrepreneurial education and support in the setting of Saudi Arabia. Further, studies may replicate this study to enhance the external validity of the results. Finally, it would be of interesting to expand the research scope and models by using a more sophisticated technique such as structural equation modeling. This study also has several implications for practice. First, as there is a high degree of entrepreneurial intention among the students in College of Business Administration, it is considered a good quality and it is a part of the ambitious KSA 2030 Vision to achieve.

This study is limited to several limitations. First, the findings are limited to the specific sample. The sample is drawn partly from 266 students in College of Business Administration. Thus, generalizing the results may not give the same findings. Therefore, it is a worthwhile exercise to find out whether different colleges at the Northern Boarder University are a significant factor for entrepreneurial intention. The medical, engineering and humanitarian colleges could also include as a sample for the future study. Future research could also conduct a comparative analysis to examine whether there is a significant difference in the entrepreneurial intention among the students belong to different colleges. Second, this is a self-reported study in which the respondents were asked to rate a one-item indicating to their entrepreneurial intention. Future research may use different measurements to measure the entrepreneurial intention. As a result, different trends of results may be documented. Third, this study measures the perception of the students towards the entrepreneurial education and support using 8-items; hence, it may not be representative of actual entrepreneurial education and support, or different measures could be used. Future research may replicate the same study using a different measure of the entrepreneurial education and support. Finally, this study is conducted among the students in College of Business Administration at Norther Boarder University. Future studies may replicate this study in different Business Colleges in different universities in the KSA.

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THE ROLE OF UNIVERSITIES IN SUPPORTING ENTREPRENEURIAL INTENTIONS OF STUDENTS TOWARD SUSTAINABLE ENTREPRENEURSHIP*

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Abstract. Entrepreneurship education should develop entrepreneurial people and aspiration by equipping individuals with the appropriate knowledge and skills to initiate and sustain enterprises. The concept of entrepreneurial intention becomes an interesting question when analysing the efficiency of university education in EU countries. The main aim of this paper is to find out whether universities support entrepreneurial intentions toward sustainability by providing necessary knowledge and skills. The conclusions are based on the opinions of students collected by the surveys conducted at Polish, Czech, Hungarian and Slovak universities in 2018/2019. The general conclusion is that in all studied countries the support is expected by students, but it seems to be insufficient in the area of knowledge provided by the university.

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Keywords: entrepreneurial behaviour; entrepreneurial intention; entrepreneurship education; entrepreneurial knowledge and skills; university; economic policies

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1. Introduction

Entrepreneurship since ancient times was connected, whether in terms of economic or psychological aspects, with exploration and implementation of new forms of development and the change of social status by the active individuals, societies and nations. For this reason, the interest of the researcher's head to the people who decide to start their own business. The variety of questions revolves around their characteristics and reasons for such a decision, around the concept of entrepreneurial activities and entrepreneurship. Entrepreneurial intentions are the expectation of individuals to start a business (Bosma et al., 2012; Grancay et al., 2015). Individuals undertake entrepreneurship for two reasons: to exploit a potential opportunity or out of necessity (Beynon et al., 2016; Lemańska-Majdzik & Sipa, 2015). The expansion of entrepreneurial activities i.e. internationalization is about conducting activities beyond the borders of the home country, crossing regional borders and being represented in different sectors of the national economy (Mura, 2019). Entrepreneurial intent can be personally, socially or even culturally driven (Autio et al., 2001; Jašková, 2019). The researchers constantly try to identify the factors of its intensification and measure the effects of entrepreneurial intent in long term perspective. Many recent researches on the relation of personality characteristics and entrepreneurship focus on the role of personality in the formation of entrepreneurial intentions and resulting business performances (Hmieleski & Baron, 2009; Zhao et al., 2010). However, already in 1990, Baumol calls for formal institutions to channel entrepreneurial energy into more productive activities. One of the most important groups influencing the entrepreneurial intention and its transformation into formalized entrepreneurial activity (enterprise) are higher education institutions. There are research studies focused on the connection between the university's education and entrepreneurial intentions of their students from several perspectives (Autio et al., 2001; Zyminkowska et al., 2019, Papadaki). Some of them are focused on specific target group of students (Barba-Sánchez & Atienza-Sahuquillo, 2018). University graduates should represent the driving force of the local economy thanks to their acquired knowledge, skills and natural intelligence (Belás et al., 2017; Girdzijauskaite et al., 2019).

The importance of effective education creates a research gap in the need to make comparisons between education systems in different countries in order to identify and implement best practices. This is what's new in the article that makes comparisons in four countries from the V4 group. Main research problem developed in this article is focused on the students' perception of support that provides their universities in case of their entrepreneurial intention creation.

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2. Theoretical Background

The need for entrepreneurial knowledge, skills and activity in all areas of life becomes more imperative, and education plays a crucial role in creating an entrepreneurial society and business culture. Organisations recognize the need for knowledge management on a strategic level and they use the appropriate tools (Bencsik et al., 2019). The number of educational programs in entrepreneurship at all levels of education continues to grow worldwide. Graduates of economic universities should be treated as the driving force of any economy due to the volume of their knowledge and natural intellect. Perspective future entrepreneurs belong to a group of people who, with their creativity and activity, are helping their countries to develop (Dvorsky et al., 2018). Entrepreneurship education should develop entrepreneurial people and aspiration by equipping individuals with the appropriate knowledge and skills to initiate and sustain enterprises (Kadir et al., 2012). Although these education programs vary by organizational structure, table of contents, methodology and educative techniques, all of them are created due to similar themes - stimulating the economic development of the environment in which they operate (Peterka et al., 2015). Reviews of the literature on enterprise and entrepreneurship education provide some evidence that these programs are successful in encouraging entrepreneurs to start businesses or improve the performance of businesses (Peterman & Kennedy, 2003).

Policymakers are also convinced that increased levels of sustainable entrepreneurship can be reached through education and especially entrepreneurship education. Sustainability behaviour can be predicted by intentions Entrepreneurship education has a positive influence on the development of the entrepreneurial spirit of young people, their intentions towards starting their own business, their employability and finally their role in society (Jakubiec, 2016). Therefore, a number of EU Member States have successfully introduced national strategies for entrepreneurship education or made entrepreneurial learning a mandatory part of school curricula – but more is needed. The important issue of students' entrepreneurship is their support. The practice showed, that the impact of entrepreneurial intervention according to Svabova et al. (2019) is rather short term in case of entrepreneurial sustainability. The European Commission's initiatives promoting entrepreneurship are summarized in an Entrepreneurship 2020 Action Plan, which is the newest version of several previous documents promoting entrepreneurship in EU. It aims to reignite Europe's entrepreneurial spirit through entrepreneurial education and training to support growth and business creation (European Commission, 2019; Ivanova et al., 2015).

2.1 Entrepreneurial Intentions

Entrepreneurial intention is a consolidated and rapidly developing area of research within the field of entrepreneurship, with a growing number of studies using entrepreneurial intentions as a significant theoretical framework (Fayolle & Liñán, 2014). The increasing interest in exploring the factors that build one's entrepreneurial intention is due to the fundamental role that entrepreneurs and entrepreneurial activities play in fostering economic and social development (Jünger & Piskorzová, 2009; Bagheri & Pihie, 2014, Baubonienė et al., 2018). Policymakers believe that more entrepreneurship is required to reach a higher level of economic growth. Indeed, empirical research promotes positive linkages between entrepreneurial activity and economic outcomes such as innovation and economic growth (Štverková & Humlová, 2016; Pellešová, 2016, Horecký & Blažek, 2019, Fabus, 2015, Shuyan & Fabus, 2019).

The literature does not provide a universally acceptable definition of the term "entrepreneurial intention". An intention can be defined as an anticipated outcome that guided by planned actions. In the entrepreneurship context, intention can be identified by the property needs to create a new venture in the business process, and as a predictor of the new reliable company (Kadir et al., 2012). Karabulut (2016) considers that entrepreneurial intention initiates entrepreneurial actions. Entrepreneurial intention shows the objective of an entity to choose entrepreneurship as a professional career. People who have entrepreneurial intentions plan to take calculated risks, gather required resources and create their venture. Hmieleski & Corbett (2006) stated that entrepreneurial

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intentions can be defined as the intentions toward starting a business with high growth potential. According to Thompson (2009, 676), the individual entrepreneurial intent defined as follows "a self-acknowledged conviction by a person that they intend to set up a new business venture and consciously plan to do so at some point in the future".

Given the importance attributed nowadays to the entrepreneurial capacity as a source of competitive advantage and economic development in the world of globalization, research focused on the analysis of entrepreneurial intentions is becoming an ever more important. Wu & Wu (2008) distinguish two categories of aspects relevant to the study of entrepreneurial intention - individual and social. To become entrepreneurs, individuals must first become nascent entrepreneurs. The process that is the basis for the creation of entrepreneurial intentions and behaviour is of the utmost importance. As regards social aspects, the level of entrepreneurial intention reflects the economic potential and economic environment of the country (Kordos et al., 2016). Understanding the level of entrepreneurial intentions provides perceptions to researchers and policy-makers to predict future entrepreneurial potentials and entrepreneurship activities that can be used to achieve economic goals (Yıldırım et al., 2016).

Various theories and models were developed to elucidate the decision to establish a new business, each addressing different factors of intentional entrepreneurial activity. Some researchers ascribe the intention to become an entrepreneur to personal traits and cognitive abilities. While, other studies emphasize the role of factors such as education and training that motivate and prepare students for establishing a new venture (Krueger et al., 2000). Some studies are based on an integrated approach that examines both - internal (personal) and external (contextual and environmental) factors that influence one's decision to establish new venture and how interactions among these factors affect the decision (Yıldırım et al., 2016). Personality features have a direct influence on entrepreneurial intention. However, as can be seen in Figure 1, the positive impact of these traits on entrepreneurial intention can be enhanced through entrepreneurial education moreover.

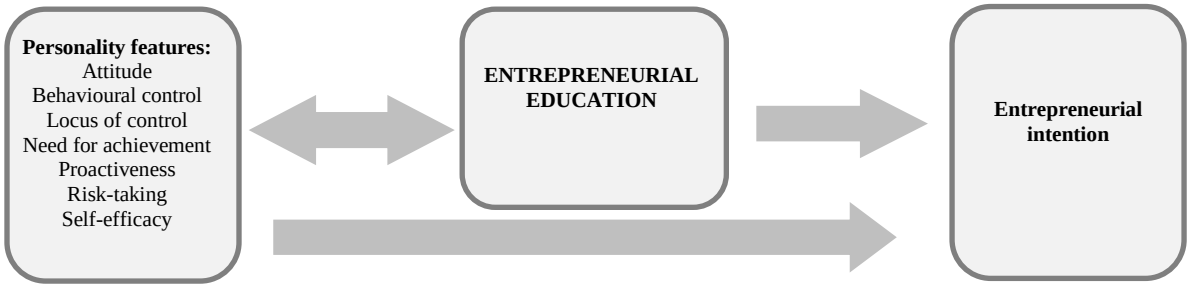

Fig.1. The main factors of entrepreneurial intention

Source: own processing based on Remeikiene et al., 2013.

In the theoretical background, there are numerous approaches to the study of entrepreneurial intentions and also efficiency (Kuncová et al., 2015). Fayolle & Liñán (2014) conducted a review of the literature and divided the most influential papers on entrepreneurial intentions, published in the years 2004 to 2013, into five main sub-areas of research. The first category includes papers studying the core entrepreneurial intention model (Hmieleski & Corbett, 2006; Thompson, 2009). These papers analyse the central elements of the model and solve theoretical of methodological issues affecting this model.

The second category encompasses papers focusing on the influence of personal characteristics, psychological variables, demographics or experience on entrepreneurial intention. As population ageing leads to great changes in the population structure, it is necessary for society to respond to this trend in several areas of social life (Grmanová, 2017). The impact of university studies on the formation of entrepreneurial intention is analysed by Wilson et al. (2007). They found entrepreneurship education have a greater impact on women´s self-efficacy and,

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through it, on intentions. This category is according Liñán & Fayolle (2015) represented as well for example by works Segal et al. (2005), Carr & Sequeira (2007), Liñán & Santos (2007), Guerrero et al. (2008). The third group of papers looks at the association between entrepreneurship education and entrepreneurial intent of its participants. They are classified study by Fayolle et al. (2006), Souitaris et al. (2007), Pittaway & Cope (2007), etc. The role the context and institutions play in the configuration of entrepreneurial intentions is addressed by papers from the fourth category. Authors of these papers focus on the influence of regional, cultural, institutional environments on the formation of entrepreneurial intentions (De Pillis & Reardon, 2007; Engle et al., 2011). The fifth research area considers the entrepreneurial process and the intention-behaviour link. This area is represented by works of Nabi et al. (2006) and Kolvereid & Isaksen (2006). In addition to the five above-mentioned categories, Liñán & Fayolle (2015) identified the sixth category, which includes several new research papers that cannot be classified into the five research areas. This last category represents "new research areas" – social entrepreneurship, sustainable entrepreneurship and other.

Among the most important theoretical frameworks investigating student's entrepreneurial intentions can be included Ajzen´s theory of planned behaviour (TPB) and Shapero´s Entrepreneurial Event Model (SEE). TPB is a general model to explain individual behaviour. Ajzen argues that intentions in general depend on perceptions of personal attractiveness, social norms and feasibility (Ajzen, 1991; Ajzen et al., 2009). Experts maintain the theory is appropriate to explain entrepreneurial intention as a conscious and intentional behaviour that can be enhanced by education and training (Krueger et al., 2000). According to the theory, intention to become an entrepreneur is the consequence of dynamic relations between approach toward entrepreneurship (awareness of the importance and positive or negative value of the new venture creation and its consequences), control over entrepreneurial behaviour (perceived competencies to carry out the tasks and roles of an entrepreneur and persistence in the face of problems) and subjective and social norms (Bagheri & Pihie, 2014). According to the SEE model person´s intent to start a business is influenced by perceived desirability, perceived feasibility, and propensity to act (Shapero & Sokol, 1982). These factors are presented as direct antecedents to entrepreneurial intentions.

2.2 The Role of the University Education in Enhancing of Entrepreneurial Intentions

In today's competitive world entrepreneurship is one of the main concerns of various institutions and organizations including universities around the world (Yıldırım et al., 2016). One reason for the increasing interest in entrepreneurship and entrepreneurship education is the positive impact of entrepreneurship on sustainable economic growth. Entrepreneurship education can be one way to increase the prevalence rate of entrepreneurs and, thereby, stimulate economic growth, job creation, sources of innovation and productivity. This led to the fact that many countries decided to invest in an entrepreneurship-friendly institutional infrastructure in general and entrepreneurship education in particular (Walter & Block, 2016).

Ambad & Damid (2016) stated that university education plays an important role in promoting entrepreneurship as a career choice by providing necessary exposure through knowledge about entrepreneurship. There are more universities offering courses on entrepreneurship in order to provide and prepare students with the necessary theoretical and practical knowledge. Besides, the courses are considered to be the best channel to create awareness in students to apply their skills and knowledge as potential entrepreneurs (Mat et al., 2015).

The literature identifies several advantages of entrepreneurship education. Walter & Block (2016) argue that the existence of entrepreneurship education can indicate the desirability of entrepreneurship and therefore sensitize students to entrepreneurial careers. Entrepreneurship education effects students' carrier choice and improves a student's vision to start their own business with innovation (Wilson et al., 2007; Küttim et al., 2014). Peterman & Kennedy (2003) discovered that participation in an entrepreneurship program significantly increased the perceived feasibility of starting a business, which implies that entrepreneurial education can increase entrepreneurial intention. Individuals learn to more effectively or rapidly bring business ideas to market than

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others, or feel more capable of doing so. In Rauch & Hulsink (2015) opinion students participating in entrepreneurship education show an increase in attitudes and perceived behavioural control and they have developed entrepreneurial intentions. They stated that entrepreneurial intentions mediate the effect of entrepreneurship education on subsequent behaviour accompanying with the creation of new business activities.

In theory, may be found a few studies suggest even negative, discouraging effects of entrepreneurship education. Oosterbeek et al. (2010) argue that it leads to students gaining a more realistic perspective on their entrepreneurial abilities, preferences and the requirements of successful entrepreneurial careers.

3. Research Description and Method

The main aim of the paper is to find out whether universities support entrepreneurial intentions by providing the necessary knowledge and skills towards sustainable entrepreneurship. The base for the scientific consideration in the article was the empirical research conducted by authors in Slovakia (SK), Poland (PL), Czech Republic (CR) and Hungary (HU) in 2018/2019, at managerial faculties. In addition, the respondents were selected within Master studies as to ensure the quality of the research, which should be conducted among respondents with the proper knowledge on the topic and being on the stage of life when the transformation of entrepreneurial intention into entrepreneurial actions is possible. The sample selection for each country was calculated according to formula (1) from Cochran (1977).

$$n_0 = \frac{Z^2 * p * (1-p)}{e^2} \qquad (1)$$

Where: n_0 is the requested sample size, Z is the Z value (e.g. 1.96 for 95% confidence level), p is the estimated proportion of an attribute that is present in the population. The level of p was calculated using the share of master students of management faculties in the total number of such students in the country. For Slovakia p=0.18, for Poland p=0.13, for Czech Republic p= 0.14 and for Hungary $p = 0.22$. e is the desired level of precision (in our study ($e = 0.04$).

We found out that according official registers (Ministries of education and Statistical offices) in each country in 2018/2019, there were in master study programs: 30 087 students in Slovakia, from which 18% represented students at managerial faculties, 438 201 students in Poland, from which 13% represented students at managerial faculties, 49 085 students in Czech republic, from which 14% represented students at managerial faculties and 33 081 students in Hungary, from which 22% represented students at managerial faculties. According formula (1) we calculated the required minimum sample size for each country: in Slovakia (355), in Poland (272), in the Czech Republic (289) and Hungary (412). The next stage of the survey was the questionnaire form fulfilment by selected respondents in electronic or paper form. After the preliminary assessment of the obtained material, 1456 properly completed questionnaires were accepted, including 366 from Slovak universities, 290 from Polish universities, 322 from Czech universities and 478 from Hungarian universities. The structure of respondents according two categories (country and gender) presents table 1.

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Table 1. The structure of respondents

Category	Characteristics	SK	PL	CZ	HU
Gender	Men	22,68%	40,00%	21,74%	53,77%
	Women	77,32%	60,00%	78,26%	46,23%
Total		**366**	**290**	**322**	**478**

Source: own research

To reach the main aim of this research, the statistical analysis of the obtained material was realised in the next step. We set out the following hypothesis for this research:

- *H1A: There is a statistically significant difference in the consideration of students about starting own business after graduation in terms of country from which they come from.*
- *H1B: There is a statistically significant difference in the consideration of students about starting own business after graduation in terms of gender.*
- *H2A There is a statistically significant difference in the declaration of students about sufficiency of knowledge gained at university in terms of country from which they come from.*
- *H2B There is a statistically significant difference in the declaration of students about sufficiency of knowledge gained at university in terms of gender.*
- *H3A There is statistically significant difference among students' perception of professional skills provided by V4 universities that are sufficient and useful for own business running after graduation in terms of country from which they come from.*
- *H3B There is statistically significant difference among students' perception of professional skills provided by V4 universities that are sufficient and useful for own business running after graduation in terms of gender.*

For the processing of obtained results, the statistical methods of Chi-square test ($\chi 2$) of homogeneity was used to see whether the students' decisions about starting their business and their expectations in respect to the university's support in setting up and running students' own business differ in observed countries. The stated hypotheses were tested on the significance level of p=0.05. If the calculated p-value was lower than the significance level, the stated hypotheses were accepted. The calculations were made through the software STATISTICA6.

4. Results of Research

The results of the research devoted to the students' perception of selected issues related to doing business after graduation within V4 countries are stated in this part of the paper. At the beginning, students declared if they consider own business after graduation (they could respond yes, no, or I don't know). The respondents' answers presents table 2.

Table 2. The students' declaration about starting own business after graduation

Attitude of students	SK			PL			CZ			HU		
	Men	**Women**	**Σ**	**Men**	**Women**	**Σ**	**Men**	**Women**	**Σ**	**Men**	**Women**	**Σ**
Yes	16	65	**81**	68	54	**122**	25	71	**96**	56	30	86
No	23	86	**109**	14	40	**54**	28	89	**117**	148	93	241
I don't know	44	132	**176**	34	80	**114**	17	92	**109**	51	95	146
Total	**83**	**283**	**366**	**116**	**174**	**290**	**25**	**71**	**96**	**255**	**218**	**473**
χ^2 (H1B)	p=0.57956			**p=0.00002**			p=0.15012			**p=0.00000**		
χ^2 (H1A)	**p=0.0000**											

Source: own research

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In Slovakia 48.09% of students declared, that they don't know if they start with own business after graduation. In Poland the most of the students declared that they start with business after graduation. Students in the Czech Republic (36.34%) and Hungary (50.42%) declared that they do not plan to start own business. To start with own business requires to fulfil and to know the specific conditions of the business environment in each country. In the evaluation of this question, we try to find out, if there are differences in the relative frequency of responses in students' answers due to the country from which they came from (H1A-Table 2). The results of the calculated p-value (p=0.0000) are lower than the confidence level (p=0.05). It means that the H1A was accepted. There are statistically significant differences among answers of students from V4 universities. The hypothesis H1B (Table 2) was confirmed for Poland (p=0. 00002) and for Hungary (p=0.00000).

In the next step students expressed, if the level of gained knowledge at university were sufficient and useful for them in case of their own business running (Table 3). For expression, they used the 5-points Likert scale (1- strongly disagree, 2 - disagree, 3 - neither agree nor disagree, 4- agree, 5- strongly agree). Analysing this aspect in four countries the significant differences can be seen (Figure 2). In terms of providing knowledge, the education system in Hungary (mean 4.54) was rated the highest and the lowest in Poland (mean 3.30). In turn, the acquisition of knowledge at the universities in the Czech Republic and Slovakia - countries with a common tradition of building educational systems - was equally assessed. When analyzing the level of standard deviation, it should be stated that the highest diversity of answers was recorded among Polish respondents, and the lowest diversity among respondents from Slovakia.

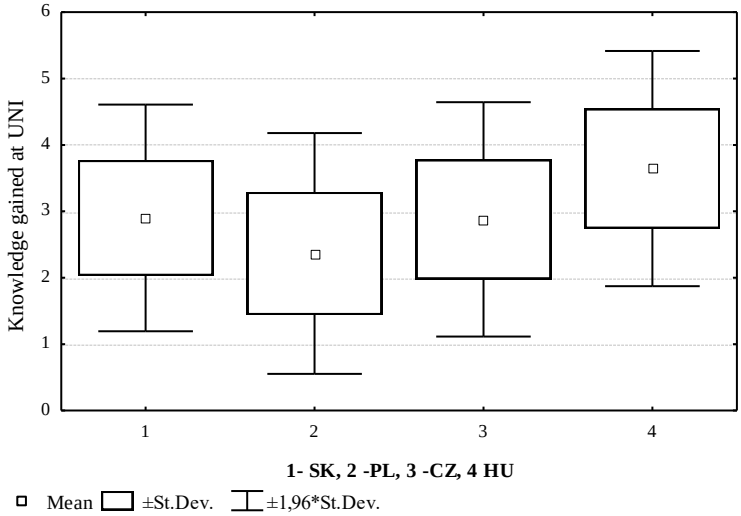

Fig.2. The assessment of students' perception of gained knowledge in V4 countries

Source: own research

As Table 3 depicts, that the most students (490) in V4 countries neither agree nor disagree with the statement related to gained knowledge at university as sufficient and useful for the running of their own business. The most students who signed this statement were from Slovakia (49.73%). The statistical analysis with using Chi-square test (Table 3) confirmed hypothesis H2A (p=0.0000) and H2B for the Czech Republic (p=0.00010) and Hungary (p=0.000755).

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Table 3. The assessment of gained knowledge

Attitude of students	SK		Σ	PL		Σ	CZ		Σ	HU		Σ
	Men	Women		Men	Women		Men	Women		Men	Women	
Strongly disagree	12	16	**28**	20	24	**44**	8	10	**18**	20	0	**20**
Disagree	19	51	**70**	54	86	**140**	27	68	**95**	12	10	**22**
Neither agree nor disagree	37	145	**182**	24	40	**64**	18	102	**120**	69	55	**124**
Agree	15	67	**82**	18	22	**40**	14	72	**86**	126	123	**249**
Strongly agree	0	4	**4**	0	2	**2**	3	0	**3**	28	30	**58**
Total	**83**	**283**	**366**	**116**	**174**	**290**	**70**	**252**	**322**	**255**	**218**	**473**
χ^2 (H2B)	p=0.041407			p=0.63016			**p=0.00010**			**p=0.000755**		
χ^2 (H2A)	**p=0.0000**											

Source: own research

The next analysed area concerns students' opinions about professional skills obtaining during the study (Table 4) and its sufficiency for students' future from the point of view of sustainable entrepreneurship. As a general consideration, it should be emphasized that the acquisition of skills by students during university education was rated higher than the acquisition of knowledge in all countries studied. The distribution of the average response was, however, analogous, i.e. the highest average was noticeded in Hungary (mean 3.82) and the lowest in Poland (mean 2.67), while in the Czech Republic and Slovakia the average response was similar. In the case of acquiring skills, the standard deviation in all countries was significantly higher than in the case of acquiring knowledge, which indicates a greater diversity of respondents' answers.

The results of the mean analysis of students' declaration, that the university provided the skills necessary for the starting of their business towards sustainability (Figure 3) showed, that the most of Hungarian students (39.49%) agree with this statement.

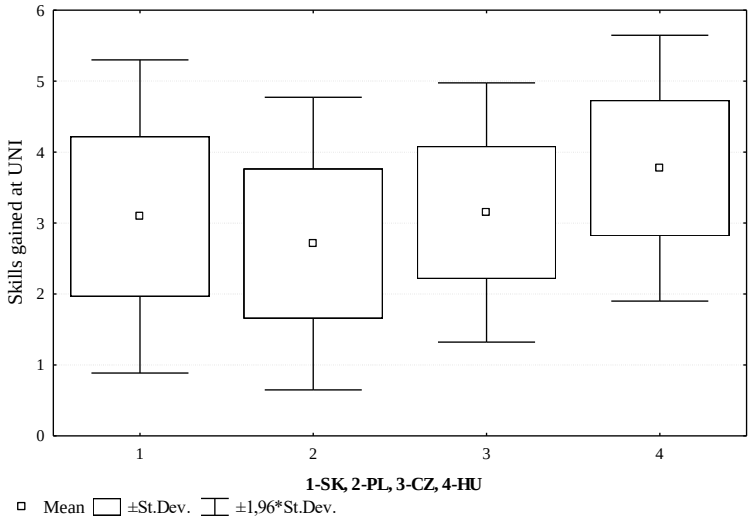

Fig.3. The assessment of students' perception of gained skills in V4 countries

Source: own research

The most students (39.49%) agree that professional skills gained at university will help them for running their business. This statement was confirmed by 17.45 of Hungarian students, 9.13% of Czech students and 8.79% of Slovak students. On the opposite side, the most of the Polish students disagree that their university provide the necessary skills for doing business.

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Table 4. The assessment of gained skills

Attitude of students	SK		Σ	PL		Σ	CZ		Σ	HU		Σ
	Men	Women		Men	Women		Men	Women		Men	Women	
Strongly disagree	12	35	**47**	16	12	**28**	3	13	**16**	17	5	**22**
Disagree	14	36	**50**	52	64	**116**	17	48	**65**	10	10	**20**
Neither agree nor disagree	23	93	**116**	14	58	**72**	15	87	**102**	57	35	**92**
Agree	22	106	**128**	30	30	**60**	32	101	**133**	116	133	**249**
Strongly agree	12	13	**25**	4	10	**14**	3	3	**6**	55	35	**90**
Total	**83**	**283**	**366**	**116**	**174**	**290**	**70**	**252**	**322**	**255**	**218**	**473**
Chi square p-value (H3B)	**p=0.01175**			**0.01175**			p=0.134209			**p=0.005593**		
Chi square p-value (H3A)	**0.0000**											

Source: own research

The results of p-value of Chi square test (p=0.0000) presented in Table 4 showed, that there are differences among students' perception of gained skills among V4 countries. We confirmed H3A. In case of H3B evaluation, based on the results of p-value, we can confirm this hypothesis for Slovakia (p=0.01175), Czech Republic (0.01175) and Hungary (p=0.005593). In these cases we can observe differences among respondents' answers in term of gender.

Discussion and Conclusion

The role of the university in supporting the entrepreneurial intentions toward sustainable entrepreneurship of their students is widely described in economic and managerial literature. The efficient system of education can strengthen entrepreneurial attitudes and lead to their conversion into new ventures. There is a need to improve the administrative management system of the higher education (Yang et al., 2020) The literature emphasizes that human capital developed within a proper higher education may positively influence the number of entry into a new venture (Dheer & Lenartowicz, 2019). Entrepreneurship education could improve understanding and experience of young people increasing their self-efficacy level (Nguyen et al., 2019). It is pointed out that many universities are focused on entrepreneurship education to the university curriculum in order to encourage students to choose entrepreneurship as a viable career choice. Papadaki et al. (2017) emphasizes through their results, that 90% of the students in their research showed the highest interest of entrepreneurship. However, many studies proved that university students are not ready to take advantage of entrepreneurial opportunities and do not plan to start a business in the short term. This statement was explained by Iwu et al. (2019) who suggested that the motivating role of entrepreneurship education is visible as far as students perceived entrepreneurship education to be valuable. Edwards-Schachter et al. (2015) indicated that entrepreneurship education may not be sufficiently focused on raising soft skills like creativity. Esfandiar et al. (2019) pointed that educational programs fostering entrepreneurship should include active learning e.g. creative business thinking skills, teamwork, setting up a business, exercises to problem-solving as well as direct visits to prestigious business projects, and meetings with successful entrepreneurs. Fuller et al. (2018) emphasized that entrepreneurial education should be focused on developing creative self-efficacy and learning self-efficacy to increase entrepreneurial intentions. A current situation analysis confirms the need for development strategies and policy solutions towards education to increase entrepreneurship plans and actions among students and graduates (Neneh, 2019) through customized educational programs.

Sustainable education reflects the whole system perspectives, and it aims to achieve learning for change. Studying people usually complain of many theoretical concepts without obvious connections and practical applications. The general dissatisfaction with the quality of education can reduce the motivation of students to study (Snieska et al., 2020). It focuses on quality education that provides not only measurable learning outcomes and national standards, but also encourage lifelong learning and developing the knowledge, skills and competencies of

individuals to strive to change (Didham and Ofei-Manu, 2020). As research of Berková et al. (2020) showed, although students have shown interest in doing business, they are not fully aware of the real situation in the area of taxes and accounting and other legislative processes. Sustainable education helps learners to examine and reflect upon their professional responsibilities, capabilities, and personal motivations (Mulà et al., 2017). When discussing how to improve the overall quality education including sustainable goals, four elements seem to be the most important: applying a well-developed curriculum, improving the quality of teaching methods, establishing a safe and effective learning environment, and inspiring cooperative and transformative learning (Didham and Ofei-Manu, 2020). Nowadays, critical challenges in ecology and aspirations of society brings the need to prepare leaders with a new set of skills, knowledge, attitude to make decisions and succeed in the process of shaping a future in sustainable world. Universities should enhance the capacity of individuals and organizations to gain knowledge and skills so that they can influence systems and participate in decision-making processes (Angeloni, 2020). To create new outcomes through the learning process, education system need to be transformed to disseminate new curricula, learning methods, research and outreach. Meanwhile, the pace at which universities and schools have fostered change seems to be slower than the pace at which the new challenges have threatened and warned global civilization (Assumpção and Neto, 2020).

Based on the conducted questionnaire research it can be concluded that in all studied countries the support in setting up and running own business is expected by students, especially in Hungary. Evaluating university support, students declare that the knowledge provided by the university is of limited sufficiency. It seems to be slightly better when professional skills were assessed. It could be concluded that teaching towards sustainable entrepreneurship should be improved in analyzed countries. And at the beginning of the improvement process, the basic question should be asked by university management: How could universities deal with the challenge of sustainable entrepreneurship in a systematically and strategically planned manner (Isenmann et al., 2020).

The main contribution of this paper to the knowledge from this area is the comparison of students' opinion from four countries, similar in economic development and historical changes in the economy.

The practical application of the study is visible in the possibility of improvement of the educational standards in the area of business and management education. It could be useful not only for economic faculties but for all kinds of studies to equip students with the knowledge and skills necessary to run their own business.

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LONG-TERM IMPACT OF NATURAL DISASTERS ON VIETNAMESE INCOME PER CAPITA: THE CASE OF TYPHOON DURIAN*

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Abstract. This study estimates the effect of natural disasters on Vietnamese income per capita in both short and long-term. The analysis also evaluates the effects by sources of income including income from salary; income from agriculture, fishery, forest; and income from industry, construction, trade, and services. Typhoon Durian happened in December 2006 in southern provinces of Vietnam is chosen for the comparative case study. The analysis applies the Synthetic control method (SCM) to construct a counterfactual with respect to two different control groups and conducts a permutation test for the estimated values. The results show that typhoon Durian decreased aggregate income per capita of the affected region and the effect was long lasting. The reduction of monthly income per capita was estimated to be 56,925 VND which accounts for 7.9% of the total income. The most affected source of income is from agriculture, forestry, and fishery.

Keywords: typhoon; income per capita; synthetic control method

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1. Introduction

Research on the impact of natural disasters often focus on the short-term, leaving much of the long-term impact unexplored (Noy and DuPont, 2018; Fakhry et al., 2018; Chehabeddine, Tvaronavičienė, 2020). One could speculate that in the short-term, farms destroyed by disasters have no harvesting, factories damaged by disasters have little output and hence a negative impact on output is inevitable. Speculation of long-term impacts of natural disasters is more complex. In the long-term, new crops will likely be planted on farms, damages at factories will likely be remedied and output will likely recover to equilibrium. Further, damage caused by natural disasters may enable better investment in new technology, and hence allow to achieve higher output in the long-term. Hence, long-term impacts of natural disasters can be positive, negative or neutral based on the post-disaster relief and post-disaster investments (Rempel, 2010).

Estimating a long-term impact of natural disasters is challenging, both empirically and theoretically. Theoretically, natural disasters do not have a clear-cut effect on output and economic growth over the long-term. Traditional neo-classical growth models predict that a negative capital shock following a natural disaster does not affect the rate of technological progress and therefore have little effect over the long-term growth. On the other hand, endogenous growth models based on creative destruction process argue that negative capital shocks may spur the process of reinvestment and upgrading of capital goods and thereby lead to higher growth (Caballero & Hammour, 1994; Cavallo et al., 2013; Heger & Neumayer, 2019). Endogenous growth models that assume increasing return to capital, however, predict a lower growth prospect. Empirically, to estimate the long-term effect, one must collect the data several years before disasters and several years after disasters. In some cases, data are not sufficiently available for making inference statistics. In addition, since there are many factors that can affect output in the long-term, it is difficult to separate the impact of disaster from the impact of other factors.

Most of existing empirical studies rely on household survey data to analyze the short-term impact of natural disasters. Whilst these studies differ with respect to the regions chosen as comparative case studies, the specific types of disasters and the methods used to estimate the impact of disasters, they largely find an income reducing effect of natural disasters for the short-term (Paxson, 1992; Thomas *et al.*, 2010; Coffman & Noy, 2012; Bui *et al.*, 2014; Arouri *et al.*, 2015; Gignoux and Menéndez, 2016; Karim, 2018; De Oliveira, 2019; Tselios & Tompkins, 2019). The negative impact of natural disasters on income is estimated ranging from 1.9% for the case of storms happening in Vietnam in the study of Arouri *et al.* (2015) to 23% for the case of floods happening in Vietnam in the study of Thomas *et al.* (2010).

From a policy perspective, long-term effects of natural disasters are as important as short-term effects (Lynham *et al.*, 2017). Yet, empirical evidence on the long-term effects of natural disasters on economic growth is scarce with a few exceptions that show different results (Xiao, 2011; Coffman and Noy, 2012; and Alwis and Noy, 2019; Parida et al., 2020). Xiao (2011) uses time-series analysis to estimate the impact of the 1993 Midwest flood and confirmed that Midwest flood had no impact on personal income but had a positive impact on agriculture in the long-term. Coffman and Noy (2012) apply the SCM to estimate the impact of Hurricane Iniki on Hawaii Island. Using data retrieved from a database maintained by the University of Hawaii Economic Research Organization (UHERO) for the period 1975-1991, the revealed findings suggest that aggregate personal income was 12% lower than the case the hurricane would have not occurred. Similarly, Parida et al. (2020) find a negative impact of flood on real per capita GSDP in Indian states. Different from previous two studies, Alwis and Noy (2019) find an increase in household income in Sri Lanka eight years after the 2004 Indian Ocean tsunami. Using the Difference in Difference method with data collected from five household survey in 1995, 2002, 2006, 2009, and 2012, Alwis and Noy (2019) attribute the positive effect of the tsunami to the large amount of external relief Sri Lanka received in the aftermath of the disaster.

Empirical studies of the impact of natural disasters on income for Vietnam are exclusively focused on the short-term impacts and only use household data retrieved from the Vietnam Household Living Standard Surveys (Thomas *et al.*, 2010; Bui *et al.*, 2014; Arouri *et al.*, 2015). These studies reach the same conclusion that natural

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disasters have negative impacts on household income. Thomas *et al.* (2010) conclude that 23% of welfare decreases because of riverine flood and 52% of welfare decreases because of a hurricane affecting the cities which have more than 500,000 people. Bui *et al.* (2014) find a decline of 6.9% and 7.1% for Vietnamese household income and expenditure respectively due to natural disasters. They also find that income inequality and poverty are also affected by natural disasters. And lastly, Arouri *et al.* (2015) find that household income per capita decreases by 1.9% in the commune affected by storms.

The present study is a first attempt to investigate the effects of natural disasters on income per capita both in short-term and long-term for the case of Vietnam. Typhoon Durian which occurred in 2006 in the southern provinces of Vietnam was chosen as the case study. Storms and typhoons are common in Vietnam as well as in other countries (CRED, 2018a). Hence, findings of this study provide relevant policy implications with respect to alleviation of the impact of natural disasters at both short- and long-term basis, for similar events like typhoon Durian. Different from previous studies which are focused on the impact of natural disasters on aggregate income or total income, this paper investigates effects of typhoon Durian by income source, including income from salary; income from agriculture, fishery, forest; and income from industry, construction, trade and services. This approach provides an insightful understanding of the types of households that are most prone to adverse effects of the typhoon. Policy implications drawn on findings of this study will therefore be more targeted and effective, whereby policymakers can prioritize disaster aids to households whose income is most affected by natural disasters, helping speed up the recovery process.

In this study, following Abadie and Gardeazabal (2003), Abadie *et al.* (2010), we use the SCM to construct a counterfactual and implement permutation test for the estimated values. The study provides several key contributions. First, it contributes to *limited* evidence of the long-term impact of natural disasters on income with an application of the SCM. It also extends the analysis of the impact of natural disasters on disaggregated sources of income rather than aggregate income per capita. The paper proceeds as follows. The next section presents an overview of Vietnam's economy and typhoon Durian. Section 3 discusses the methodology of synthetic control which is followed by an empirical specification and relevant tests. Section 4 describes the data and presents an empirical analysis. Section 5 discusses the findings and the final section concludes the paper.

2. Vietnam and typhoon Durian

Vietnam is located in tropical region with a long coastline of 3260 km, Vietnam is often affected by tropical storms in the coastline area and floods after storms because of rainfall (Desinventar, 2018). According to the report of CRED (2018b), Vietnam is one of the top ten countries affected by natural disasters. In 2017, natural disasters in Vietnam caused 316 deaths and 3.1 billion US$ damage accounted for 1.4% of Vietnam's GDP. Vietnam Income per capita in PPP dollars from 2012-2014 is $3771 with an average income growth rate of 6.5% (World Bank, 2018). Vietnam is still considered as lower middle-income country. In addition, according to GSO (2018), Vietnamese income from agriculture, forestry, and fishery accounts for 27.2% of total income for the period 2002-2014. This income is more easily affected by storms and floods than the income from industry because farm and forest are destroyed directly by storm and flood while factories can just close down during the time of disaster to mitigate the impacts.

On November 26, 2006, a tropical depression intensified into a storm and was named Durian by the Japan Meteorological Agency (JMA). Strengthening of the storm took place over the following days and become a typhoon on November 29, 2006. Typhoon Durian affected mostly Philippine and Vietnam with the maximum wind speed of 195 km/h. Durian struck southern Vietnam on December 5, 2006 as a tropical storm and after that it diminished to a tropical depression. Durian hit mostly southern provinces of Vietnam such as Ba Ria-Vung Tau, Ben Tre, Tra Vinh, Soc Trang, Bac Lieu, and Ca Mau. According to the Centre for Research on the Epidemiology of Disasters (CRED), typhoon Durian killed 95 people and caused property damage of 456 million USD in Vietnam. For more details, see the map of Vietnam and track of typhoon Durian in Figure 1.

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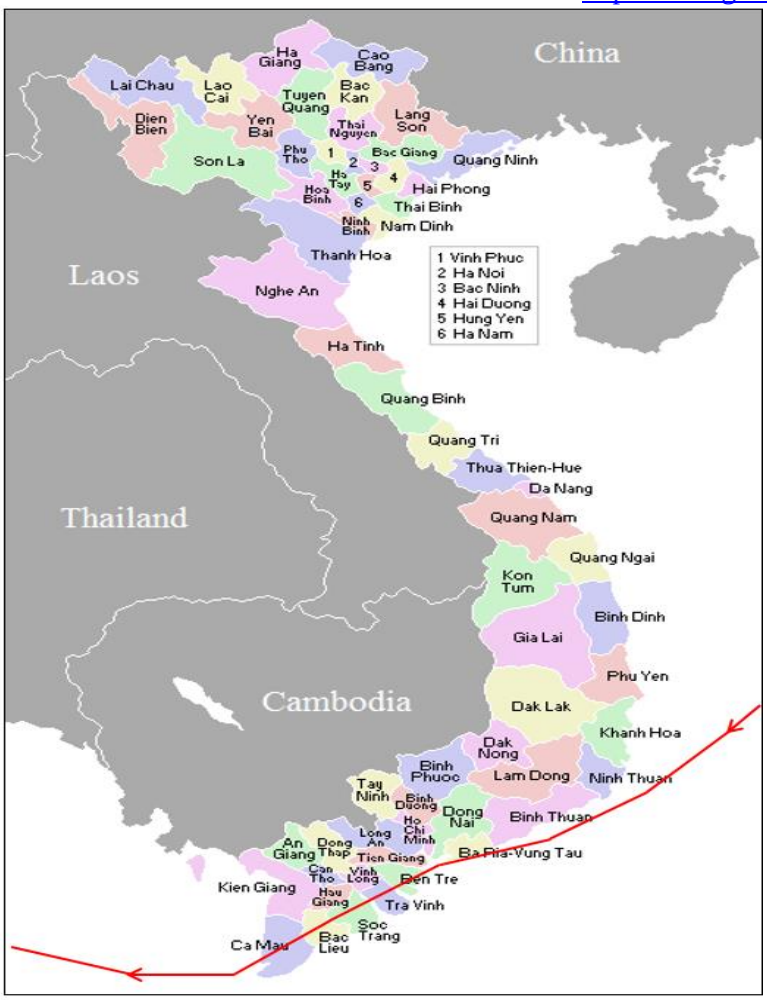

Figure 1. Map of Vietnam and track of typhoon Durian

Source: Authors' preparation using data from Japan Meteorological Agency

In this study, typhoon Durian was selected as a typical disaster for the case study on three accounts. Firstly, typhoon Durian was one of the top five natural disasters happened in Vietnam from 2002-2014 (Desinventar, 2018). Secondly, typhoon Durian mostly affected the southern provinces of Vietnam that are notably characterized with a low frequency of natural disasters compared to the central and northern provinces of Vietnam.

This allows a good choice of Ben Tre - a southern province as the treatment group as this province was affected by Durian but not affected by any other disasters afterward. Thirdly, 2006 is an appropriate timing to analyze possible impacts of the typhoon because the required economic data are essentially available both prior and post the typhoon. Specifically, data on disaster damage and characteristics of 63 provinces of Vietnam are available from 2002-2006 for choosing the control groups and data on income per capita are available from 2007-2014 for estimating the effects of typhoon Durian.

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3. Methodology

3.1. Synthetic control method

Synthetic control method (SCM) is considered a quasi-experiment in which the result is the difference between treatment group and control group. This method was first introduced by Abadie and Gardeazabal (2003) in a study of the effects of political conflicts on economic growth in the Basque Country. SCM was then applied in the study of Abadie *et al.* (2010) which evaluate the effect of the tobacco control program in California in 1988 on the consumption of tobacco. This method was also considered as a bridge between quantitative researches based on large sample and qualitative researches based on small sample (Abadie *et al.*, 2015). Applications of SCM require a number of identification assumptions that are commonly used in quasi-experimental methods including independence between causing factor and control group, no spillovers cross units, no exogenous shocks, and the common support assumption. These assumptions have been discussed in detail in previous studies (Cavallo *et al.*, 2013; Adhikari and Alm, 2016).

Independence between causing factor and control group requires that the control group be not affected by typhoon Durian. In order to satisfy this assumption, we remove all the province that were affected directly by typhoon Durian including Ba Ria-Vung Tau, Tra Vinh, Soc Trang, Bac Lieu, and Ca Mau (see the map of Vietnam in figure 1). In the aftermath of typhoon Durian, income spillover effects might occur to the provinces nearby Ben Tre because the reconstruction process places a surge in demand for labours and materials from neighbouring provinces. We can partially satisfy this assumption by excluding from the control group all provinces bordered with the provinces affected by typhoon Durian including Ba Ria-Vung Tau, Ben Tre, Tra Vinh, Soc Trang, Bac Lieu, and Ca Mau. This removes the following provinces from control group: Binh Thuan, Dong Nai, Tien Giang, Vinh Long, Hau Giang, and Kien Giang.

No exogenous shocks require that control groups be not affected by typhoon Durian and any other disasters during the time investigated. There are no such provinces because Vietnam is usually affected by floods and storms. Following Cavallo *et al.* (2013), we consider the magnitude of natural disasters based on which we select control groups as the provinces that were neither affected by typhoon Durian nor affected by "*large disasters*". We define large disasters based on the severity of damage, measured by the number of deaths and missing and the number of houses destroyed and damaged (see table 1). We choose two control groups to include provinces that did not suffer from top 1% and 10% of total disaster damage, respectively. Top 1% are provinces that have greater than 20 deaths and missing and greater than 3297 houses destroyed and damaged per million people in one year. Top 10% are provinces that have greater than 6 deaths and missing and greater than 379 houses destroyed and damaged per million people in one year. Threshold numbers are calculated based on the percentile of provincial damage for the period 2002-2014.

We call these two control groups as Synth1% (including 19 provinces: Bac Ninh, Binh Duong, Binh Phuoc, Ca Mau, Dak Nong, Dien Bien, Gia Lai, Hai Duong, Hoa Binh, Hung Yen, Khanh Hoa, Lam Dong, Nam Dinh, Nghe An, Ninh Thuan, Tay Ninh, Thanh Hoa, HCM City, Tuyen Quang) and Synth10% (including 9 provinces: Bac Ninh, Binh Duong, Binh Phuoc, Gia Lai, Hai Duong, Hung Yen, Lam Dong, Tay Ninh, HCM City).

The common support assumption requires provinces included in the control group have similar characteristics to those of Ben Tre. Practically, this assumption is well addressed by the SCM as this method can produce counterfactual by a weighted combination of provinces in the control group. SCM uses algorithm to minimize the differences between treatment group and control group of specific of interest which are Income per capita and its predictors.

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3.2. Modelling

We call J the number of observations in control groups which consists of 19 and 9 provinces in two cases of analysis. Ben Tre is one observation in treatment group. Therefore, we have a total of J+1 observations in the dataset. Following Abadie *et al.* (2010), let Y_{it}^N be the income per capita that would be observed for province i at time t that was not affected by disasters and Y_{it}^I is the income of province that was affected by disasters. For provinces, $i = \overline{1, J+1}$ and $t = \overline{1, T}$. Let T_0 is the number of period before typhoon Durian happening ($1<T_0<T$). So for the period before the disaster, we have $Y_{it}^N = Y_{it}^I$. For period after the disaster we use $\alpha_{it} = Y_{it}^I - Y_{it}^N$ represent for the effect of the disaster to province i at time t for $t = \overline{T_0+1, T}$. Our interest is to compare the income of Ben Tre province that was affected by typhoon Durian with the income of other provinces that were not affected by the disaster. As such we will compute:

$$\alpha_{1t} = Y_{1t}^I - Y_{1t}^N \qquad \text{for } t>T_0 \tag{1}$$

Of which Y_{1t}^I is the per capita income of Ben Tre province and Y_{1t}^N is the per capita income of the control group or per capita income of Ben Tre province if typhoon Durian did not happen. Y_{1t}^I is observed, but we do not know Y_{1t}^N. SCM assumes that Y_{1t}^N is weighted average of Y_{jt} for $j = \overline{2, J+1}$ or it can be calculated by this equation:

$$Y_{1t}^N == \sum_{j=2}^{J+1} w_j Y_{j,t} \quad \text{with the constraints: } w_j > 0 \text{ and } \sum_{j=2}^{J+1} w_j = 1 \tag{2}$$

In estimating w_j, we denote the matrices for the calculation as follows:

$$W = \begin{bmatrix} w_2 \\ w_3 \\ . \\ . \\ w_{J+1} \end{bmatrix} \quad X_1 = \begin{bmatrix} X_{11} \\ X_{12} \\ . \\ . \\ X_{1K} \end{bmatrix} \quad X_0 = \begin{bmatrix} X_{21} & X_{31} & . & . & X_{J+1,1} \\ X_{22} & X_{32} & . & . & X_{J+1,2} \\ . & . & . & . & . \\ . & . & . & . & . \\ X_{2K} & X_{3K} & . & . & X_{J+1,K} \end{bmatrix} \quad V = \begin{bmatrix} V_1 & 0 & . & . & 0 \\ 0 & V_2 & . & . & 0 \\ . & . & . & . & . \\ . & . & . & . & . \\ 0 & 0 & . & . & V_K \end{bmatrix}$$

W is the matrix (J x1) that contains the weight of the observations in the control group. X_1 is a matrix (K x 1) that contains explanatory variables for the changing of income per capita. X_0 is the matrix (K x J) containing the explanatory variables for the per capita income of the control group, which are similar to X_1. V is the non-negative diagonal matrix. From the notation we have (X_1-X_0W) is the difference between the treatment group and the control group. SCM estimates W_j by minimizing this difference between the treatment group and the control group or minimizing the distance:

$$\|X_1 - X_0 W\|_V = \sqrt{(X_1 - X_0 W)' V (X_1 - X_0 W)} \tag{3}$$

According to Abadie and Gardeazabal (2003), the matrix V represents the importance of the explanatory variables and can be defined by researchers. In this study, we assume that every explaining variable is equally important and accordingly set V matrix to unity.

3.3. Statistical significance

From equation (1), we denote the estimated impact as $\hat{\alpha}_{1t} = Y_{1t}^I - \hat{Y}_{1t}^N$ where $\hat{Y}_{1t}^N$ is the estimated value of control group. But we are not sure about the significance of the estimated value because of possible errors in data

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collection and estimation. So, we have to test the significance of the value $\hat{\alpha}_{1t}$. Following Abadie *et al.* (2010), the estimated value will be tested by permutation test which is also called Placebo test.

In the permutation test, we assume that every province in the control group was also hit by typhoon Durian while they were actually not hit and we apply SCM accordingly to estimate these counterfactual impacts. This yields a distribution of the estimated values of all provinces in the control group. We then compare the estimated value of the treatment group and the distribution of estimated values of control group. Statistical significance is measured by P_value, calculated as follows:

$$P\_value_t = \Pr(\hat{\alpha}_{j,t}^{PL(j)} \le \hat{\alpha}_{1,t}) \qquad \text{where } j = \overline{2, J+1} \tag{4}$$

P_value_t is the probability that estimated value of the treatment group is greater than estimated values of the control group in the year t. This value will be calculated and presented details in table 3.

4. Data

Data for this study includes natural disasters and economic data. Natural disasters data of 63 provinces in Vietnam from 2002 to 2014 were retrieved and compiled from Desinventar (2018) which was supported by United Nations Office for disaster risk reduction. Total number of observations at provincial level is 819. The Desinventar data show the post-natural disaster damages represented by number of deaths, missing and number of houses destroyed and damaged for 63 provinces of Vietnam, as described in detail in table 1.

Table 1. Total natural disaster damages in Vietnam during 2002-2014

No.	Provinces	Deaths and missing/ mill.person	Houses destroyed and damaged/ thous.person	No.	Provinces	Deaths and missing/ mill.person	Houses destroyed and damaged/ thous.person
1	An Giang	37.7	103	33	Kien Giang	0.9	0.2
2	B.Ria-V.Tau	65.2	8.5	34	Kon Tum	45.4	2.4
3	Bac Giang	9.6	2.7	35	Lai Chau	4.4	0.0
4	Bac Kan	84.3	29.3	36	Lam Dong	80.7	1.0
5	Bac Lieu	10.4	1.8	37	Lang Son	32.9	7.4
6	Bac Ninh	1.9	0.0	38	Lao Cai	144.8	2.8
7	Ben Tre	13.5	103.2	39	Long An	176.1	5.5
8	Binh Dinh	144.1	24.8	40	Nam Dinh	19.9	9.0
9	Binh Duong	2.5	0.3	41	Nghe An	74.7	22.9
10	Binh Phuoc	0.0	0.1	42	Ninh Binh	390.9	14.6
11	Binh Thuan	17	4.8	43	Ninh Thuan	45.1	14.1
12	Ca Mau	4.1	1.9	44	Phu Tho	3.3	0.6
13	Can Tho	19.2	80.0	45	Phu Yen	67.6	2.3
14	Cao Bang	54.6	6.0	46	Quang Binh	12.2	9.3
15	Da Nang	143.5	16.0	47	Quang Nam	31.7	2.8
16	Dak Lak	44.5	2.1	48	Quang Ngai	29.5	9.9
17	Dak Nong	11.9	2.6	49	Quang Ninh	194.9	2.4
18	Dien Bien	29.9	2.9	50	Quang Tri	252.2	650.4
19	Dong Nai	1.9	1.9	51	Soc Trang	301.3	75.9
20	Dong Thap	72.5	39.9	52	Son La	426.7	20.6
21	Gia Lai	11.5	0.3	53	Tay Ninh	66.7	11.5

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22	Ha Giang	174.5	8.1	54	Thai Binh	118	182.5
23	Ha Nam	2.5	0.0	55	Thai Nguyen	1.5	0.9
24	Ha Noi	3.5	0.0	56	Thanh Hoa	74.6	11
25	Ha Tinh	115.6	95.4	57	T.T Hue	1.9	0.1
26	Hai Duong	0.6	0.1	58	Tien Giang	5.6	23.2
27	Hai Phong	8.1	7.6	59	Tra Vinh	28.3	2.2
28	Hau Giang	0.0	7.1	60	Tuyen Quang	12.9	1.7
29	HCM City	0.9	0.2	61	Vinh Long	90.8	18.1
30	Hoa Binh	45.4	2.4	62	Vinh Phuc	13.1	18.2
31	Hung Yen	4.4	0.0	63	Yen Bai	2.0	3.3
32	Khanh Hoa	80.7	1.0		**Average**	**67.0**	**28.0**

Source: compiled by authors from Desinventar.net

Economic data was collected from General Statistics Office of Vietnam (GSO, 2018) from 2002-2014. Data includes aggregate income per capita (A_Income) which represents our key dependent variable, and income disaggregated by sources such as income from salary (S_Income), income from agriculture, fishery and forestry (AFF_Income) and income from industry, construction, trade, and services (NAFF_Income).

Following Noy and Vu (2010) who studied the impact of natural disasters on economic growth in Vietnam, we used Infrastructure, Trade, Education, Healthcare, all measured at the provincial level, as control variables in the present study. Infrastructure, measured by the amount of goods transported, is a main factor explaining economic growth as suggested by Sahoo and Dash (2009); Chakamera and Alagidede (2018) in their studies on the role of infrastructure on economic growth in South Asian and Sub Saharan Africa countries.

Domestic Trade, measured by retail sales per capita as proxy for Trade, is considered an important indicator underlying commercial activities and hence economic output and income (Noy and Vu, 2010).

Healthcare measured by the number of doctors per capita represents the intensity of healthcare whereas Education measured by the number of students per capita represents the level of education, as commonly done in previous studies (Ramirez and Nazmi, 2003; Noy and Vu, 2010; Kuo and Shiu, 2016).

In line with a cross-country study by Cavallo *et al.* (2013) estimating the impact of natural disaster on economic growth during 1970-2008, we also use Land, measured as land area per capita as a control variable. Income from agriculture, fishery and forestry is affected by production from agriculture, fishery, and forestry. According to Tran (2014), paddy is a common agricultural crop, wood and fish are the common output for forestry and fishery, respectively.

Hence, when estimating income from agriculture, fishery, and forestry we include annual yield of paddy (Paddy), annual production of wood (Wood), and annual production of fish (Fish) as control variables.

Data for all control variables is collected from GSO (2018). All economic variables were converted to fixed price in 2010 using respective consumer price indices. Table 2 presents the average value of economic data of the case study.

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Table 2. Average value of all variables

Variables	Unit	Before typhoon Durian from 2002-2006			After typhoon Durian from 2007-2014		
		Ben Tre	Synth1%	Synth10%	Ben Tre	Synth1%	Synth10%
A_Income	Thous.VND/month	465.25	504.65	589.7	723.72	815.2	974.78
S_Income	Thous.VND/month	132.71	147.67	195.6	216.95	320.48	387.7
AFF_Income	Thous.VND/month	167.4	171.51	157.28	229.99	216.63	233.43
NAFF_Income	Thous.VND/month	89.78	109.35	143.34	159.44	185.08	245.48
Trade	Mill.VND/person/year	3.58	4.86	5.93	11.39	14.58	7.94
Infrastructure	Ton*km/person/year	0.18	0.31	0.32	0.27	0.54	0.54
Healthcare	Doctors/thous.person	1.71	1.76	1.63	2.31	2.13	1.99
Education	Students/thous.person	192.51	228.31	229.38	165.17	174.92	194.38
Land	Km^2/thous.person	1.84	4.65	4.58	1.87	5.18	4.12
Paddy	Ton/person/year	0.28	0.67	0.46	0.28	0.48	0.5
Wood	M^3/ person/year	0.01	0.05	0.03	0.00	0.06	0.05
Fish	Ton/thous.person/year	105.77	59.59	20.7	217.94	56.54	34.94

Source: calculated by Authors from GSO.

5. Results and discussions

We estimated the impacts of typhoon Durian on aggregate income per capita (A_Income) and three disaggregated sources of income including income from salary (S_Income), income from agriculture, fishery and forest (AFF-Income) and income from industry, construction, trade and services (NAFF_Income), respectively. To estimate the impact of typhoon Durian, SCM was used to compute a counterfactual. This means that control groups should have the same characteristics as treatment group. In this study, control groups were provinces that have the same income, land area, infrastructure, trade, healthcare, and education as Ben Tre province. For a robust result, we analyze two control groups including provinces that did not suffer from top 1% and 10% of total disaster damage. We call these two cases as Synth1% and Synth10%. Figure 2 shows the trend income of Ben Tre and income of control groups and table 3 shows placebo test for the estimated results.

The results show that typhoon Durian has negative impact on aggregate income per capita both in the short-term and long-term. The monthly average reduction is 56,925 VND for the period 2007-2014. The reduction of income accounts for 7.9% of total household income. This finding supports the hypothesis "no recovery" as also confirmed by Hsiang and Jina (2014). This hypothesis argues that disasters destroy productive capital or durable consumption goods and households do not have enough resources to recover from this negative impact. The recovery is even harder for poor/developing countries that are endowed with limited resources and underdeveloped infrastructure systems (Noy & DuPont, 2018). Vietnam is not an exception with income per capita of 2006 at current prices is 636,000 VND/month, equivalent to 477 US dollars/year (GSO, 2018). In addition, Ben Tre is situated in middle of the Mekong river delta where there are nine rivers passing through the region. The use of ferries, rather than bridges, for crossing the river is still common, making it harder for households in Ben Tre to access resources in other provinces.

With respect to disaggregated sources of income, the estimated impact of the typhoon differs as per income source. Income from salary and income from agriculture, fishery and forest are found negatively affected by typhoon Durian from 2007-2014 while there is a positive impact of the typhoon on income from industry, construction, trade, and services from 2009-2012. Durian reduced income from salary by 55,395 VND and reduced income from agriculture, fishery, and forestry by 106,047 VND monthly for the period 2007-2014

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compared with the two control groups. This occurred because many factories could not operate in the aftermath of the disaster, workers did not receive salary and farmers did not have income from farming due to the crop damage. On the contrary, income from industry, construction, trade, and services of Ben Tre province was higher than that of provinces in the control groups in the period of 3 to 5 years after the typhoon. Theory of creative destruction process offers a possible explanation whereby the reconstruction activities that take place in the aftermath of natural disasters can raise the demand for construction and related services. The impact could be attributed to an increased demand for post-disaster reconstruction as proposed by Cavallo *et al.* (2013); Caballero and Hammour (1994). Since 2012, the results show a negative impact again, probably because the demand of reconstruction disappeared.

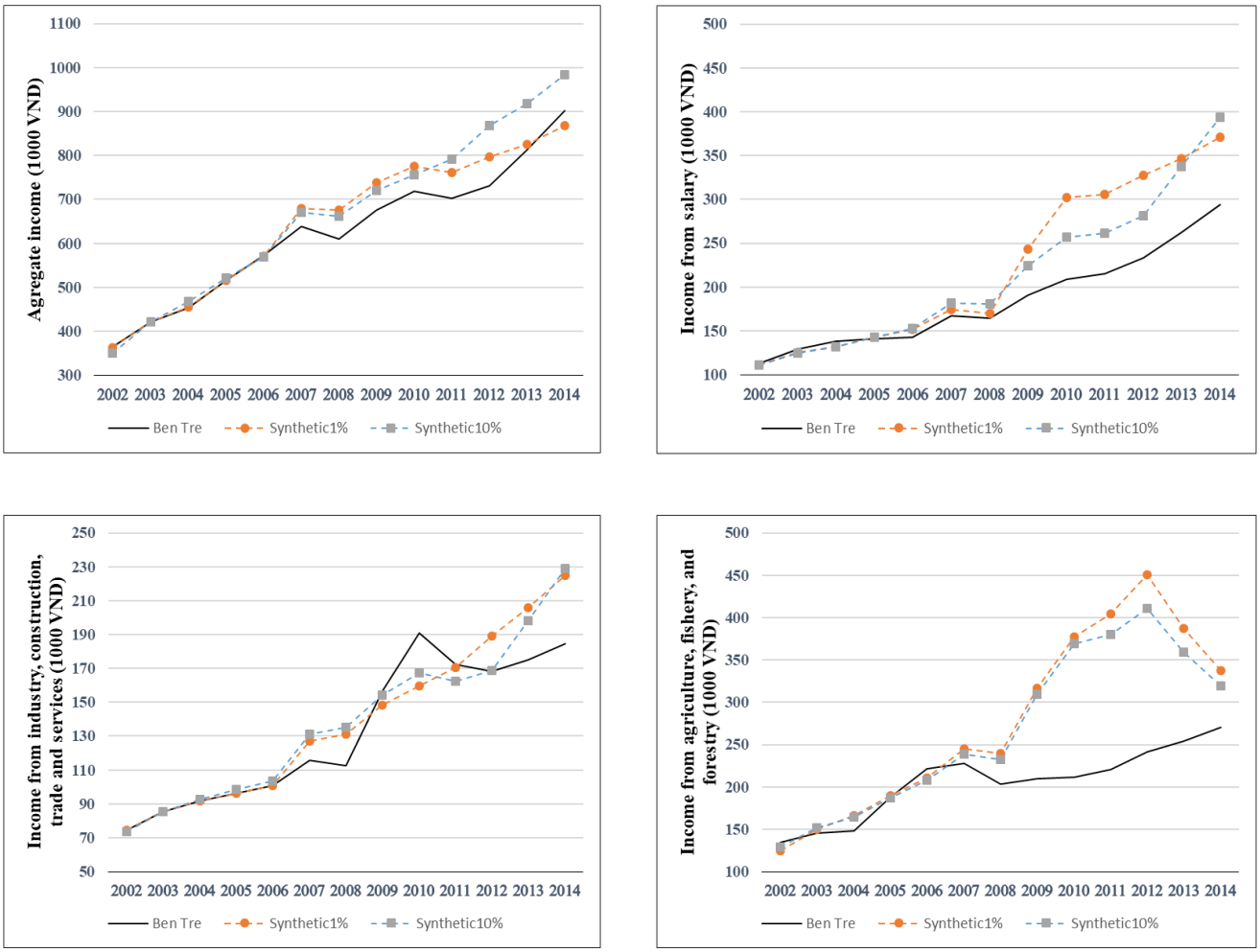

Figure 2. Income per capita, aggregated and disaggregated: Ben Tre vs. control provinces

The significance of the results is especially important. In this case, one could question whether income of Ben Tre province was indeed reduced by typhoon Durian or that was only random results. Following Abadie *et al.* (2010), we use the permutation test to check the results. SCM is applied for the provinces included in the control groups as if they were affected by typhoon Durian. This so-called Placebo test provides a distribution of the estimated results, based on which we compare the results between the aggregate income of Ben Tre and

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provinces in the control groups. The test results as presented in table 3 indicate that typhoon Durian caused a statistically significant negative impact on all the sources of income after typhoon Durian except income from industry, construction, trade, and services for the period 3-5 years after the event.

Table 3. Statistical significance of estimated results by Placebo test

Year	Aggregate income		Income from salary		Income from industry, construction, trade, and services		Income from agriculture, forestry, and fishery	
	Synth1%	Synth10%	Synth1%	Synth10%	Synth1%	Synth10%	Synth1%	Synth10%
2007	-3.52***	-2.46**	-2.23**	-2.00**	-3.17***	-3.20****	-2.71***	-0.47
2008	-5.27***	-3.41***	-2.28**	-2.27**	-3.10**	-2.83**	-5.45***	-1.98**
2009	-4.48***	-2.64**	-5.54***	-2.31**	0.16	-0.99	-11.84***	-3.02***
2010	-3.63***	-1.96**	-6.52***	-2.19**	2.43	0.95	-12.87***	-3.00***
2011	-4.18***	-3.55***	-6.58***	-2.69**	-0.4	-0.21	-10.56***	-3.50***
2012	-4.35***	-4.72***	-6.45***	-2.29**	-2.04**	-0.66	-9.28***	-3.86***
2013	-2.39**	-4.48***	-4.96***	-2.48**	-1.94**	-1.23	-7.59***	-3.37***
2014	-0.81	-3.14***	-3.92***	-2.54**	-1.81**	-1.48*	-4.65***	-3.04*

Note: Table 3 presents t-statistics of the difference in aggregate income per capita between the treatment group and control group. *, **, *** represent the significance at 10%, 5%, and 1% respectively. *Source:* estimated by authors.

Conclusions

We applied SCM to investigate the effect of typhoon Durian that occurred in Ben Tre province (Vietnam) in 2006 on aggregate income per capita and income disaggregated by sources. The analysis uses data on natural disasters and economic data at the provincial level during the period 2002-2014. Our results document an income reducing effect of the typhoon Durian on aggregate income per capita of Ben Tre and confirm that the effect lasted eight years after the event. This finding provides support of the hypothesis of no recovering after natural disasters, as also confirmed by previous studies for other countries (Coffman and Noy, 2012; Barone and Mocetti, 2014; Hsiang and Jina, 2014).

By source of income, our results also reveal a negative and long-lasting impact of typhoon Durian on income from salary and income from agriculture, fishery, and forest. The most affected income sources include income from agriculture, fishery, and forestry. A possible policy implication drawn on this finding is that policymakers should prioritize post-disaster relief programs to households that primarily receive income from agriculture, fishery, and forestry. Better targeted post-disaster relief program will help speed up the recovery process, especially for disasters similar to Durian.

The study merits some attentions for future research. One of SCM assumptions requires no spillover effect from the affected area to the control group. We partially controlled for this by technically removing from the control group provinces that are bordered with Ben Tre. In order to fully satisfy this assumption, more empirical studies are needed to estimate the spillover effects of natural disasters. In addition, income from agriculture, fishery, and forest collected from the General Statistics Office of Vietnam are aggregate data for the entire sector. Therefore, the present analysis could not estimate the impact of natural disasters on income of each sub-sector of agriculture, forestry or fishery. If one could separate income from agriculture, forestry, and fishery, the results would be more policy relevant.

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INCREASING CUSTOMER FOCUS IN METAL TRADING

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Abstract. Customer focus is a diverse and multifaceted concept and is an important element of organizational culture, closely related to the marketing function. Its various components are more significant for companies and have a different impact on formation of their customer orientation. The identification of the CF elements that are significant in managing consumer expectations in this context of distribution helps companies focus on specific characteristics, which means being more efficient and resonating with the largest number of target market customers. This article is part of a study to increase the level of corporate bonds in metal trading, and was carried out at enterprises of Kazakhstan, in the metal business.

Keywords: Customer focus; satisfaction; CRM; loyalty; commitment; services

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JEL Classifications: M3, M1, L9

1. Introduction

The Customer focus (CF) organization means the marketing orientation of its activities associated with a deep understanding of the needs and values of not only customers, but all participants in the distribution channel (stakeholders involved in the marketing process) as well. First of all, it is the organization's ability to generate additional profit due to a deep understanding and effective satisfaction of customer needs. These literary studies clearly show that customer focus and business performance are positively interconnected.

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Customer focus in metal trading is building relationships with consumers of metallurgical products with the specificity expressed in the fact that the decision to buy metal is not made by one person, but collectively; the market uses rational rather than emotional motives; the market has an expressed seasonality. The metal trading market of Kazakhstan is oligopolistic with a differentiated assortment, large capitalization of companies, high barriers to entry into the industry, significant control over prices and non-price competition.

2. Satisfaction and Loyalty

Loyalty means a biased behavioral reaction expressed over time by a client in relation to one supplier from many suppliers, which is a function of making a "binding" decision and brand assessment process (Kankam & Achiaa, 2019). Oliver proposed the initial customer loyalty structure, the "cognitive effect" model based on four main dimensions: cognitive loyalty, affective loyalty, conative loyalty and action loyalty (Oliver, 1979).

Affective loyalty: develops on the basis of aggregate satisfaction resulting from use. Conventional loyalty: is a hidden stage of intentional behavior when a customer directly buys a certain brand. Customer satisfaction is seen as the result of a comparison process between the perceived characteristics of a product and previous customer expectations (Oliver, 1997). A review of the literature on customer satisfaction is seen as a multi-dimensional design (Yi, 1990), which includes: satisfaction of the product/service (Marr & Crosby, 1992), satisfaction from sales as a process in which interpersonal customer relations become the focus of attention, where the ability to meet and exceed customer needs is essential and satisfactory for after-sales services (Ostrom, & Dawn, 1995). Customer retention is an indispensable tool for successful customer relationship management practices. In addition, customer retention has a positive effect on the organization's profitability and productivity, reducing customer switching to competitors and introducing fresh perspectives (Reinartz & Kumar, 2000).

However, there are a number of reasons why a client, despite a high level of satisfaction, cannot remain loyal. Such customers may be price sensitive when they see the offer cheaper. Customers can seek variety while enjoying new tastes or experiencing new perspectives. Customers can be completely polygamous, while being loyal to several brands. Customer needs may change, and therefore they may desert. In fact, studies of loyalty and profitability have been found to have a low correlation (Groening et al, 2019).

Information related to the cost price of products in digital marketing through content and product capabilities, a customer engagement strategy through feedback and analysis, and service quality assurance helps to provide customer satisfaction and maintain a loyal customer base (Hasanata et al, 2019).

3. Theory of Expectations Anticipation

Projected expectations are based on customer experience with a product or similarly competitive product. Clients compare the perception of a new experience with previous feelings of experience or other information gathered from various sources. Expectations provide the basis for customers to compare their experience. An increase in the level of satisfaction from expectation and comparison in experience depends on the level of Compromise, which should be positive. This is a marketing priority and is called exceeding customer expectations.

The controlled and uncontrolled expectations of consumers, company-controlled products and services, advertising, pricing and quality are highlighted which are memorable for customers and create or change expectations (Kurmanov et al, 2019). Uncontrolled expectations are the elements that the company cannot control, but what helps the client create expectations regarding their products and services, competitive advertising, customer experience with competing products, individual customer preferences. Anticipation of expectations is an

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attempt to maintain awareness of these uncontrolled influences and include efforts that can be transferred and managed with controlled expectations.

Ideal expectations are based in part on both experience and the will of the client. Projected expectations are based on customer experience with a product or similarly competitive product. It represents what is likely to happen. Minimum expectation is an acceptable level of expectation, which contributes to minimal satisfaction. Identification of customer preferences is the main goal of Priority Marketing and its approach differs from traditional segmentation, goes beyond the traditional customer survey information by identifying information.

3.1 Ways to exceed customer expectations (Babalola et al, 2015):

- a combination of methods for maintaining customer participation: feedback, surveys, etc. to identify how well their expectations are met and what is important to them.
- assess the prospect of the client having studied the customer experience with your products and services in comparison with competitors.
- management of expectations should be focused on all verticals and processes, operational, administrative and other activities of the company, as well as built into the philosophy of business.
- measurement of customer preferences through Priority Marketing.
- set expectation levels, set a predetermined line of action on how these priority preferences will be fulfilled.
- surprise i.e. blinding a client using the unexpected and seeking novelty, excitement and immediate satisfaction.

An attractive, superbly crafted product will certainly compensate for the poor service and high price that often annoys customers.

Raising expectations is a logical and acceptable phenomenon, as customer expectations are always raising. If the expectations for a product or service become too high, the company will become vulnerable to customer dissatisfaction. By creating high expectations beyond their own performance capabilities, companies are doomed to failure. Thus, the hypothesis H1 seems to be as follows:
H1: Leading customer expectations positively affects rational loyalty.

4. Theory of co-creation of services

Co-creation of services theory recognizes that co-creation of value often involves networking, in which clients and companies engage in the division of labor to provide specialized knowledge and experience that increase productivity (Vargo & Lusch, 2006). These networks of customers and companies work as resource integrators, creating value that is shared between networks. Consumer skepticism in relation to a particular category of services restrains the influence of their interaction and assessment of the activities of a service company on the joint creation of services. Customer satisfaction also increases altruistic customer participation. Customer satisfaction can also partially offset the impact of engagement on altruistic customer participation (Johnson et al, 2019). Based on these arguments, hypothesis H2 is constructed as follows:
H2: Co-creation of services creates high customer satisfaction and creates affinity.

5. CRM - XRM System Transition Concept

Customer Relationship Management (CRM) is a combination of customer-oriented activities supported by organizational strategy and technology, and is designed to improve customer engagement in order to build customer loyalty and increase profit over time (Padmavathy et al, 2012). The main specific task of creating a

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CRM strategy is customer differentiation, which is a qualitative analysis of the organization's client profile and consists of segmenting consumers based on their value to the organization (Gurova, 2017).

The introduction of CRM without explicit customer focus is XRM, so the acronym CRM is now replaced by the acronym XRM, where X- represents the management of any type of relationship. The transition of CRM to XRM leads to a great demystification of the CRM process in such a way that it ceases to be an island collecting data from other systems and becomes an integral part of everyday processes (Stojkic et al, 2014). XRM system means managing relationships with company processes, suppliers, customers, employees, equipment maintenance, and much more. XRM tools provide automation of administrative activities as part of business processes. XRM-oriented systems provide functions such as data management, creating flowcharts, recording user experiences, access and security, X-oriented analysis and reporting. Automating processes using XRM strategies and tools, using new technologies, leads to greater efficiency and transparency of business processes and ease of management (Petrova et al, 2020; Vazov, 2019; Mikhailov et al, 2018). XRM as a software tool is not and will not be a replacement for ERP-systems, but its application will be extended to administrative processes not covered by the ERP-system in the company. Thus, the proposed hypothesis H3 is as follows:
H3: Creating XRM systems in the enterprise positively affects the emotional loyalty of employees.

6. Key TQM Factors

TQM is a process of continuous improvement and revolves around four organizational principles: a) quality assurance, b) customer enthusiasm, c) continuous improvement and d) personnel management. It consists of nine key concepts, such as leadership, strategic sustainability, CF, relationships with suppliers, the use of information and quality analysis, a continuous improvement cycle, statistical monitoring and prevention, human resources management and process management (Novianty, 2019).

6.1 Leadership and CF.

Leadership is seen as the basis for the TQM pyramid (Subramanian and Gunasekaran, 2015) and has been recognized as a driving force, catalyst in the philosophy of total quality management. Leadership has a positive and significant impact on the implementation of TQM (Sriyakula et al, 2019). Theories are distinguished: transactional leadership, transformational leadership, process leadership, action-based leadership, adaptive, rational, kinesthetic (educational) forms of leadership, and individual stylistic, visionary, mentoring, affiliated, democratic, reference, dictatorial. Modern leadership requires leadership that encourages participation and creativity. Studies show that employees working with transformational leaders are more innovative and channel their energy towards the good of the organization (Xenikou and Simosi, 2006), which leads to continuous improvement (Feng et al., 2006). There is a positive and significant relationship between all leadership styles and continuous improvement in organizations, as well as indirectly and CF (Kumar & Sharma, 2018).

6.2 TQMFC

The multifaceted nature of customer orientation (CF) includes elements that focus on both existing and potential customers of the company, as it is necessary to study the efforts of the company in order to understand the needs of these customers, now and in the future. In this context, it is understood that CF is ensured by the management of consumer flows through the selection of set of combinations depending on the configuration of the external environment, customer requests and their perceived value to achieve target outcome indicators. Thus, we come to the following hypothesis H4:
H4: TQMFC creates low satisfaction and affinity.

6.3 Information and Analysis

Theoretical models for adopting innovations and technologies that positively affect CF have been tested and confirmed in numerous studies (Ramdani & Kawalek, 2007): Technologies - Organization - Environment

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Framework (OO-Framework), Acceptance Model (TAM) technologies, Theory of Planned Behavior (TPB), combined TAM and SPT, TAM2, Diffusion theory of innovation, based on resources View Scene Theory and Unified Theory of Acceptance and Use of Technology (UTAUT). Managing customer knowledge creates a positive impact on trust (Barbosa et al, 2017). Some authors argue that trust promotes commitment, and this, in turn, affects behavior loyally (Čater & Čater, 2009). Thus, the proposed hypothesis H5 is as follows:
H5: Analysis and information positively influences rational loyalty.

6.4 TQMHR Management

TQMHR means a strategic and holistic approach to the quality management of the most valuable assets of the company, namely, people who individually and collectively contribute to the achievement of organizational goals. The client-focus (CF) is part of the organization's value system, and the focus is shifted to internal clients, which means creating a sense of relevance, significance and value of employees for the company. A number of authors and researchers argue that TQMHRs do not significantly affect the causal level of client focus implementation (Mady, 2009). Also, the issue of determining performance indicators in the area of employee CF (Striteskaa & Jelinkovab, 2015) remains problematic. Efficiency of advertising increases the pride of employees; Pride of employees increases the level of corporate identity (Celsi & Gilly, 2010). Thus, in the present study, hypothesis H6 is proposed as follows:
H6: A sense of demand for employees forms a high customer satisfaction and creates an affinity.

6.5 Process Management

Clients are a key link in managing the process of moving material and related information and financial flows. The management of the sequence of interrelated events aimed at quality is based on the participation of all members of the organization and is aimed at achieving long-term success by satisfying the consumer. Of course, a more CF is a decentralized approach with a bottom-up planning system such as lean manufacturing, JIT I, JIT II, Kanban, ECR, Efficient Consumer Response, Effective customer response. But all this does not reduce the merits of MRP systems if the company has a separate CF strategy in quality management.

6.6 Strategic Sustainability and SCM.

The idea of sustainability is rooted in stakeholder theory (Freeman, 2007), which emphasizes that a company should pay attention and take into account the interests of all the main stakeholders that are important for the functioning of the business (i.e. customers, employees and investors), and secondary Stakeholders that may influence the company's business indirectly (i.e. the community and the environment). Sustainability means the ability to anticipate dangerous and unexpected events for an organization in the face of threats. Market sustainability reflects the organizational culture of the company which focuses primarily on creating superior value for customers (Narver & Slater, 1990; Paladino, 2007; Naama, 1999). Stakeholder orientation refers to "the organizational culture and behavior that encourages members of the organization to be constantly up to date and active in various stakeholder issues" (Ferrell et al, 2010; Amoako George, 2019; Al-Minhas et al., 2020).

Orientation to the market stability of the company is positively related to the degree of CF. It has been proven that CF mediates the relationship between company market stability and productivity (Du et al, 2016).

6.7 SCM customer focus (SCMFC).

Quick response in the supply chain is the equivalent of flexible tools that can cope with widespread changes in demand. SCM's customer-oriented and demand-driven supply chain productivity initiatives increase customer satisfaction while reducing costs. The main requirements for increasing CF in the SCM process are characterized by stability, flexible response in the supply chain, reliability, flexible restructuring of the organization's internal relations (Madhani, 2018). Based on these arguments, hypothesis H7 is constructed as follows:
H7: Strategic resilience positively affects SCMFC.

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7. Online and offline integration (O2O)

The modern multi-channel, cross-channel and omnichannel sales environment is integrated into online and offline outlets (Drobiazgiewicz, 2018). Customers expect a smooth transition from offline to online contacts, and each channel should have the same information, including information about previous purchases. According to International Data Corporation (IDC), most purchase decisions in B2B (from 50 to 80%) are made before the seller participates. There is growing evidence that pure online retail has its limits and that click-based approaches will be of significant value when combined with offline presence (Simons & Bouwman, 2011). Thus, we come to our eighth hypothesis:
H8: Integration of online and offline forms low satisfaction and creates affinity.

8. Involvement

The basis of modern marketing strategies is not so much attracting or retaining as increasing the "involvement" of customers. The consumers involved show a higher level of emotional attachment and tend to value, deeply trust and patronize the firm more (Roderick et al 2011).

A separate topic in the literature highlighted the involvement of employees — those who are ready not to spare their work time for additional efforts for the benefit of the organization are fully interested in the company's activities and the implementation of its vision and mission. Employees who do not feel involvement may well work more than satisfactorily, but they are not enthusiastic. An atmosphere of openness and cooperation is a key factor in the successful motivation and involvement of employees. Companies conduct surveys to determine employee satisfaction because they recognize a direct relationship between employee satisfaction and customer service and customer satisfaction. There is also a link between ensuring engagement through effective leadership and tolerance for flexible work hours. Thus, we predict hypothesis:
H9: Engagement creates emotional loyalty among customers and employees.

9. CF measurement indicators

Companies measure customer satisfaction by using regular surveys. Nenadal et al. (2004) distinguishes four levels of measurement experience with respect to customers - analysis of data for complaints, measurement of customer satisfaction, analysis of customer value and measurement of customer loyalty. Studies show that only 3% of dissatisfied customers complain (Kotler, 2001). Thus, it is obvious that companies cannot use complaints as a measure of their satisfaction.

In order to evaluate the emotional reactions of consumers, the Kano Model (Franceschini et al, 2019), Taguti loss function, SERVQUAL, Importance of Performance Analysis (IPA), FCR (First Call Resolution) are used.

In order to evaluate and analyze the degree of CF employees and the relationship with the final sales results are used: SOCO scale, MKTOR scale (Popov & Tretyak, 2014), MARKOR scale, 9-factor Deshpande scale.

The following are used to measure customer satisfaction: TRI * MIndex, TRI * MTypology, TRI * MGrid, TRI * MCompetitive Analysis, TRI * MConversion Model; CSI (Customer Satisfaction Index), NPS (Net Promoter Score).
A tool to help in understanding both consumer behavior and brand image: NeedScope methodology.

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10. Research model

Based on the theory of the conceptual research model for increasing customer focus (Islamgaleyev & Uruzbayeva, 2018) Figure 2 and previous studies, the proposed research model is as follows, Figure 1:

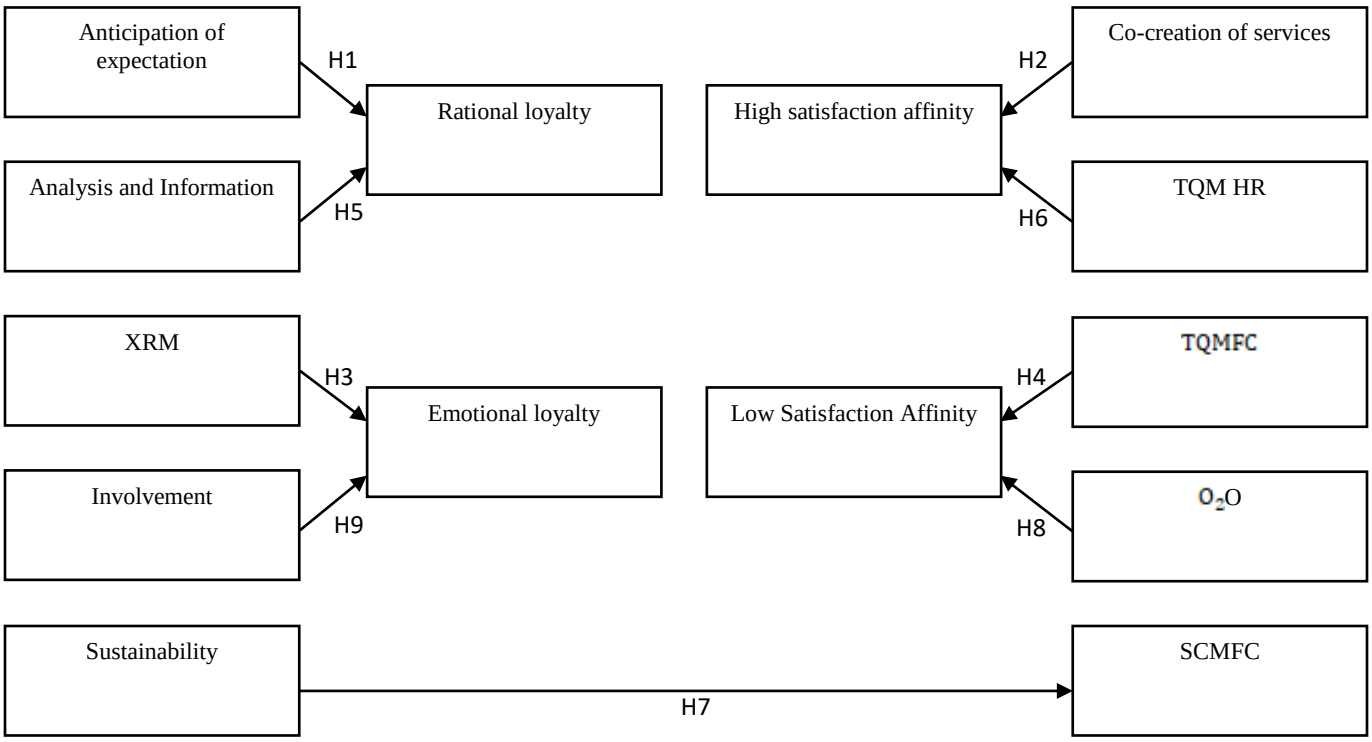

Fig.1. Proposed Research Model
Source: compiled by the authors

This model was proposed due to the fact that the analysis revealed that Kazpromkompleks LLP clients are at different stages of development of relations with the company, therefore, each type of client requires a separate approach. This means that each type of customer should be addressed with messages of different content, ensuring a consistent transition of potential and unstabilized customers to customers, and then transfer them to a loyal group.

11. Research methods

In order to monitor the types of consumers in the metal trade market of Kazakhstan according to the parameters of this model, we interviewed the expectations and satisfaction of consumers and employees of Kazpromkompleks LLP and collected questionnaires from 190 respondents. The research method uses quantitative methods with explanatory and descriptive approaches. Data sources come from primary and secondary data using structured data methods using questionnaires in the field of the operational interaction of customers with accounting documents and local employees, by answering questions through Samsung tablets (model number SM-T230) with an assessment on a five-point Likert scale. The questionnaires consisted of four blocks (rational loyalty, emotional loyalty, satisfaction and high affinity, satisfaction and low affinity) with 12 questions each, mainly based on multi-element measurement scales. Checking the normality of the data using the determination of the tightness of the bonds by the Pearson correlation coefficient using SPSS software version 23.0.

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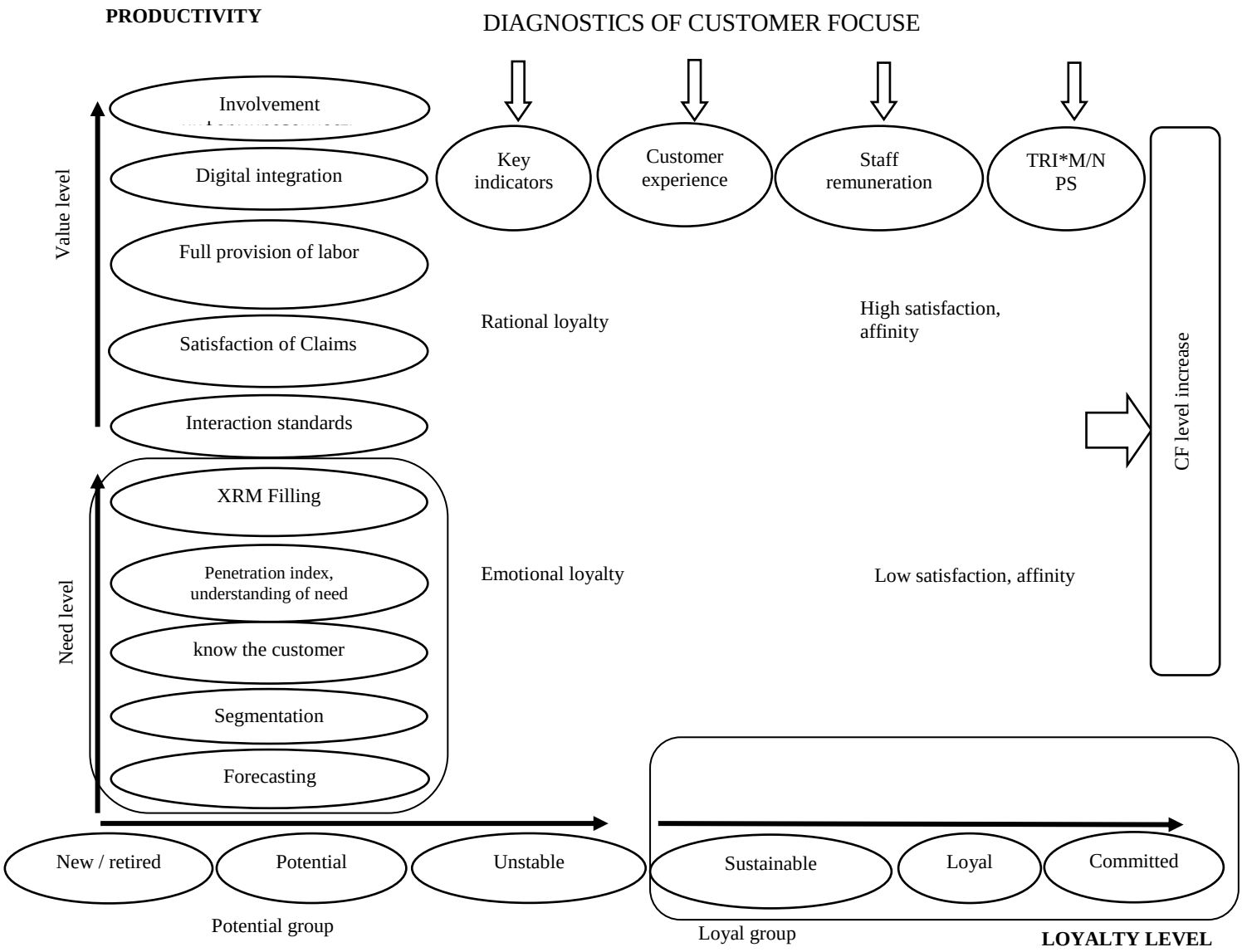

Fig.2. A conceptual study model for increasing customer focus.
Source: compiled by the authors

12. Results and discussions

The strength of the measurement model was provided by considering the load factor and the internal reliability of the structure (Table 1). All nine variables were tested on Cronbach Alpha and its coefficient of value ranged from 0.72 to 0.85 with a minimum level of 0.70, which, accordingly, proved the internal reliability of the design.
Assessing the validity of a measurement model focuses on convergent and discriminant validity. Convergent actions of factors were investigated by studying standardized factor loads. The recommended load factor should be 0.50 - 0.70 or higher to prove converged design validity. Converging validity is confirmed based on the mean

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deviation highlighted (AVE). The values of each measurement of service quality (anticipation, co-creation of services, XRM, TQMFC, analysis and information, TQMHR, online and offline integration, involvement) and sustainability were 0.584, 0.597, 0.597, 0.641, 0.6, 0.590, 0.622, respectively 0.590, 0.638 than correspondingly converging reality was confirmed. Since all diagonal values were significantly greater than the correlation of a particular design with other designs, the adequacy of discriminant validity was ensured and all indicators had a high load. Thus, the discriminant validity is confirmed and sufficient to support the proposed model of this study. The higher the discriminant validity, the stronger the evidence that this design is unique.

Table 1. Reliability Statistics

Scale	Alpha valuation	Subject matters	Cronbach Alpha Based on Standardized Items	Average deviation
Ahead of expectations	0,78	Evaluate the desire of company employees to solve your problem.	0,73	2,09
		Evaluate the speed of processing the application.	0,74	
		Evaluate the desire of company employees to solve your problem.	0,71	
	+0,80	Estimate the breadth of the company's product range.	0,74	
		Estimate the speed of loading metal products.	0,72	
		How do you evaluate the quality of metal products of our company.	0,78	
Co-creation of services	0,83	Are you satisfied with the choice of a company as a partner in the metal business?	0,83	1,52
		Have you had any good experience with our company brand?	0,84	
		What is the probability that you will advise our company to your friends, acquaintances, colleagues?	0,83	
XRM	+0,85	Evaluate the level of help and satisfaction with the CRM system.	0,82	1,68
		My pilot experience with the XRM system was positive.	0,84	
		My colleagues share an opinion on a single system in the enterprise.	0,81	
TQMFC	0,73	Rate your satisfaction with the factor: in case of problems (marriage, short delivery), its quick solution.	0,56	1,86
		Appreciate the professionalism of the service.	0,72	
		Will you choose another metal supplier?	0,62	
Analysis and Information	0,76	Rate your satisfaction with the factor: speed and analysis of information processing in the company.	0,67	1,64
		Evaluate your degree of awareness about the route of metal products.	0,57	
		Are you satisfied with the timeliness of our delivery?	*0,81*	
TQMHR	0,78	At what level do you think the declared values of our company correspond?	0,59	1,59
		Does the level of additional remuneration or bonuses satisfy with the achievement of high results in my work?	0,84	
		Rate your level of development in our company.	0,76	
Online and offline integration	0,81	Evaluate the satisfaction and convenience of purchasing metal through an online store.	0,57	1,62
		Given the quality of the services we received when purchasing metal online, I rate the site / application as ...	0,83	
		Rate the ease of making payments on the site.	0,82	
Engagement	0,77	You have the opportunity every day to do what you know best. At what level do you realize these opportunities?	0,73	1,56
		Determine how your supervisor or someone at work cares about you as a person?	0,81	
		What is the level of consideration of your opinion (point of view) in the company or among employees?	0,79	
Sustainability and CSMFC	0,82	Estimate the level of pricing in the company.	0,84	1,64
		What is the probability, then you will advise our company as an employer to your friends, acquaintances?	0,82	
		Your reaction to the lack of a certificate of quality for metal products?	0,59	

Source: compiled by the authors

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The discriminant actions were evaluated during the two evaluation constructs by limiting the estimated correlation parameter between them to 1.0, and then performing the test χ^2 difference from the values obtained for the limited and unlimited model (Table 2). The discriminant validity is estimated by limiting the correlation between each pair of coefficients to unity. If χ^2 the difference between the constrained and unconditional model is statistically significant, then it is likely that the correlations for this pair of factors are indeed not one.

Table 2. Measurement Model of χ^2 Differencies

Model	χ^2 natural	χ^2 resrained	$\Delta\ \chi^2$	Sig.
Anticipating expectations and rational loyalty	568,7	627,8	60,6	0,000
Analysis and information and rational loyalty	535,6	601,8	59,4	0,000
Co-creation of services and high satisfaction	557,9	712,4	154,2	0,000
TQMHR and high satisfaction	521,7	624,5	59,7	0,000
XRM and low satisfaction	501,2	588,7	87,9	0,000
Engagement and low satisfaction	546,5	618,7	58,4	0,000
TQMFC and emotional loyalty	512,2	583,7	72,5	0,000
O2O and emotional loyalty	562,8	629,7	60,1	0,000
Sustainability and TQMFC	42,3	188,6	147,3	0,000

Source: compiled by the authors

The results of the structural model show that in the construction of rational satisfaction it was found that the factor in determining the anticipation of expectations ($\beta = 0.94$ and $\beta = 0.61$, $p < 0.001$) of the H1 test, that is, anticipation of expectations positively affects the rational customer satisfaction and H5, analysis and information positively affects rational loyalty. The third hypothesis H3 was "Creating XRM systems in the enterprise positively affects the emotional loyalty of employees", is also supported ($\beta = 0.27$, $p < 0.001$) in the model. The influence of involvement on emotional loyalty is calculated in the model ($\beta = 0.82$), which also demonstrates a strong positive effect of hypothesis H9. The influence of CF on satisfaction in the structural model ($\beta = 0.78$ and $\beta = 0.61$), which shows a positive and strong impact, therefore, H4, TQMFC creates low satisfaction and affinity, and the effect of online and offline integration on satisfaction forms low satisfaction and creates an affinity, H8. The design established a high customer satisfaction affinity that the co-creation of services and TQMHR form a strong influence ($\beta = 0.85$ and $\beta = 0.82$).

Table 3. Influence of variables in the structural model

	Direct effect			
	RLOY	ELOY	HSA	LSA
AE	+0,94			
AI	0,61			
XRM		+0,27		
Inv		0,82		
CcS			0,85	
THR			0,82	
TFC				0,78
O2O				0,61

Source: compiled by the authors

However, we have identified a tendency that product supply management creates low stability, apparently due to the fact that loyal consumers reduce requirements for product quality. This observation creates the conditions for further research in this area.

13. Conclusion

Despite the intense relevance of customer focus and the increased growth of empirical research on this topic, the heterogeneity and fragmentation of various approaches are obvious. However, from the discussion about the essence of the customer-oriented concept, it is appropriate to conclude that these convergence reflect generalizations regarding the objective versus the subjective nature of the concept. CF approach is currently perceived as a leading business paradigm. This is due to the complexity of creating unique competitive advantages of products using new digital technologies, as well as through the expansion of the product line of the organization's products, increasing its operational efficiency and introducing a competent pricing policy due to the possibility of copying by competitors. However, this does not apply to the "customer relationship" area, since it is impossible to copy it.

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REGIONAL DEVELOPMENT OF SMALL AND MIDSIZE BUSINESSES IN THE CONDITIONS OF FORMING OF INNOVATIVE ECONOMY OF KAZAKHSTAN: A CASE STUDY

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Abstract. The article is devoted to the development of small and medium-sized enterprises (SMEs) in Kazakhstan which is recognized worldwide as an effective lever for economic growth of the country. It examines the current status and scope of activity of this business in Kazakhstan, as well as the possibility of its development in the future. It was found that the level of SMEs development in the low country, and the current structure of employment of its subjects are far from perfect. The causes of structural deformation of SMEs in business which is related to its lack of development in the industrial sector; the lack of its subjects in the manufacture of certain sectors define the intensive development of the economy. On the example of developed countries, where SMEs take the largest share in the production of the gross domestic product, the substantiation of the possibility of transformation of the business into a major sector of the economy in terms of its development on an innovative basis. Particular attention is paid to the SMEs creation around new innovative enterprises using the outsourcing system, franchising, and other business cooperation. At the same time recommendations on the use of the state to support mechanism to accelerate the growth of SMEs in the industrial sector and fully implement its technical industrial and socio-economic potential.

Keywords: small and medium enterprises; investment; innovation; cluster; outsourcing; franchising mechanism; localization and consulting

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1. Introduction

In the modern period, the Republic of Kazakhstan, despite the negative impact of the global crisis, continues to hold the positive development of its economy (Caurkubule et al., 2020). A role in the growth of the economy has played entrepreneurship, the development of which manifested themselves in recent years, some trends of improvement, especially in its forms, both small and medium businesses. Usually entrepreneurial activity in the sphere of production and services made within the enterprise as a separate entity of market relations, regardless of its size, in which they are divided into small, medium and large (Wiklund & Shepherd, 2013). Despite some growth in the number of enterprises, SMEs have not received the expected proper development, its contribution to the scale of the country's economy remains insignificant. Therefore, to study the state of SMEs, the conditions of its formation and functioning in Kazakhstan is an important problem whose solution is crucial for the successful implementation of the plan of the second five-year state program of forced industrial-innovative development for 2015-2019 years (The state program of industrial-innovative development of Kazakhstan for 2015-2019, 2014). In developed countries, the SME market economy is a major sector of the economy which produces a significant portion of their gross domestic product. In Kazakhstan, the share of SMEs in this product is low due to the fact that up to the end has not worked out a state program of support and assistance for the development of this business, it was half-hearted, and did not give the desired result. SMEs in the pursuit of a temporary benefit to establish and develop their business are the most commercial and intermediary business, rather than in production. As a result, the structure of employment in the prevailing SMEs became deformed in business. It shows that the mechanism of organizational and economic impact of the state at choice by subjects of SME types of an entrepreneurship and the sphere of its maintaining, the main signs and its differences from other forms of economic activity are insufficiently studied and is a gap in scientific research. Small and medium business is not some special kind of management, but the integral part of economic activity regulated by the state in order to create the necessary conditions for its implementation. For this type of business is needed, as well as other kinds of business, the high level of management with appropriate attributes that should be created by the state for the normal functioning of its subjects in the economic environment which also remains not studied enough in research. Proceeding from the above, in the article is given an attempt to fill this gap in a certain extent. According to this aim, it provides a theoretical rationale solution for the creation and development of SMEs as well as increasing its role in the development of the innovation-based economy. In this regard, the authors consider the indisputable advantages of SMEs, the need and the opportunity to better use in the industrial sector, concentrating its business on the major companies in this sector with their relationship lighting (Namagembe et al., 2019).

The results and findings of scientific research can be used in determining the direction and scope of the measures taken into account and implemented by the state innovation policy. The proposals put forward in promoting effective partnerships between small and medium businesses and large business — this would make the policy comprehensive and intensify their activities. This will positively affect the development of the production sector of the country, carrying out modernization of its key sectors to expand the range of manufactured and development of new products based on the establishment of interaction between small, medium and large businesses. The conceptual basis of the relationship of these types of businesses are represented more specifically on the example of the industry, in particular, the engineering industry, and may be of interest to self-regulating business institutions not only in Kazakhstan but also abroad.

2. Materials and Methods

The creation and development of small and medium-sized businesses play a major role in economic development and addressing its social and economic problems. This type of business has own characteristics associated with its benefits and value in securing employment and market saturation of domestic goods and services. Given this characteristic, the basis of the SME study put the economic analysis method to its ways to study the role and

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importance of SMEs, the disclosure of its advantages and conditions of operation in the economic environment, determine the cause of the uneven development of small and medium-sized businesses in the manufacturing and non-manufacturing sectors. The economic analysis shows that the state support and help stimulating the impact of the state at choice by its subjects of a specific type of an entrepreneurship and the sphere of its development for SMEs is of a great importance. In terms of methodology, it is paramount to reveal the advantages of small and medium-sized businesses, and it differs from the other types of management and role in improving the business structure in the economy. Small and medium business is a mobile and productive sector of the economy; in some countries, this type of business is a predominant part of its structure and creates a significant share of the gross domestic product. The implementation of the SMEs in business has such advantages as efficiency, flexibility, rapid adaptability to changing market conditions, willingness to take risks. Using a comparative analysis with statistical and analytical data of the Statistical Agency of the Republic of Kazakhstan revealed a number of reasons hindering the development of SMEs, suggest measures to eliminate them (Small and medium enterprises in the Republic of Kazakhstan, 2014). However, this made it possible to justify the need to attract more SMEs in the manufacturing sector and focus their business on new innovative enterprises created in some sectors of the economy of Kazakhstan. SMEs will learn a particular innovation faster than large enterprises, will initiate the innovational rise of these companies, and release their innovative products (Pierluigi & Paolo, 2011).

The described methodological approach to the problem of formation and development of SMEs in the industrial sector provides a clearly defined nature of specific ways of development in this business field, assist it for the favorable functioning state aid, and have support from the large enterprises.

3. Literature Review

Study of SMEs devoted a lot of domestic and foreign research works, revealing its essence and operating conditions in the economic environment. They are the detailed definition of SMEs using the adopted legislative and normative acts regulating its activity in relation to the conditions of the country. In the Business Code of the Republic of Kazakhstan is fully considered the small and medium business which is used by the authors as a methodological basis for the study along with the works of classical economics, domestic and foreign scientists economists (Entrepreneurial Code of the Republic of Kazakhstan, 2015). The Code provides a definition of entrepreneurship as an initiative independent activity of citizens and their associations, aimed at making a profit, carried out at their own risk and on the financial responsibility (Jenkins, 2012). A similar definition of entrepreneurship is accepted in the international practice (Cavusgil, Knight & Reisenberger, 2013). The interrelation of the regulatory base, financial and credit support, and specific projects of entrepreneurs (taking into account interests of both the states and entrepreneurs) is worked conceptually out. Regarding small and medium business, specific actions for many directions for improvement of an economic environment of its functioning and the mechanism of implementation of the state support and help of a business type to it are provided. In the organizational plan of small and medium business in the Code were allowed some omissions at the opinion of the authors.

For the efficient organization of enterprises, SMEs require a high level of organization which provides a system of business development and the provision of its wide range of assistance measures and the protective measures it against unfair competition. The developed world has an extensive network of not only the public but also of public associations designed to promote the development of SMEs. In the US there is the Small Business Administration, in Japan - Office for Small and Medium-Sized Enterprises, in Saudi Arabia - Saudi House of Consulting Services, and in Russia - the State Committee for Support and Development of Small Businesses, in regions of the country - the Department of Support of Small Business; their function is to coordinate and help small businesses by the government. Activities of the Office of the Affairs of small and medium enterprises in Japan are built under the motto of the creation of SMEs in business environment in which their shortcomings have had a minimal effect, and the maximum benefits of exercise (Rosin, 1993; Martynova et al., 2017). In Kazakhstan

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a course taken on the accelerated development of SMEs and its transformation into the dominant economy, would lead borrowing of foreign experience to shape and implement the correct policy of the Government in relation to this business. Created in Kazakhstan SMEs as "Union of Entrepreneurs of Kazakhstan", "Entrepreneurship Development Fund" due to the lack of powers of the authorities cannot fully carry out their functions in support of SMEs. In the domestic literature on the development of SMEs was not raised the question of the need for state bodies, local government regulation, and support of the business entities. The need to create such a body in the form of an independent agency or department in the Ministry of National Economy, Ministry of Industry and Innovative Development of the Republic of Kazakhstan Government dictated the course of the transformation of SMEs in a major sector of the economy.

4. Results

Small and medium-sized businesses are the necessary elements of the market economy which allows solving important socio-economic problems in society (Martynova, 2018). This kind of business is a mobile and productive sector of the economy because of its undeniable advantages associated with its efficiency, flexibility and fast adaptability to changing market conditions. It is the main generator of innovative processes and dynamically responds to the changing consumption patterns (Zamanbekov, 2014a).

This is confirmed by the experience of developed countries, where small and medium business has a strong position in the development of the national economy, with the share of GDP from 50% to 80%. In Kazakhstan, the share of this business in 2017 amounted to 28% of GDP according to the task in 2050 it will be increased to 50% (Nazarbaev, 2012). To solve this problem in the country today are already opened up the new horizons for the accelerated growth of small and medium-sized businesses, and expanding the scope of activities in connection with the transition of the economy to a qualitatively new level of development based on the use of innovation (Zamanbekov, 2014b). The first small and medium business in Kazakhstan appeared on a cooperative basis in 1992, when it became carried out the privatization and denationalization process of transition to a market economy. At that time, the number of such enterprises was 34506. In subsequent years, their number is reduced, then increased to a tipping point in 2000, when the economy began to develop steadily. However, for the reasons of both objective and subjective associated with high taxes, lack of funds, violation of the rights and interests of businesses, the bureaucratic intervention of the local authorities, the growth of the small and medium business is very slow.

To improve the situation of small and medium-sized businesses and eliminate existing barriers to its development in the country it was conducted a system complex of protective measures of entrepreneurship including preventive, special and managerial measures. At the same time, from the moment of the small and medium-sized businesses formation till present, was accepted six state programs on its development among which the most important is "The Road Map of Business - 2020". Implementing these programs in the development of small and medium-sized businesses, the past decade, where the business got a significant growth, stands out. In 2014, the number of registered small and medium business enterprises increased compared with 2005 by 2.2 times, and with 2010 - 138.3% including the number of active small and medium-sized enterprises respectively by 182.8% and 140.1 %. The share of small and medium-sized enterprises in the production of gross domestic product amounted to 10.5% in 2005, in 2010 - 20.6% and in 2014 - 26.2%.

The main object of the study is the small and medium-sized businesses which operate as private enterprises without a legal entity that is governed by the law of Kazakhstan "On private entrepreneurship". The subjects of this enterprise produced the bulk of the product by all small and medium-sized businesses. For example, the share of small and medium enterprises in the total volume of production by all the subjects of small and medium businesses accounted for 81,6% in 2013, in 2017 - 88.4%. The remaining part of the product accounts for individual enterprise and the peasant (farmer's) economy. The transformation of small and medium-sized

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businesses in the largest sector of the economy is highly dependent on the level of SMEs that in the course of its operation have the opportunity to grow and be the basis for the formation of large organizational and economic structures, increasing the number of existing large companies, as well as to develop innovative business as external coauthors conducted such scientific and technical programs the by companies to promote the creation of the country's innovation economy. The data on the development of SMEs are given in Table 1 and Figure 1.

Table 1 shows the number of enterprises that are actively engaged in the entrepreneurial activity for the period under review, and has increased significantly, but its growth has slowed over the past five years. The number of medium-sized business enterprises even reduced for 68,7%. Although the output of SMEs increased by 2,5 times during this period by 2.1 times, ensuring the growth of the share of small and medium-sized businesses in the GDP due to their products.

Table 1. Dynamics of development of small and medium-sized business enterprises in 2013-2017 (%)

№	Primary factors	Units of measu-rement	Years					2017 year in % comparing to
			2013	2014	2015	2016	2017	2013
1.	**Registered enterprises of small business**	thousands of units	247,7	278,8	297,6	320,5	349,0	140,7
	including:							
	Active small businesses enterprises	thousands of units	61,1	278,9	297,6	320,5	349,0	3.4 times
	Production of small business enterprises	billions of US dollars	12,4	74,8	175,8	189,6	208,7	4 times
	The number of employed in small businesses enterprises	thousands of people	527,5	51,7	55,5	39,4	49,8	2,5 times
2.	**Registered enterprises of medium-sized businesses**	thousands of units	12,6	6,1	3,1	3,1	3,0	24,0
	including:							
	Active medium-sized enterprises	thousands of units	8,3	4,6	2,9	2,7	2,6	31,3
	Production of medium-sized business enterprises	billions of US dollars	37,2	37,5	16,7	10,1	12,2	32,8
	The number of employed in medium-sized enterprises	thousands of people	711,8	516,5	351,8	353,0	361,4	51,0
	Source: Small and medium enterprises in the Republic of Kazakhstan / Statistical Yearbook. - Astana, NEM Committee on Statistics of Kazakhstan, 2018, 42 p.							

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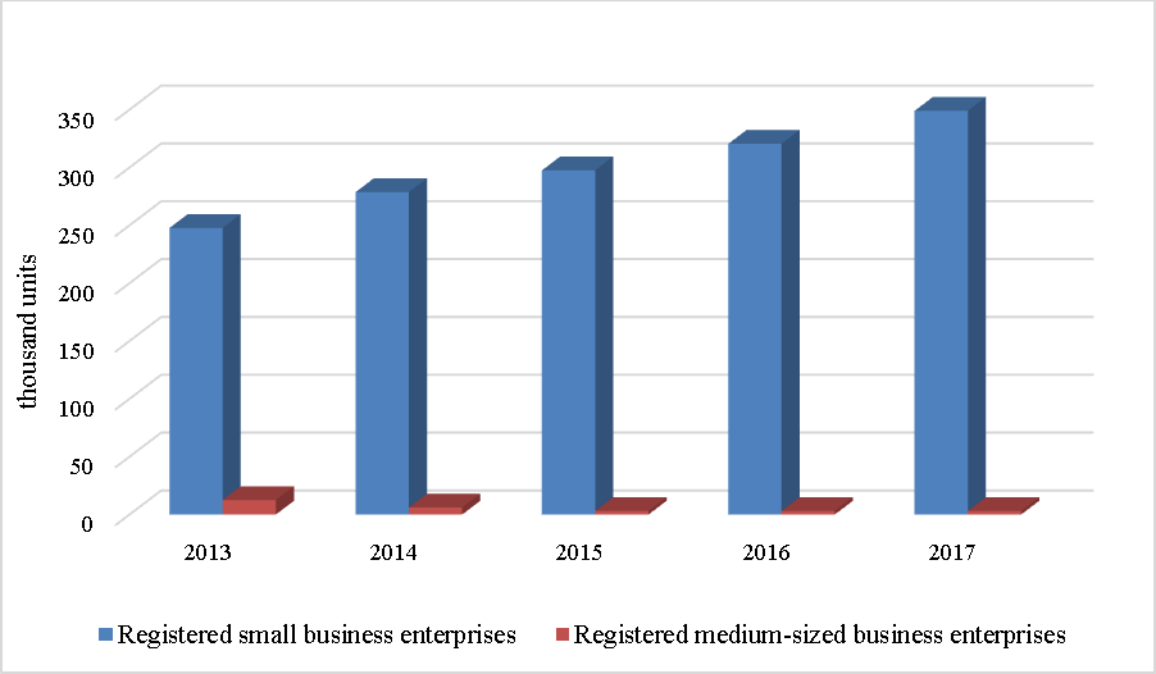

Figure 1. Number of small and medium-sized enterprises in 2013-2017. Source: Small and medium enterprises in the Republic of Kazakhstan. Statistical Yearbook. Astana, NEM Committee on Statistics of Kazakhstan, 2018, 42 p.

The Concept of the draft of the Entrepreneurial Code is developed for fixing positive tendencies in the growth of small and medium business and creation in the country of favorable conditions for its further development. After its statement, it will serve as an initial platform of systematization of the entrepreneurial legislation and elimination of gaps in legal regulation of an entrepreneurship. Provisions of this Concept are developed adequately developing conditions of development of Kazakhstan during the modern period and its implementation to provide the implementation of the program tasks containing in "Strategy "Kazakhstan - 2050".

With respect thereto the President of the Republic of Kazakhstan in the Message to the people of Kazakhstan, "Kazakhstan way – 2050: the single purpose, single interests, single future", specified that "It is necessary to increase a tendency of the favorable conditions which developed in the country for business implementation, to create effective mechanisms of the methodical help to the beginning businessmen and to develop this business around the new innovative entities". Follows from this task that today it is necessary to apply the innovative approach providing a new view to conditions of its activities that development of this business was adequate to the process of forming and functioning in the country of industrial economy of the innovative type to problems of development of SMEs. In this regard for improvement of an economic environment of the functioning SMEs, it is necessary to make purposeful changes in the process of use of market regulators, especially their types as credit and tax systems, to review at the same time methodical approaches to determination of a taxation basis, having established a threshold of the most admissible total tax withdrawals and obligatory payments at such possible level which provides incentives to development of small and medium business first of all in the production sphere, that is the created new innovative entities in the country.

In modern conditions when the country started implementation of a task of the second five-year period of industrial and innovative development, activities activation of SMEs in combination with the large-scale production concentrated on the large and largest enterprises of the industry is important. These entities thanks to benefits of large-scale production constitute a basis of the industrial system in the country, being "the bearing

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design" its economies. But efficiency of their activities is directly connected with expansion around itself network of SMEs, specializing in the production of individual parts of the final product, from the issue of which they are released due to the small amount and get an opportunity to improve productivity, reduce production costs and increase the output of their final product (Small and medium enterprises in the Republic of Kazakhstan, 2015).

The foreign industrially developed countries which realized the concept of the innovative approach of economy development on an innovative basis, managed for the short historical period of time to create the effective national innovative systems including the mechanisms of interaction of the state, business, science and education, and to achieve the increase in science intensity of GDP. With respect thereto Kazakhstan for ensuring sustainable development of national economy on the basis of the implementable program of the forced industrial and innovative development it is necessary to use the experience of foreign countries in the creation of the small innovative enterprises and rendering the state support to them with its tools. Today it is important for it doubly in connection with a small number of the subjects of small and medium business occupied in industries and their absence in some industries, including mechanical engineering where they have the most optimum conditions for participation in the getting solution of tasks on development of scientific and technical progress, and implementation of its achievements.

Now in the country, the greatest number of the acting subjects of small-scale business enterprises perform the activities in the sphere of trade and transport, in agricultural industry, in production and service trade, and their smallest number are engaged in the industry and construction, in other industries of the non-productive sphere (see Table 2 and Figure 2).

Table 2. Structure of production of enterprises and number of employment in SMEs in the Republic of Kazakhstan by types of economic activity in 2013 and 2017, %

№	The list of industries	The number of SMEs		The production volume of SMEs		The number of employed in SMEs	
		2013 year	2017 year	2013 year	2017 year	2013 year	2017 year
Total		**100**	**100**	**100**	**100**	**100**	**100**
including:							
1.	Agriculture, forestry and fisheries	5,8	5,3	3,7	3,3	7,1	6,3
2.	Industry:	9,4	8,8	20,9	21,9	17,2	16,1
	- Mining and quarrying;	0,8	1,1	3,7	7,6	1,8	1,8
	- Manufacturing.	7,9	6,7	14,3	12,2	12,5	12,1
3.	Construction	15,5	15,4	23,4	19,1	16,1	15,1
4.	Wholesale and retail trade; repair of motor vehicles and motorcycles	34,9	30,7	21,6	23,7	18,8	21,2
5.	Transportation and warehousing	5,2	4,4	6,4	6,2	5,9	5,5
6.	Real estate activities	5,7	3,9	2,7	2,9	5,0	4,5
Source: Small and medium enterprises in the Republic of Kazakhstan / Statistical Yearbook. - Astana, NEM Committee on Statistics of Kazakhstan, 2018, 42 p.							

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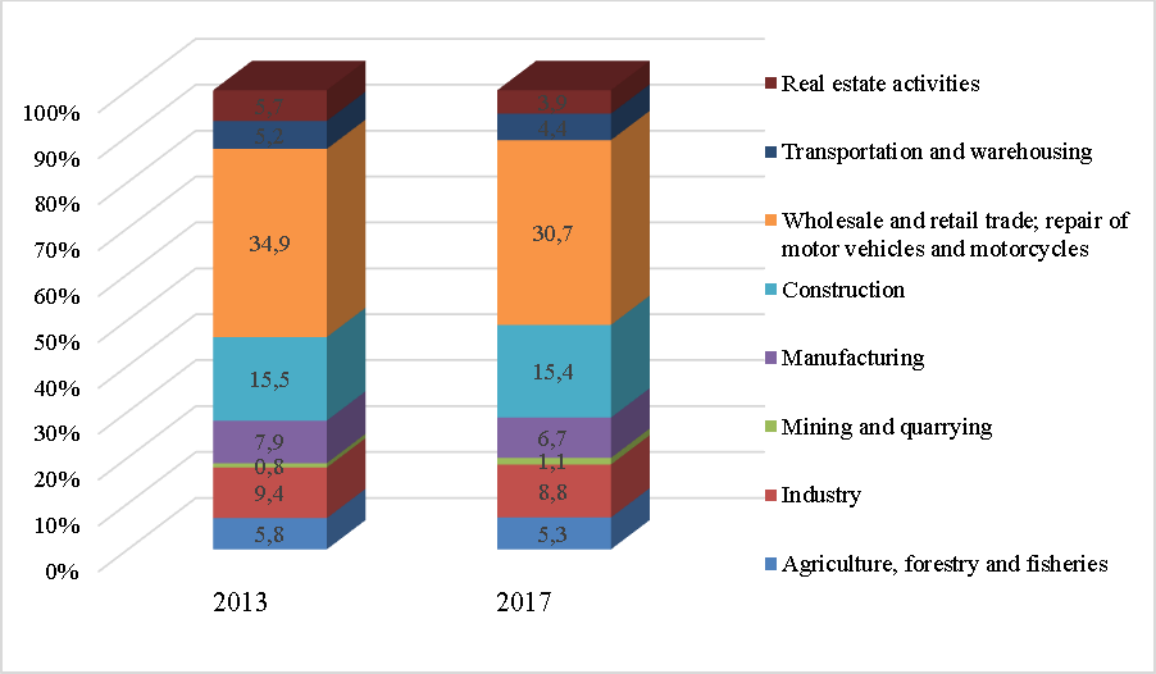

Figure 2. Number of small and medium-sized enterprises by industry. Source: Small and medium enterprises in the Republic of Kazakhstan. Statistical Yearbook. Astana, NEM Committee on Statistics of Kazakhstan, 2018, 42 p.

As can be seen from Table 2, the current structure of employment of small and medium businesses in the industrial and commercial activity is far from perfect and does not meet the installations of the strategy "Kazakhstan - 2050"which provides for the introduction of the science-intensive economic model to increase the share of non-oil products in Kazakhstan export potential to 70% (Nazarbaev, 2012). In this connection, it is necessary to improve the system of state regulation of business to strengthen state influence on the existing structure of SMEs. For this purpose, first of all, need to give priority supporting the business engaged in the industry to intensify its involvement with big business in the production of end products based on the development of new technology, creation, and development of knowledge-intensive industries, etc. The importance is the provision of effective assistance to it by the state to create a system of cooperation (franchising) between SMEs and large business, as well as the legal framework for its implementation (Villa, 2011). This will speed up the implementation of economic restructuring and improve its branch structure.

Figure 3 shows the current sectoral structure of the economy with the gross domestic product which is an aggregate measure of production and in its structural slice reflects the share of the production of each sector of the economy. Industry accounts for just 27.6% in the product, and in the industrial production of the extractive industry occupies 38,4%, with an downward trend and nevertheless remain as the basis for the development of the country's economy to the nearest period. Products of this type of industry continue occupying almost 90% of the country's total exports, while the share of animal and vegetable products accounts for 4%, chemical industry – 4%, machinery and equipment - 1%.

In the commodity structure of export, the high-tech products are virtually non-existent. Therefore, the priority development of metallurgy and metalworking, electrical engineering, chemical industry, mechanical engineering, in the country is aimed at implementation of the innovative industrial economy, and improve on this basis its branch structure. Among the challenges faced by these industries for their development, the most important is to create innovative SMEs, whose activity is of great importance in building up the release of product innovation

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and raising the technical level of production in other sectors, especially in manufacturing which is very important for its restructuring. Figure 4 and Figure 5 shows the structure of SMEs and the volume of their production by economic activity in 2014 as a percentage.

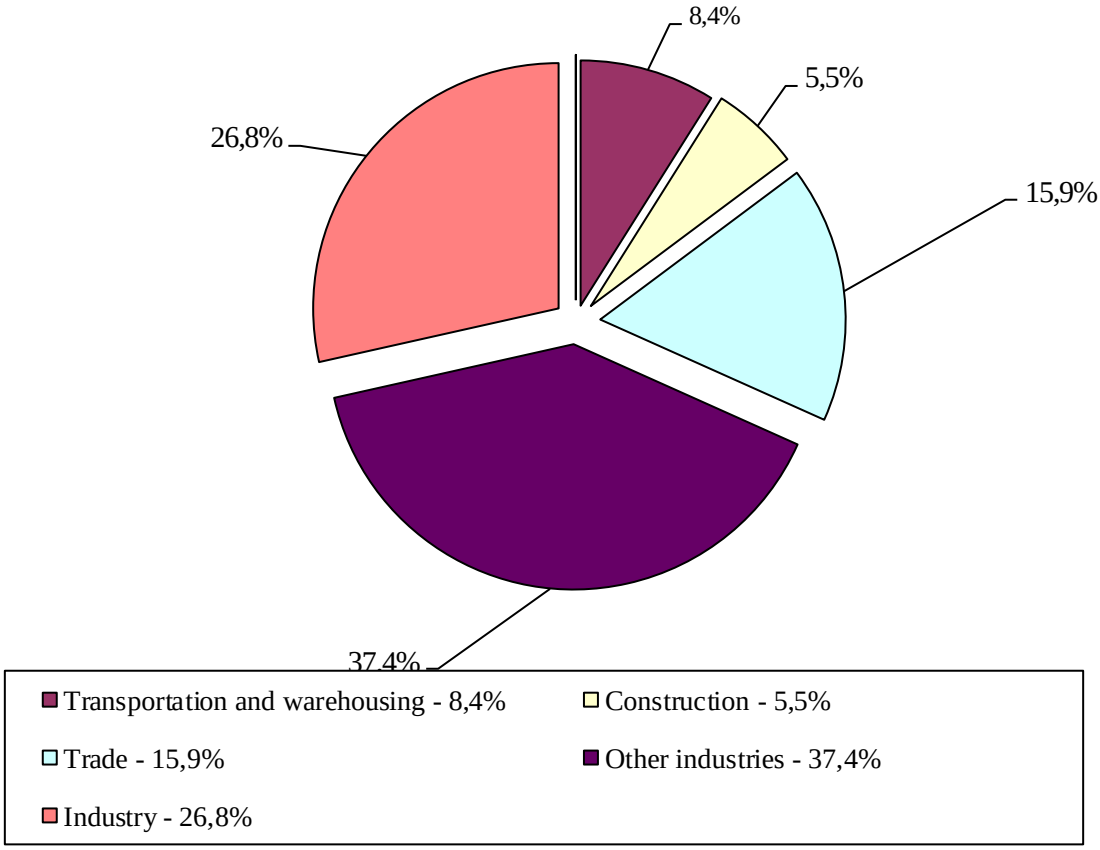

Figure 3. The share of manufacturing industries in the gross domestic product of the Republic of Kazakhstan in 2017,%. Source: Small and medium enterprises in the Republic of Kazakhstan / Statistical Yearbook. - Astana, NEM Committee on Statistics of Kazakhstan, 2018, 42 p.

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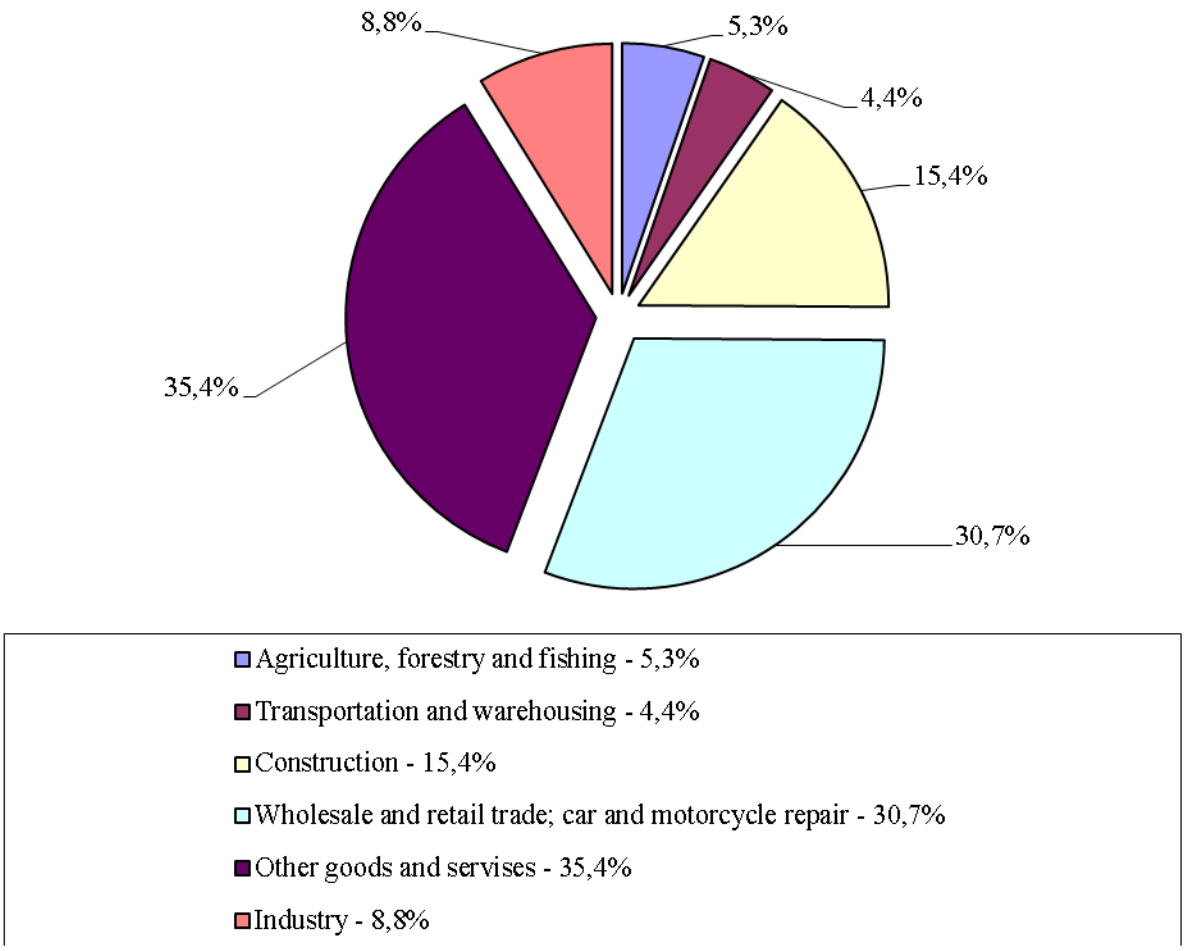

Figure 4. Structure of enterprises by economic activity of SMEs in the Republic of Kazakhstan in 2017,%. Source: Small and medium enterprises in the Republic of Kazakhstan / Statistical Yearbook. - Astana, NEM Committee on Statistics of Kazakhstan, 2018, 42 p.

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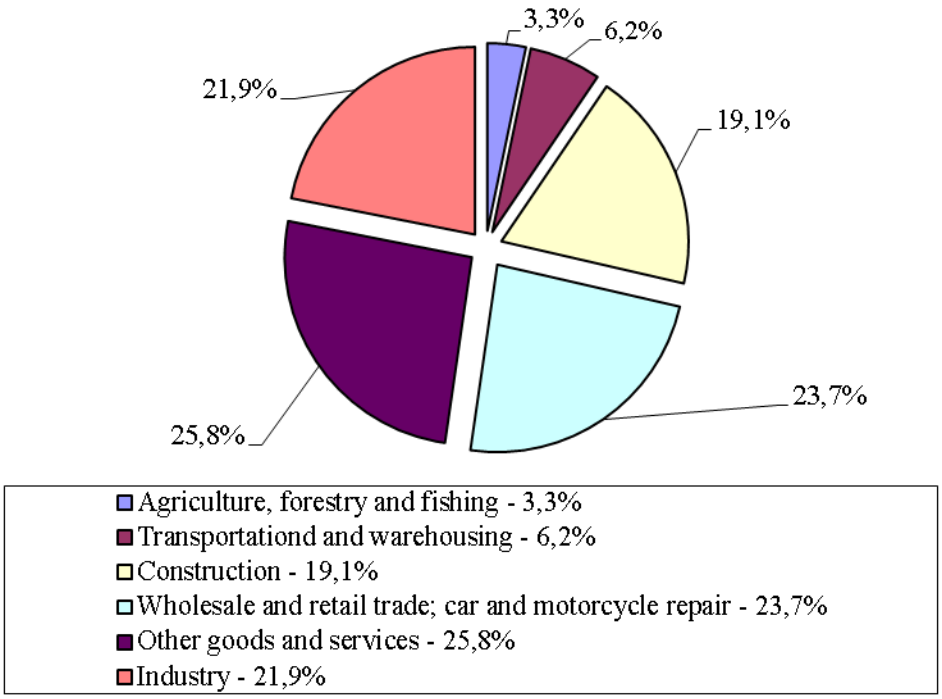

Figure 5. The structure of SMEs production by economic activity in the Republic of Kazakhstan in 2017,%. Source: Small and medium enterprises in the Republic of Kazakhstan / Statistical Yearbook. - Astana, NEM Committee on Statistics of Kazakhstan, 2018, 42 p.

Figure 4 and 5 shows that the largest number of active of SMEs account for wholesale and retail trade, repair of motor vehicles and motorcycles, whose share in the total number of enterprises is 30,7%, and the volume of production - 23.7%, in the industry - 9.7% and 25%. Expansion of business activities in the sphere of production is of paramount economic importance since it is created products in this area. In connection with this increase in the number of enterprises engaged in the SMEs production, the output will undoubtedly lead to an increase in the proportion of them in the production of the gross domestic product.

Revitalization of SMEs in the field of industrial production, particularly in the engineering industries is preferred for the economy because it allows solving the problem of improving the structure of employment, ensuring the work of the working population, and the decrease in the level of monopolization of production, etc (Tukkel, 2002). In connection with this state to activate the processes of creation and development of SMEs in the engineering industry, it should have the intended effect of the process by using measures such as the provision of state support and aid the formation mechanism of regular exchange of information between small, medium and large businesses, expanding training programs for skilled workers for their production function, creation of industrial design centers, technology transfer, etc (Devos, van Landeghem & Deschoolmeester, 2014). All this will eventually lead to an increase in the share of the business structure in the industrial production which in the future should bring it to the structural level in the developed world.

Among industries, machinery stands out for its special role played in the industrialization of the country through the implementation of process innovation, as well as the release of product innovation and providing its innovative emerging needs of the economy in the country (Zamanbekov, 2013a). The enterprises of this industry are the main core of the production process in the sectors of mining and manufacturing industries. Produced by them every year more, newer, modified vehicles, and equipment with the best qualities to a large extent determine

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the level of development of industries based on the economy innovation. Therefore, mechanical engineering in Kazakhstan is now elevated to the priority sectors of the economy and transferred to an intensive, outstripping development path. In this industry, there are more possibilities in the creation of large innovative companies that carry out research and development and engineering works on the issue of innovation and develop on the basis of high-tech business.

The machine-building complex of Kazakhstan includes today more than twenty sectors and sub-sectors, each of which is participating in the state program of industrial-innovative development of the country, update the products, create new techniques and technology designs; some of them borrow advanced foreign technology, modify manufactured products for economic modernization.

Currently, the country's needs in the engineering industry are met by the domestic production is at 20%, the remaining 80% are covered by supplies from foreign countries. According to the forecast volume of production engineering in the short term will continue to grow faster than the projected rate of GDP growth, and the country needs for its products will increasingly be met by domestic production, which will lead to the gradual reduction of its imports.

Domestic engineering thanks to the successful implementation of the measures taken for the implementation of state programs for the industrial-innovative development of the country in recent years shows a positive trend of sustained growth.

Machine-building production of the country is available now mostly for large and medium-sized enterprises. According to the data of Statistics Agency of RK, the vast majority of existing companies in this industry are engaged in repair and installation of machinery and equipment. In industries of SMEs engineering is very small, sometimes their number is reduced, due to the suspension in some years of the numerical growth of these enterprises due to the complex structure of products, consisting of machinery, spare parts, and units (see Table 3 and Figure 6).

The data in Table 3 shows that for the period from 2013 to 2017 engineering products decreased to 91,7%. Among the enterprises and mechanical engineering industries, nearly 80% of them are engaged in repair and installation of machinery and equipment which are mainly related to the form of services provided to individuals and legal entities for the maintenance and repair of vehicles, and other types of machines, rather than to final product manufacture or its individual parts.

Table 3. Dynamics of indicators of Kazakhstan Engineering Development for 2013-2017

Indicators	Years		
	2013	2017	2017 in % comparing to 2013
Engineering Products, billion USD	5,7	3,0	53,0
The share of mechanical engineering in the total volume of industrial production,%	4,8	4,4	91,7
Number of enterprises and mechanical engineering industries, units.	1626	1845	113,5
including: - The number of enterprises and industries in repair and installation of machinery and equipment units.	1295	1 447	111,7
Source: Small and medium enterprises in the Republic of Kazakhstan. Statistical Yearbook. Astana, NEM Committee on Statistics of Kazakhstan, 2018, 42 p.			

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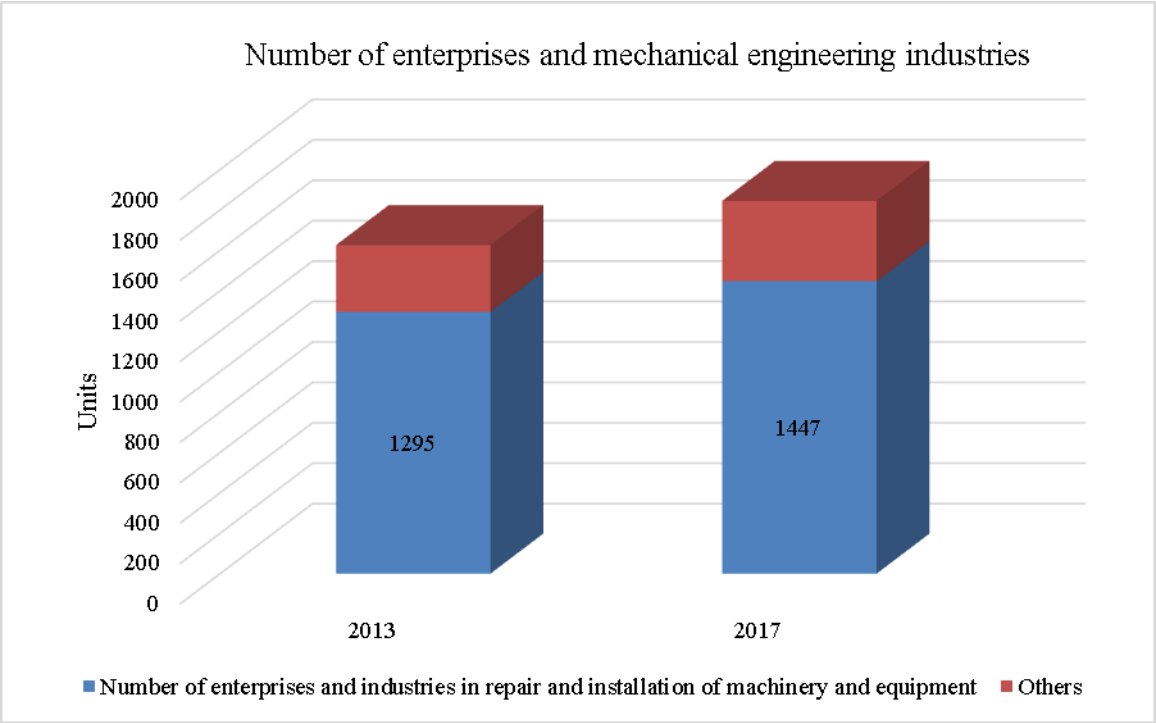

Figure 6. Number of enterprises and mechanical engineering industries in 2013 and 2017. Source: Small and medium enterprises in the Republic of Kazakhstan. Statistical Yearbook. Astana, NEM Committee on Statistics of Kazakhstan, 2018, 42 p.

If these enterprises for the manufacture of the products will receive the necessary raw materials (long products, casting a variety of materials from the special procurement enterprises, for example by casting and forging plants, individual parts and units of machines - from the small and medium enterprises, it will lead to a simplification of their structure and improve production efficiency in the sectors of the industry most operating large enterprises that produce in the greater part of its production; small and medium enterprises are very small and their number does not increase. The largest number of active SMEs are engaged in the manufacturing sector of the economy in industries (see Table 4 and Figure 7).

To date, there is still not justifying the old system in Kazakhstan when one industrial company makes almost everything - from processing raw materials to the finished end product. For example, at many machine-building enterprises of the country, there are exist archaic industrial structure that hampers diversification. The industrial structure of these companies are included in addition to the primary (collection and processing) procurement workshops (casting, forging, pressing, cutting and harvesting) and other workshops (instrumental, repair), portions and service economy. Of course, the enterprise becomes difficult to manage and uncompetitive not only on the outside with a production structure, but also in the internal market (Zamanbekov, 2014c).

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Table 4. Dynamics of active SMEs growth and output of their products in the industrial sector for 2013, 2017

Indicators	2013 year		2017 year		2017 year in % comparing to 2013 year	
	the number of SMEs, thousand of units	production volume, billion USD	the number of SMEs, thousand of units	production volume, billion USD	the number of SMEs, thousand of units	production volume, billion USD
1	2	3	4	5	6	7
Industry – total	24,5	10,6	42,3	14,2	172,7	134
including: manufacturing industry	22,9	7,1	36,7	7,6	160,3	112,0
(of them:) - small and medium enterprises - Individual entrepreneurship	5,4		14,2		262,0	107,0
Source: Small and medium enterprises in the Republic of Kazakhstan. Statistical Yearbook. Astana, NEM Committee on Statistics of Kazakhstan, 2018, 42 p.						

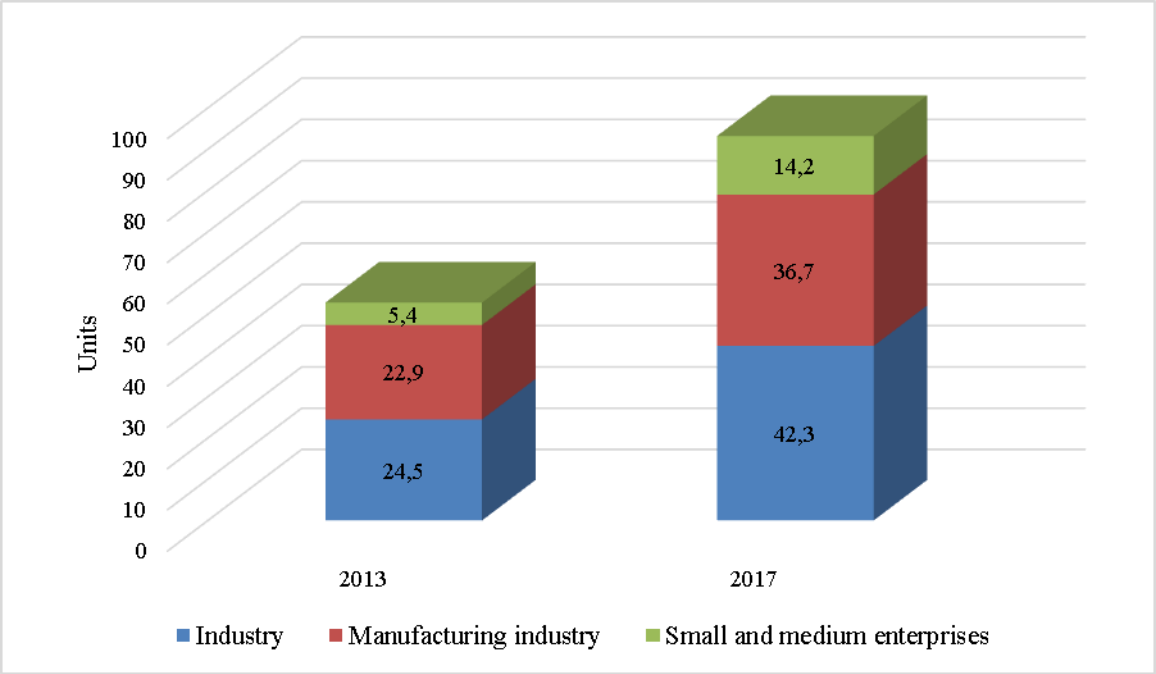

Figure 4. Dynamics of active SMEs growth in the industrial sector in 2013 and 2017. Source: Small and medium enterprises in the Republic of Kazakhstan. Statistical Yearbook. Astana, NEM Committee on Statistics of Kazakhstan, 2018, 42 p.

As can be seen from the data in table 4, SMEs are concentrated in manufacturing industries, the number of which over the period under review increased by 60.3%, and their output increased 2.5 times. This is due to the development of the process of concentration of production within these enterprises and the transfer of some small enterprises to the category of medium-sized enterprises or individual entrepreneurship, the number of which

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increased by 2.6 times. Their production growth amounted to 2.4 times, and they play a decisive role in manufacturing industries, since they account for only 92.8% of the total manufacturing output.

Today, the old system, which is not justifying itself, is still being preserved in Kazakhstan, when one industrial enterprise does almost everything - from processing raw materials to producing finished products. For example, many operating machine-building enterprises of the country have an archaic production structure that impedes the diversification of production. In addition to the main (processing and collection), the production structure of these enterprises includes procurement workshops (foundry, forge, press, cutting and procurement) and other workshops (tool, repair), sections and service farms. Of course, with such a production structure, an enterprise becomes difficult to manage and uncompetitive not only in the external, but also in the domestic market (Zamanbekov, 2014c).

Under these conditions, the operation of SMEs as a "satellite" is essential for the maintenance of those or other needs of enterprises giants and freeing them from some units of farm structures. But government supports this requires for these enterprises, summing up their infrastructure and support also on the part of the backbone enterprises by providing brand products, if necessary, isolation loan on favorable terms, the provision of consulting services and the provision of rental premises, machinery, equipment, etc. These entities at the same time receive an opportunity to gradually narrow the sphere of own business for the benefit of improvement of the economic indicators as a remuneration (Semenova & Loginov, 2008).

Releasing them from inefficient production due to small scale which is possible with the integration of small and medium-sized enterprises specializing in these types of production, i.e., production of individual parts of the final product (nodes, components, containers for packing of finished products, etc.) create favorable conditions for development of small and medium-sized businesses. Midsize businesses can enter into cooperation with large enterprises to complete the operation on the assembly of the finished product and its realization. They can establish cooperative ties with small businesses and for the organization of production and implementation of new products with a distinct quality and high price that gives them stable financial stability (Anshin, 2008).

For the dynamic development of industrial production on an innovative basis, the new horizons in connection with the implementation in the country of the accepted Strategy "Kazakhstan - 2050" in the case of which the small entrepreneurship shall develop deep into and in breadth opens. In the Messages of the last years, the President of the Republic of Kazakhstan specified the importance of building up in the country development of rare-earth metals considering their importance for the knowledge-intensive industries – electronic engineers, the laser equipment, the communication and medical equipment. In these Messages, the Head of state also specified, "Within the second and the subsequent five-years periods till 2050 it is necessary to base industries of mobile and multimedia, nano-space technologies, robotics, genetic engineering, search and discovery of energy of the future" (Nazarbaev, 2012). In these guidelines president justified the provisions of the Strategy "Kazakhstan - 2050", in the course of which Kazakhstan should enter the top 30 developed countries of the world, creating an industrial economy which will gradually be transformed into a post-industrial system with the development of fundamentally different values. In this context, the specialized exhibition "EXPO-2017" held in the capital of Kazakhstan (Astana), and will be of a great importance for the rapid development of the economy in the coming five-year period through a gradual transition of the energy sector on a competitive basis.

At the present stage in the most developed countries of the world dominated by the fifth technological order and manifest elements of the sixth technological order (biotechnology, artificial intelligence redundant system, integrated high-speed vehicles, the network of the business community, etc.) Kazakhstan, based on the positive experience of these countries, started using new technologies as a developing factor of a modern economy and has already made some steps in this direction. In particular, the established industrial and innovation clusters, techno, technology parks, incubators, design offices in the near future will create agglomerates in the four major cities of

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the country that will provide the real sector of the economy in one line with global trends, based on a knowledge-based innovation model. Under the influence of these structural elements of the infrastructure there will be created, in the opinion of the authors, Kazakhstan Venture Company which will support the projects implemented mainly by small start-ups in the high-tech sphere. An important role in this area plays a machine-building complex on the extent of which depends on the activation of innovation processes in the economy. Therefore, the creation of this complex network INSME enterprises, especially small innovative firms, is of a great importance for the dynamic development of the engineering industry and increase its role in economic restructuring and transfer it to an innovative path of development.

Currently, the industrial enterprises in Kazakhstan have not properly appreciated all the advantages of innovative development. Therefore, the competitiveness of their products lows in comparison with similar products imported from the foreign countries. In manufacturing, the number of enterprises engaged in the process of creating innovations, made in 2014 year, 1940 units of them with the products and process innovations is 1303 units. Their share in the total number of enterprises was, respectively, 8.1% and 5.4%. The total volume of sales of innovative products in 2014 amounted to 3.239 billion US dollars including industrial production - 2,935 billion US dollars of which in manufacturing - 2,451 billion US dollars. If the share of innovative products and services GPD amounted to 0.7% in 2010, and in 2014 – to 1.5%. In the area of small business, innovation is very effective but in spite of this level of activity is very low due to the small amount of businesses in the industrial sector.

Therefore, to improve the functioning of the economic environment of small firms and optimize the structure of employment of their production and non-production areas, it is necessary to form a multi-level integrated support system of providing them with access to the production-technological, financial, labor and information resources. In this regard, Kazakhstan introduced Unprecedented in the post-program "Business Road Map-2020". The experience of Kazakhstan in support of small and medium-sized businesses, the establishment and improvement of its business measures provided in this program may be of an interest not only to the neighbor but also distant foreign countries.

Within the framework of the program "Business Road Map-2020" drafted Entrepreneurial Code of the Republic of Kazakhstan and upon approval by the authorized body will be set up on entrepreneurship development with several national institutions. In the program "Business Road Map-2020" were introduced new financial instruments: the new system of the loan guarantee, subsidizing of interest rate, provision of service support and training, etc. In Kazakhstan was started to be implemented the project entitled "Business Communications" with new components "Senior Seniors" and "Business Advocacy" by the investment project "Business support". Collectively, these projects are aimed to improve the conditions of activity of enterprise structures and the creation of a favorable climate for the business development in all the types of economy. But the development of small businesses in the engineering industry, the provision of the state support and assistance remains a priority as this type of business is the foundation and guarantee of the rapid economic growth of the country.

In recent years the industry in the country has formed a whole system of the high-tech enterprises for the production of metal products, long products, equipment and machinery well-known foreign brands. For example, in the automotive industry, there are companies for the production of cars "General Electric", "Nissan", "Toyota", "Lada", "Aljeton" and several other models. But these enterprises, specially created in the first five years of SPAIID, have a local content which is still not high with many sets of spare parts, components, and units of machines imported from the foreign countries. For example, road and rail engineering level of localization of domestic production is only 30%. Therefore, enterprises in these sectors play a significant role by the gradually increasing local content in the near future to provide a significant growth in the level of localization. There is a need to develop SMEs by the focusing it on the large machine-building enterprises, passing it through the production of imported import components of the final product.

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Under these conditions, the large machine-building enterprises establishing and securing relationships with the SMEs act for it as a supplier of raw materials and as a wholesale customer of its products. It is not excluded dictating their conditions to SMEs, which carries them to a significant risk of loss of independence. Therefore, SMEs not to become too attached to the production scheme of a large company should specialize in small-scale or individual production and pursue its relatively independent policy. But this is only possible on condition that the SMEs will be established as an independent economic entity on the basis of contracts. Establishing cooperation with companies on the basis of cooperation of SMEs is beneficial for large enterprises themselves. Enterprises SMEs, in practice, can be their main generator of innovative processes, providing them with new types of individual components for the production of innovative products in the form of new models of vehicles, machinery, and equipment.

In connection with this important creation in the region through joint efforts of existing companies are large companies to SMEs, making one of them on the machining center, the other - for welding, the third - on the casting or the manufacturer of cutting tools, etc. But such large enterprises as "SemAP" in Semipalatinsk, "Agromashholding" in Kostanay, "Asia Auto" in Ust-Kamenagorsk, instrument-making factory in Kokshetaue, Excavator Plant in Kentaue, plant "Electrical Apparatus" in Shymkent, etc., given the specificity of their end products, SMEs can create around themselves for the following types of components, namely, for the production of gears, gear wheels, sprockets, shafts, non-standard metal products, iron castings, followed by machined, stamped metal parts, plastic casings and other products. The relationship with the SMEs should be based on the contract and the subcontract. At the same time to strengthen the business relationship between them is necessary to use a system of cooperation (franchising) which opens up additional opportunities for SMEs to expand their activities and increase its effectiveness.

As known, under the right franchise is providing a large company to another entity, in particular small, the right to sell its products or services under the trademark of a large company. On the one hand, this is the easiest painless way to establish a new venture for those who do not have sufficient business experience and not prone to the commercial risk. On the other - for large companies is the solution to many problems associated with the expansion of sales markets, attracting additional capital savings in the development of its own distribution network, etc., partially shifting the responsibility to small businesses, large companies snapping up smaller than its "core" capital (Gupta, Seetharaman & Raj, 2014).

The most favorable conditions for the development of relations between the large companies and SMEs are cluster enterprises (Zamanbekov, 2013b). The joint development have interrelated them within the cluster association beneficial to both SMEs and large businesses. This happens due to the establishment of cooperation between educational institutions and preparation of the required staff, ensuring access to production infrastructure for their activities, the expansion of cooperation in the field of research collaboration and marketing of goods, attracting investments, etc.

5. Discussion

In sales terms of the forced industrial and innovative development program of the country for 2015-2019 the entities of mechanical engineering issuing new or modified machine and the equipment are the innovative entities now which shall provide with the products upgrade of production in industries of the economy and its transfer to an innovative way of development (Bianchi et al., 1985). For them, the main task is the search for advanced technology and release of a product innovation which raises the competitiveness of the entities. Implementation of the innovative projects provided by the "Map" of industrialization of the country happens on the terms of separation of risks between its participants and active use of the system of outsourcing today. At the same time, the systemically important entities as the project integrator, i.e. the large machine-building enterprise participating the products in the implementation of this project are engaged only in the assembly of an end product, logistics

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and sales and all the rest of the production of accessories and the equipment are transferred to the entities of SMEs. Such job specialization between large businesses and SMEs will lead to the growth of the nomenclature of spare parts made in the country for the assembly issued by the domestic plants of machines and to increase in their content in Kazakhstan.

The entities of SMEs establishing relations with the large companies will constantly feel guardianship from their party, speaking in images, they will be under their "wing", and the entrepreneurial opportunities to implement with the greatest efficiency. Expanding the activities, SMES during the development from some kind of base on which higher "floors" of the functioning economy having high potential production and the considerable amount of production and sales of products will grow. As a result of the entity of SMEs will take gradually the priority place in the economy, and the dominated provision of large enterprises will decrease respectively. But it does not mean that large-scale production to give way in market structure of the small and medium business, losing the benefits. On the contrary, its value will increase as the systemically important entity representing the major market structure which the development multiplies the resource capacity of the country, ensuring its economic safety (Spitsyn, 2004).

Establishment of business relations on the basis of reciprocity between large enterprises and the entities of SMEs give a powerful impulse for their mutual development. Created by the large innovative enterprises of small and medium business will have more opportunity for strengthening of the provision and proliferation, and also to develop steadily in the production sphere, carrying out separate transactions in a technological chain of production of an end product. On this basis, the structural deformation of business activity existing in the country will be overcome that is caused by a low share of these activities in the sphere of industrial production, especially in mechanical engineering. For example in this industry with a general growth of a number of machine-building enterprises for the considered period for 5,5%, the number of the entities on repair and installation of machines and the equipment increased by 3,6%.

By the size, these entities, i.e. by the number of busy workers and output, treat small enterprises are an allowance not only their growth but also medium scale enterprises. In 2014, the volume of produced industrial output amounted to 2.01 million US dollars or 2.1% of total industrial production. At the same time with a core activity, 783 entities were engaged that constitutes about 70% of their total quantity. Therefore among these entities, there are entities which are allocated with rather a large amount of production and are engaged not only in repair and installation of machines and the equipment but also the production of an end product of the industry of mechanical engineering. For example, JSC "Almaty Car-repair Plant" which is engaged along with repair of a railway rolling stock, its nodes, and aggregates, both production and recovery of the spare parts and nodes of the capital equipment, necessary to it, even in the production of the non-standard equipment. Such more or less large enterprises are available in other industries of mechanical engineering, in particular, oil and gas, mining, agricultural, electric equipment and instrument making.

The vast majority of the entities occupied with repair and installation of machines and the equipment began to develop steadily now, broadening the sphere of the activities in connection with the increased requests from the served clients. These entities have a real opportunity, relying on a government assistance and support, to pass into the category of averages and to promote the intensive development of domestic engineering industry. For this purpose in the country were created the favorable conditions on the basis of the made decision by the government about stimulation of the accelerated transition of the small entities to averages with the support of the state are created (Cohen, 2015). They are in the course of the formation by the mid-scale businesses and will have gradually an advantage peculiar to this business.

Medium scale enterprises, as practice shows, flexibly react to the change of a market situation, have high degree of efficiency on change of production engineering procedures, are capable to make competitive products and on

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this basis to provide processes of upgrade of technical base of production and growth of its amounts with rather high rates, recovering the investment activity. But the priority in the development of industries remains so far behind the operating large enterprises which around themselves can concentrate the entities of SMEs and enter with them into cooperative communications, having charged them the production of necessary semifinished products, details, nodes and products of separate stages of engineering procedure for release of end products. And large enterprises have at the same time an opportunity to expand the production and to pay more attention and funds for designing and designing of new products, improvement of the production technology, enhancement of control methods of product quality etc.

Creation of stable work of the entities of SMEs in industries of mechanical engineering requires entering into the current legislation of the changes and additions determining legal, economic and social conditions and guarantees of small and medium business in its relations with the large innovative enterprises. Within the legislation, it is necessary to develop the new regulatory legal acts directed to the protection of freedom of business activity of subjects in small, medium and large business, their state support by creation of an efficient incentive system, and also the mechanism of implementation of provisions of the legislation (Anderson et al., 2015).

For the purpose of the increase in effectiveness of activities of subjects of SMEs functioning in the production sphere, it is necessary to make the change to use of such market regulators as credit and tax systems, the insurance directed to the improvement of an economic environment for their development. With respect thereto it is necessary to review methodical approaches to determination of a taxation basis, having established a threshold of the most admissible total tax withdrawals and obligatory payments at such level which provides incentives to the development of small and medium business, first of all in industries.

Most the created entities of SMEs in the production sphere have no at the beginning of the activities of sufficient means for immediate purchase of the real estate necessary to them, property and the equipment. In this regard leasing firms and the companies which mechanism of use of leasing shall be favorable for these entities on acquisition the equipment and compensation of an interest rate for it shall play an important role in production organizations at the entities of SMEs (Toxanova, 1999).

Conclusions

During the modern period in the major industries clusters are created and function. Entry into their structure of the entities of small and medium business united with the large businesses which create for them additional opportunities for expansion of their activities and increase in a number of subjects of this business in the production sphere. Now, Kazakhstan has the sufficient resource potential and favorable conditions for the development of small and medium business and formation by its prevailing structural part of the national economy. But owing to the known reasons of objective and subjective nature not all registered subjects of SMEs are acting, from them only a third (2014 of-73,5%) actively are engaged in business activity in the sphere of commerce and trade (Scott & Regan, 2012).

For the purpose of creating favorable conditions for fruitful activities of subjects of SMEs, it is necessary to enhance the legislation in the direction of strengthening in it the guarantees represented to them and protective measures of their business activity, its barrier from illegal infringement of it and respect by entrepreneurs of generally accepted standards of morality and ethics in the work. There was allowed to use its technical and production and social and economic potential in the practice of managing for ensuring the growth of employment of the population and a market saturation with goods of production and consumer appointment and services.

For improvement of the situation of small and medium business, it is necessary to make also changes in acting legislative and the regulatory legal acts of an entrepreneurship allowing to stir up its activities in the way of development of this business to a large sector of the economy. For this purpose was developed practical approaches to creation and concentration of SMEs around the large innovative enterprises with the use of the system of outsourcing, a franchising and other types of business cooperation are of great importance for expansion of business activity.

Because of the importance of such types of cooperation, there is a significant value for the intensive development of this business in industries that described possibilities of use of cluster consolidation. It will promote creation and development of small and medium business first of all in the production sphere, for the purpose of the increase in its share in the total amount of gross internal output. Therefore the concentration of SMEs around the new innovative entities functioning in industries of Kazakhstan is very important. These entities will receive a powerful boost for the development being under their guardianship and protection that will help them to strengthen the position, to raise and develop quantitatively. The small enterprises which are engaged in repair and installation of machines and the equipment can also establish business relations with the large innovative enterprises on the basis of reciprocity and develop these relations having a real opportunity to enter in the long term category of medium scale enterprises.

Implementation of the provisions provided in conclusions of the article and the measures proposed to accelerate the increase in production in industries by means of the interconnected development of the entities in small, medium and large business, will provide stability and efficiency of their functioning that is very important for forming of the innovative national economy.

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KAZAKHSTAN MEAT INDUSTRY ANALYSIS: IMPORT SUBSTITUTION, DELIVERY AND STATISTICS

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Abstract. Effective management of food safety and product quality issues is critical for maintaining and enhancing the competitiveness of livestock production. Food safety and quality standards are now and will become increasingly important for the competitiveness of livestock products. For most producers and processors of livestock products, as well as for most livestock products, domestic demand remains the main, if not the only, driving mechanism for market improvements in food safety and quality. Better imports entering the market already indicate the need to raise standards, at least to maintain domestic market share, as well as to achieve import substitution or appeal to export markets. International experience shows that the implementation of quality standards should be stimulated by the private sector, but not by the government. However, the government plays an important role in improving the skills of veterinarians and providing advisory services to help livestock producers and processors meet the ISO (International Organization of Standardization) and the CCPHA (Critical Control Point of hazard analysis) standards. In other to create conditions for the prosperity of the livestock industry, the government needs to pay more attention to the following two key areas: reducing market costs and prudent management of food safety and quality of livestock products. With the transition to more dispersed cattle breeding, the cost of re–establishing links between scattered and small livestock producers and consumers, local or foreign, has increased. But such costs can be reduced. To ensure food safety, meet consumer requirements and increase the ability to compete with imports, domestic producers need to strengthen their capacity to achieve higher standards of safety and quality. Attention should be paid to such instruments of the import substitution strategy as an active industrial policy, trade protection and export promotion. The purpose of this study is to analyze the meat industry of Kazakhstan, to present the problems that the industry is facing at the present stage and direct their solutions and the tasks of the state in this mechanism. The

scientific novelty of the study lies in the development of measures to develop policies in the field of the meat industry in the context of import–substituting policies and the development of appropriate organizational and economic tools for their implementation

Keywords: competitiveness; meat production; innovation; import substitution strategy; state regulation

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JEL Classification: A10; A11; F13

1. Introduction

The meat processing industry has traditionally been one of the main agricultural industries in Kazakhstan. Its essence is the integrated processing of livestock. The industry unites many enterprises of various fields of activity: livestock raising and fattening, production of animal feed, slaughter and processing of conditioned animals, production of meat products, storage and sale of products, as well as service enterprises of the industry.

In recent years, the Republic of Kazakhstan has been actively using an import substitution policy in the field of beef and veal. There is a certain possibility of slowing down or changing the trend of imports of processed livestock products to the domestic market. The key point of import substitution in the future will be to increase the productivity and competitiveness of domestic producers and processors, as well as improve the quality and safety of food products to meet the standards of the corresponding imported processed products. The idea of import substitution, as well as its attendant problems and challenges, permanently arise and become relevant for national economies within the framework of national security concepts and socio–economic development strategies of different countries. The Republic of Kazakhstan is not an exception. The meat and meat products market, being the largest segment of the domestic food market, has a significant impact on the country's food supply. The presented study examines the features of meat industry development in the implementation of import substitution programs (Simachev & Kuzyk, Zudin, 2016)). The solution of import substitution problems is a complex of long–term measures, in the implementation of which both state bodies at all levels, business itself, and local governments should take part.

Contribution to science. Import substitution is a survival strategy. Shakarim University in Semey, contributes to the solution of the problem of import substitution. Thus, Kazakh specialists develop equipment and production technologies for the meat industry and other products that meet international standards. Specialists of regional universities and meat industry enterprises (Semipalatinsk meat processing plant, Kubley LLP, Rubikom Meat processing plant) make a huge contribution to science. All enterprises of the meat industry are focused on specific cases that contribute to solving problems that are strategically important for the regions and the country (Tvaronavičienė, Ślusarczyk, 2019), (Tvaronavičienė, Razminienė, 2017). One of these projects was the creation of world–class advanced technologies and equipment for the production of meat products in the framework of the import substitution program, carried out in cooperation with high–class specialists. The advantages of the equipment are obvious: when creating it, an integrated approach is used, taking into account literally everything, from the technological project to the final result – as a result, manufacturers offer a ready–made solution, a "turnkey" project. The equipment fully meets the highest international standards, while its price is significantly lower than for imported analogues. Kazakhstan's major producers and farmers, as well as from near and far abroad, showed interest in the new technology. Universities contribute to the solution of the important state task of filling the market with high–quality and useful domestic meat products. An important role in this is played by actively involved students, undergraduates, and doctoral students in the research and production process. Their

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participation in production essentially outgrows the scope of career guidance, becoming a serious activity with the prospect of continuing after graduation.

Novel ideas.
In Kazakhstan, all the necessary conditions are available for the development of beef cattle breeding: large areas of natural forage land and deposits, empty livestock premises, livestock personnel, natural resources of large livestock, allowing to develop beef cattle breeding in various natural and climatic conditions. The country has real opportunities to occupy a worthy niche among the world's exporters of meat and processed products – extensive pasture lands that allow to reduce the cost of production as much as possible, the presence of a large Russian market in the neighborhood (which is located in the common customs space) and, finally, the existing national traditions of beef cattle breeding.

Increasing the economic efficiency of agriculture allows you to increase the production of agricultural products with the same resource potential and reduce labor and material costs per unit of production. As an assessment of certain activities carried out in agriculture, the criterion of economic efficiency is used. Economic efficiency of agricultural production is characterized by profitability, which is an economic category that reflects the profitability of the enterprise, industry. Analysis of world experience has shown that one of the important characteristics of any highly developed country is the presence of an effective livestock industry. It is developed animal husbandry that ensures the full nutrition of the population and its viability.

The increase in livestock will stimulate the growth of domestic trade, as well as encourage the country to export large volumes. For Kazakhstan, it will be quite easy to export at a sufficient level of livestock, due to the appropriate market conditions, namely, natural and climatic conditions, the availability of pastures, and the proximity of capacious markets.

2. Literature review

A review of literature showed that these measures have a positive effect on the development of import substitution of meat products in Kazakhstan. Many studies are devoted to the effectiveness of import substitution policies (Austin, 2010), (Bochko, 2015). (Bruton & Henry, 1989), (Kysil, Kolodka & Rosokhata, 2014), (Volchkova & Turdyeva, 2016), (Niyazbekova, Baigireyeva, Niyazbekova, Borisova & Ivanova 2019), (Lambert & Burduroglu, 2002), (Drexl & Kimms, 1997), (Mula, Peidro, Diaz–Madronero & Vicens, 2010), (Ozguven, Ozbakir & Yavuz, 2010), (Rodrigues, 2010), (Abenov, Kirdasinova, Tulaganov, Zhumataeva, Mutalyieva & Issayeva, 2019), (Bravo, Álvarez, 2012). (Beregova & Klipin, 2017),

There is a point of view whose supporters point to significant benefits from the developed policies and opportunities to accelerate the development of the economy through the use of various economic support mechanisms (Baynov, 2018), (Chen & Lee, 2008), (Chen, 2010), (Vatolkina & Gorbunova, 2016).

Among scientific approaches, the term “import substitution” is interpreted as the process of replacing imported goods with domestic ones in the market (Ioris, 2018). The term “import substitution” is interpreted as a way of the country's economy entering the world economy system (Zhudro, 2014); as well as for the economic development of regions (Bochko, 2015), (Nassyrova, Niyazbekova, Ilyas, Zhanabayeva, Khassenova & Tlessova, 2020).

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3. Methodology

The methodological basis of study was the fundamental provisions in the field of meat industry in the conditions of sustainable development, scientific papers of scientists in the field of food security, reviews of meat industry performance of the Republic of Kazakhstan. In science, certain development methods have been developed in the field of import substitution of meat products in the conditions of sustainable development. However, to determine the directions of import substitution, various integrated approaches are needed. In the course of studying the issues of ensuring import substitution in the field of meat industry as part of the analysis of sustainable development, data for a number of years «Analysis of beef and veal imports», «"Beef and veal supplies of the Republic of Kazakhstan» were carried out.

The current state of industry, the volume of its financial support were analyzed in the study. The state support of import substitution in an industry and its results are examined in detail. Based on current state data, the main problems of the industry development are identified, shown the dynamics of import substitution in it, recommendations on the effective development of the industry in the long term are made. The study revealed positive dynamics in the market of meat and meat offal.

4. Application functionality

In Kazakhstan, the production of meat and meat products has traditionally been considered one of the main priority areas in agriculture. The greatest results were achieved in 1980s, when annual meat production (in slaughter weight) exceeded the milestone of 1.5 million tons, and 95 kg were produced per capita. Accordingly, the processing enterprises in the form of meat–packing plants, cold–slaughter houses, numerous sausage shops and slaughterhouses have also received proper development. Today, despite stabilization and some growth in domestic production, there is a tendency to increase imports of poultry meat and sausages in the domestic market, while the share of imports of canned meat and meat and vegetable products is still high (52 %). There is a problem of the lag of meat processing enterprises of the Republic of Kazakhstan in the development of advanced technologies and technical equipment. The meat industry of the Republic of Kazakhstan has long been well–developed by livestock is the oldest industry and is in first place in terms of output.

Let`s consider the analysis of meat industry market for the past fifteen years. Import of beef and veal in Kazakhstan by years (table 1).

Table 1. Import of beef and veal in Kazakhstan for 2005 – 2019

Market Year	Imports	Unit of Measure Единица измерения	Growth Rate
2005	11	(1000 MT CWE)	37.50 %
2006	22	(1000 MT CWE)	100.00 %
2007	30	(1000 MT CWE)	36.36 %
2008	20	(1000 MT CWE)	–33.33 %
2009	11	(1000 MT CWE)	–45.00 %
2010	16	(1000 MT CWE)	45.45 %
2011	18	(1000 MT CWE)	12.50 %
2012	30	(1000 MT CWE)	66.67 %
2013	35	(1000 MT CWE)	16.67 %

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2014	27	(1000 MT CWE)	–22.86 %
2015	26	(1000 MT CWE)	–3.70 %
2016	18	(1000 MT CWE)	–30.77 %
2017	29	(1000 MT CWE)	61.11 %
2018	26	(1000 MT CWE)	–10.34 %
2019	26	(1000 MT CWE)	0.00 %

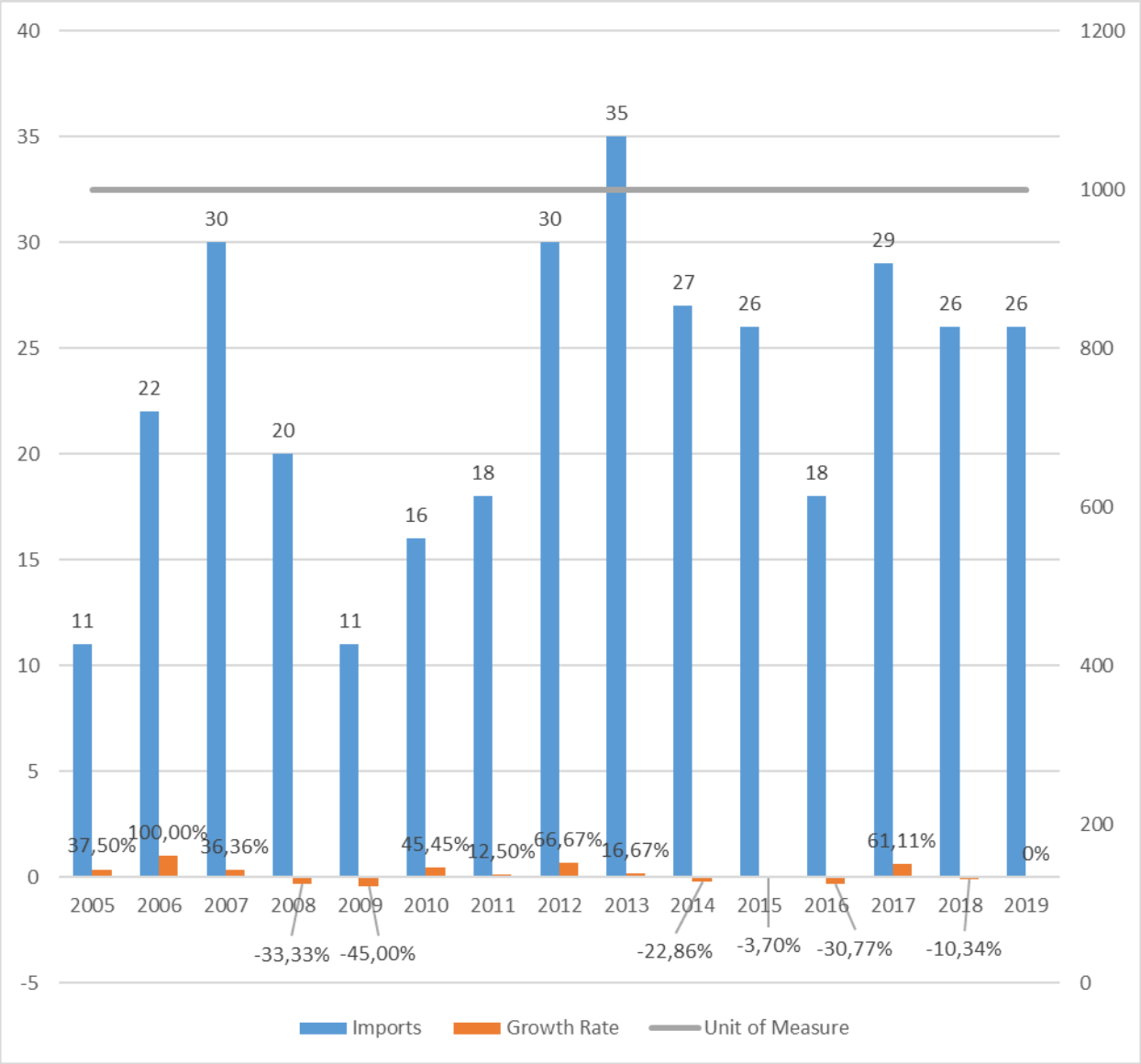

Figure 1. Import of beef and veal in Kazakhstan for 2005 – 2019
Source: compiled by the authors according to the source Index Mundi
https://www.indexmundi.com/agriculture/?country=kz&commodity=beef–and–veal–meat&graph=beginning–stocks

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The meat and meat products market is characterized by low supply, high import dependence, as well as the imperfection of the price system and the chain of goods movement. Beef and veal production in Kazakhstan by years (table 2).

Table 2. Beef and veal production in Kazakhstan for 2005 – 2019

Market Year	Production	Unit of Measure	Growth Rate
2005	345	(1000 MT CWE)	4.55 %
2006	370	(1000 MT CWE)	7.25 %
2007	384	(1000 MT CWE)	3.78 %
2008	400	(1000 MT CWE)	4.17 %
2009	400	(1000 MT CWE)	0.00 %
2010	407	(1000 MT CWE)	1.75 %
2011	393	(1000 MT CWE)	–3.44 %
2012	374	(1000 MT CWE)	–4.83 %
2013	384	(1000 MT CWE)	2.67 %
2014	406	(1000 MT CWE)	5.73 %
2015	416	(1000 MT CWE)	2.46 %
2016	425	(1000 MT CWE)	2.16 %
2017	451	(1000 MT CWE)	6.12 %
2018	477	(1000 MT CWE)	5.76 %
2019	480	(1000 MT CWE)	0.63 %

Source: compiled by the authors according to the source Index Mundi
https://www.indexmundi.com/agriculture/?country=kz&commodity=beef–and–veal–meat&graph=beginning–stocks

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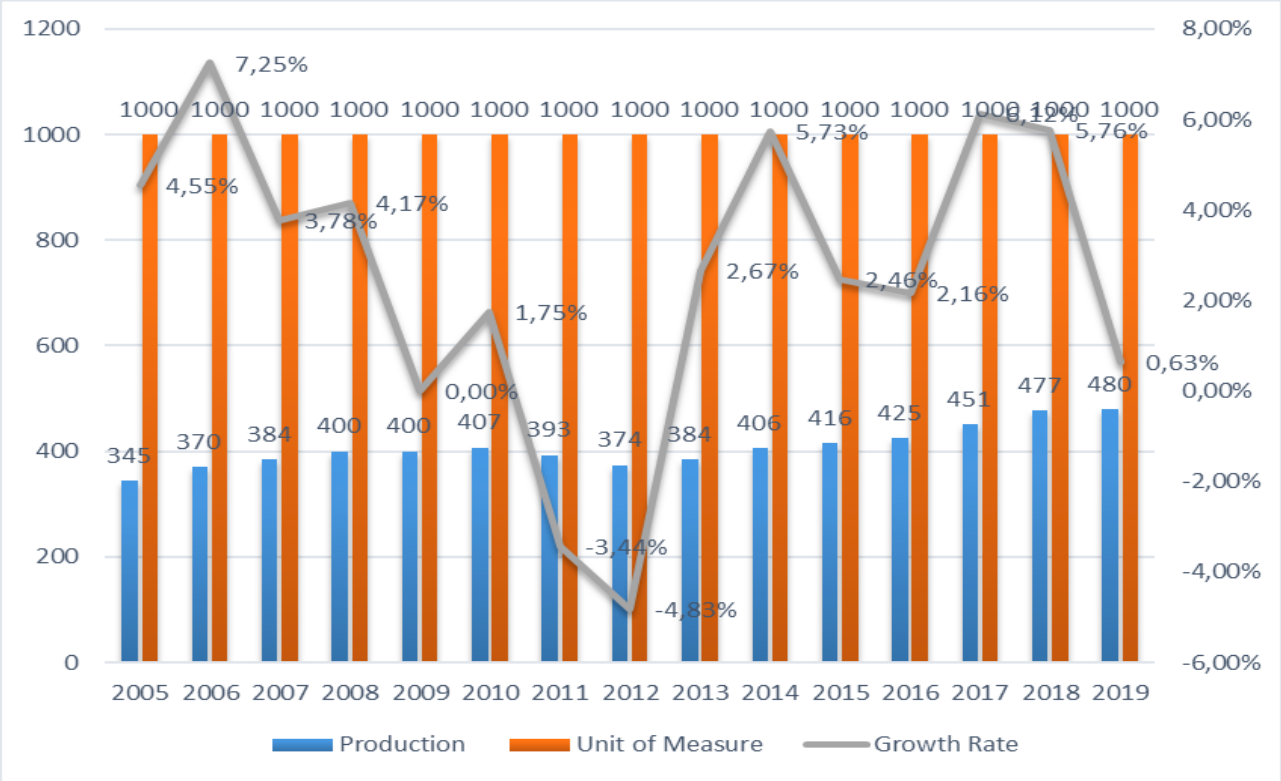

Figure 2. Beef and veal production in Kazakhstan for 2005 – 2019
Source: compiled by the authors according to the source Index Mundi
https://www.indexmundi.com/agriculture/?country=kz&commodity=beef–and–veal–meat&graph=beginning–stocks
https://www.indexmundi.com/agriculture/?country=kz&commodity=beef–and–veal–meat&graph=production

The beef industry development is characterized by stable demand in the domestic market. Unfortunately, meat is more consumed in Kazakhstan than produced.

Domestic consumption of beef and veal in Kazakhstan by years (table 3).

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Table 3. Domestic consumption of beef and veal in Kazakhstan for 2005 – 2019

Market Year	Domestic Consumption	Unit of Measure	Growth Rate
2005	356	(1000 MT CWE)	5.33 %
2006	392	(1000 MT CWE)	10.11 %
2007	414	(1000 MT CWE)	5.61 %
2008	419	(1000 MT CWE)	1.21 %
2009	411	(1000 MT CWE)	–1.91 %
2010	422	(1000 MT CWE)	2.68 %
2011	411	(1000 MT CWE)	–2.61 %
2012	403	(1000 MT CWE)	–1.95 %
2013	418	(1000 MT CWE)	3.72 %
2014	430	(1000 MT CWE)	2.87 %
2015	440	(1000 MT CWE)	2.33 %
2016	442	(1000 MT CWE)	0.45 %
2017	478	(1000 MT CWE)	8.14 %
2018	496	(1000 MT CWE)	3.77 %
2019	499	(1000 MT CWE)	0.60 %

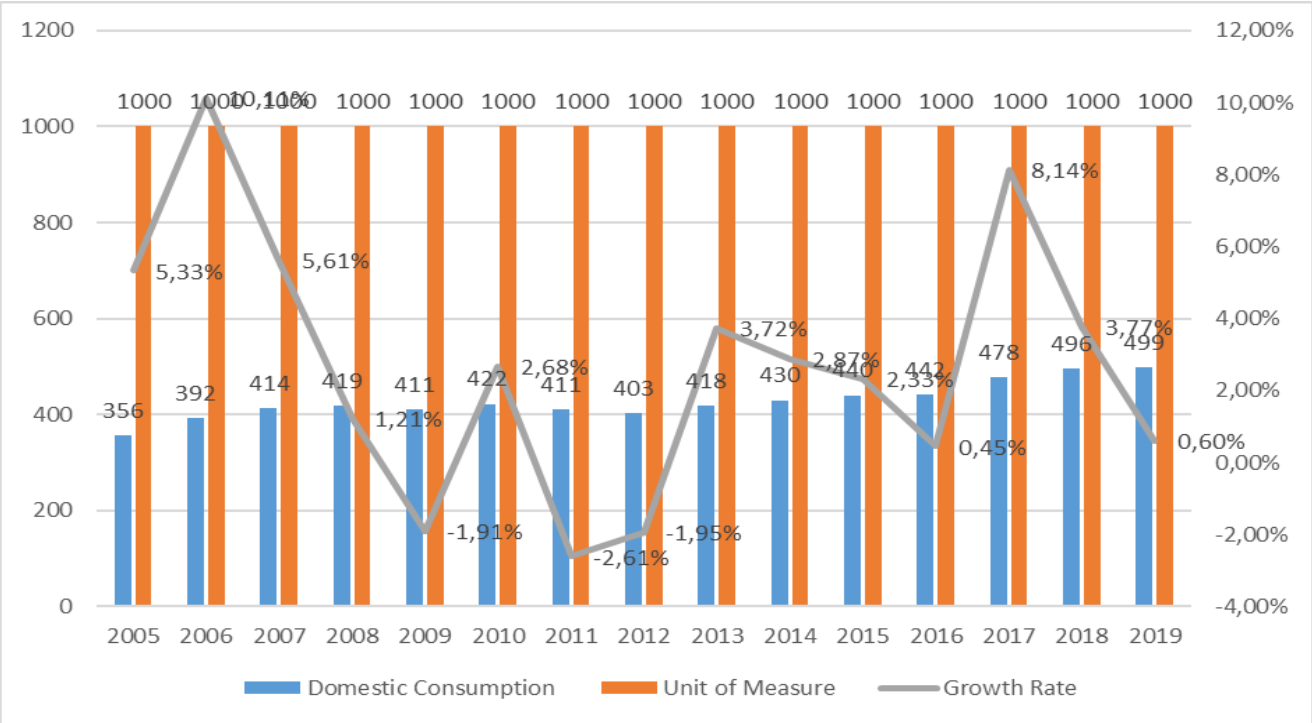

Figure 3. Domestic consumption of beef and veal in Kazakhstan for 2005–2019
Source: compiled by the authors according to the source Index Mundi
https://www.indexmundi.com/agriculture/?country=kz&commodity=beef–and–veal–meat&graph=beginning–stocks

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At the present stage, the issues of saturation of the market with meat products of domestic production, improving quality, increasing competitiveness, expanding the assortment are becoming increasingly important.
Stocks of beef and veal in Kazakhstan for 2005 – 2019 (table 4).

Table 4. Stocks of beef and veal in Kazakhstan for 2005 – 2019

Market Year	Ending Stocks	Unit of Measure	Growth Rate
2005	0	(1000 MT CWE)	NA
2006	0	(1000 MT CWE)	NA
2007	0	(1000 MT CWE)	NA
2008	0	(1000 MT CWE)	NA
2009	0	(1000 MT CWE)	NA
2010	0	(1000 MT CWE)	NA
2011	0	(1000 MT CWE)	NA
2012	0	(1000 MT CWE)	NA
2013	0	(1000 MT CWE)	NA
2014	0	(1000 MT CWE)	NA
2015	0	(1000 MT CWE)	NA
2016	0	(1000 MT CWE)	NA
2017	0	(1000 MT CWE)	NA
2018	0	(1000 MT CWE)	NA
2019	0	(1000 MT CWE)	NA

Source: compiled by the authors according to the source
https://www.indexmundi.com/agriculture/?country=kz&commodity=beef–and–veal–meat&graph=ending–stocks

Kazakhstan is a major producer and exporter of meat, especially beef and veal.

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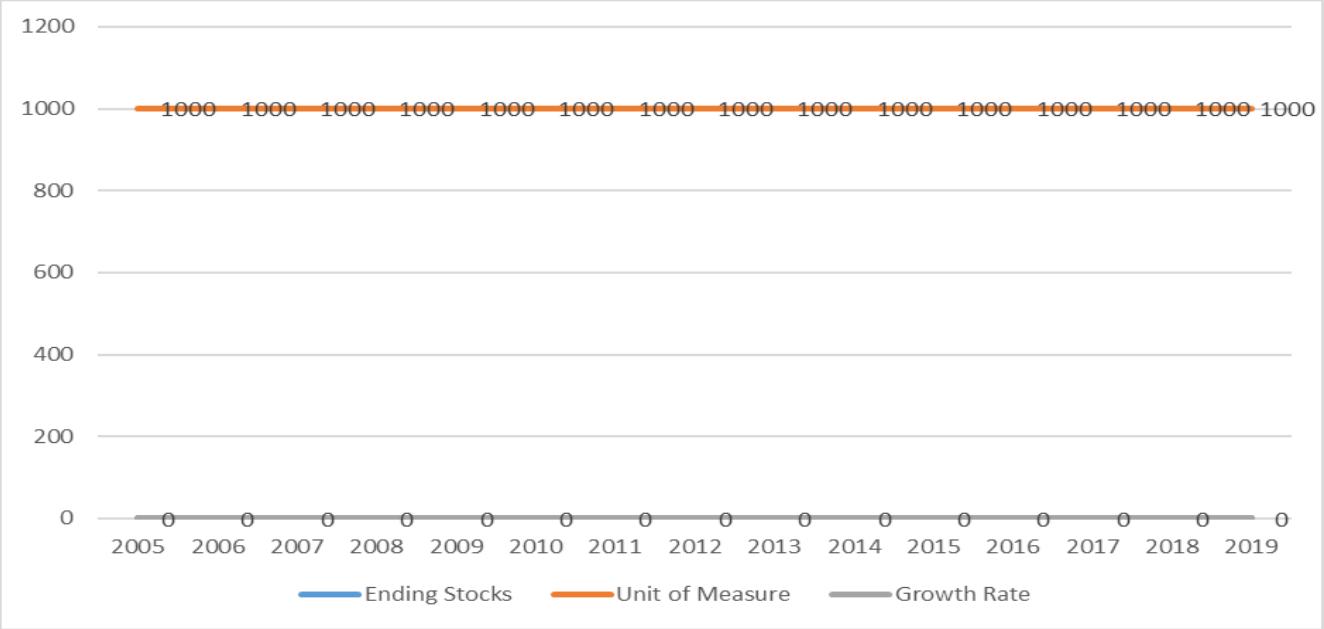

Figure 4. Stocks of beef and veal in Kazakhstan for 2005 – 2019
Source: compiled by the authors according to the source Index Mundi
https://www.indexmundi.com/agriculture/?country=kz&commodity=beef–and–veal–meat&graph=ending–stocks

From Figure 4 we see that the stocks of beef and veal in the country were not practiced. The trend is negative. Export of beef and veal from Kazakhstan by years (table 5).

Table 5. Export of beef and veal from Kazakhstan in 2005 – 2019

Market Year	Exports	Unit of Measure	Growth Rate
2005	0	(1000 MT CWE)	NA
2006	0	(1000 MT CWE)	NA
2007	0	(1000 MT CWE)	NA
2008	1	(1000 MT CWE)	NA
2009	0	(1000 MT CWE)	–100.00 %
2010	1	(1000 MT CWE)	NA
2011	0	(1000 MT CWE)	–100.00 %
2012	1	(1000 MT CWE)	NA
2013	1	(1000 MT CWE)	0.00 %
2014	3	(1000 MT CWE)	200.00 %
2015	2	(1000 MT CWE)	–33.33 %
2016	1	(1000 MT CWE)	–50.00 %
2017	2	(1000 MT CWE)	100.00 %
2018	7	(1000 MT CWE)	250.00 %
2019	7	(1000 MT CWE)	0.00 %

Source: compiled by the authors according to the source Index Mundi
https://www.indexmundi.com/agriculture/?country=kz&commodity=beef–and–veal–meat&graph=ending–stocks

According to the Eurasian Economic Union, Kazakhstan exported beef to China in 2016, almost 12 tons http://www.eurasiancommission.org/ru/act/prom_i_agroprom/dep_agroprom/sensitive_products/Documents/%D0%9E%D0%91%D0%97%D0%9E%D0%A0%20%D0%BF%D0%BE%20%D0%93%D0%9E%D0%92%D0%AF%D0%94%D0%98%D0%9D%D0%95.pdf.

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Distribution of beef and veal in Kazakhstan by years (table 6).

Table 6. Distribution of beef and veal in Kazakhstan for 2005 – 2019

Market Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Total Distribution	356	392	414	420	411	423	411	404	419	433	442	443	480	503	506
Unit of Measure	(1000 MT CWE)														
Growth Rate (%)	5.33	10.1	5.61	1.45	2.14	2.92	2.84	1.70	3.71	3.34	2.08	0.23	8.35	4.79	0.60

Source: compiled by the authors according to the source Index Mundi
https://www.indexmundi.com/agriculture/?country=kz&commodity=beef–and–veal–meat&graph=total–distribution

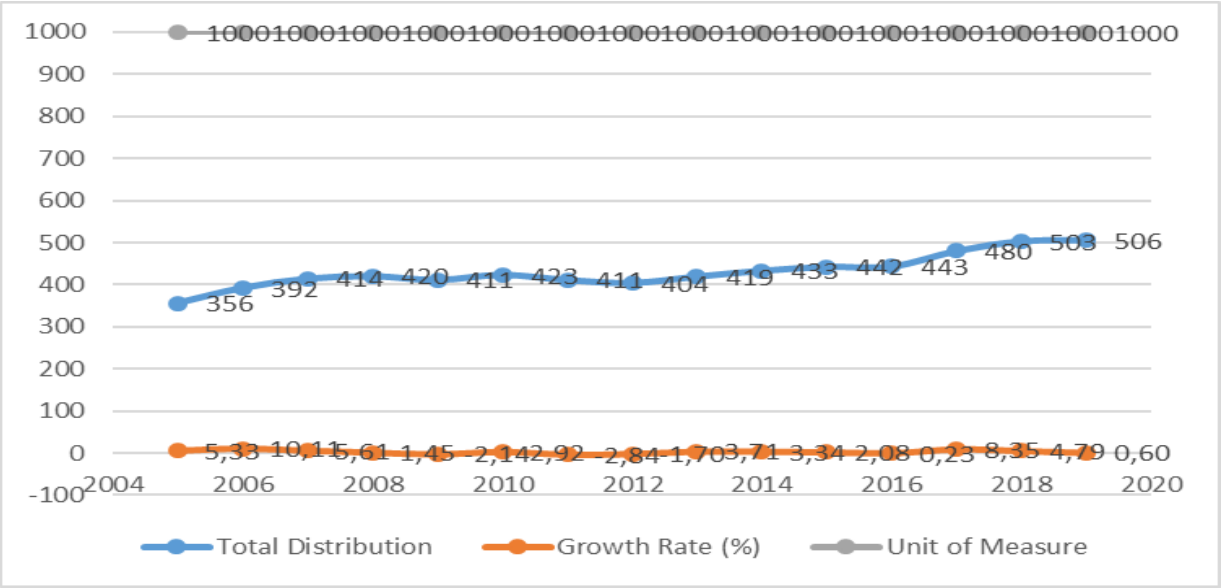

Figure 5. Distribution of beef and veal in Kazakhstan for 2005 – 2019
Source: compiled by the authors according to the source Index Mundi
https://www.indexmundi.com/agriculture/?country=kz&commodity=beef–and–veal–meat&graph=total–distribution

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Kazakhstan's supply of beef and veal by year is presented in table 7.

Table 7. Kazakhstan supplies of beef and veal for 2005–2019

Market Year	Total Supply	Unit of Measure	Growth Rate
2005	356	(1000 MT CWE)	5.33 %
2006	392	(1000 MT CWE)	10.11 %
2007	414	(1000 MT CWE)	5.61 %
2008	420	(1000 MT CWE)	1.45 %
2009	411	(1000 MT CWE)	–2.14 %
2010	423	(1000 MT CWE)	2.92 %
2011	411	(1000 MT CWE)	–2.84 %
2012	404	(1000 MT CWE)	–1.70 %
2013	419	(1000 MT CWE)	3.71 %
2014	433	(1000 MT CWE)	3.34 %
2015	442	(1000 MT CWE)	2.08 %
2016	443	(1000 MT CWE)	0.23 %
2017	480	(1000 MT CWE)	8.35 %
2018	503	(1000 MT CWE)	4.79 %
2019	506	(1000 MT CWE)	0.60 %

Source: compiled by the authors according to the source Index Mundi
https://www.indexmundi.com/agriculture/?country=kz&commodity=beef–and–veal–meat&graph=total–supply

Table 7 shows that in recent years, the supply of beef and veal for 2005 – 2019 is increased. Compared with 2005, in 2019 it was increased by 156.

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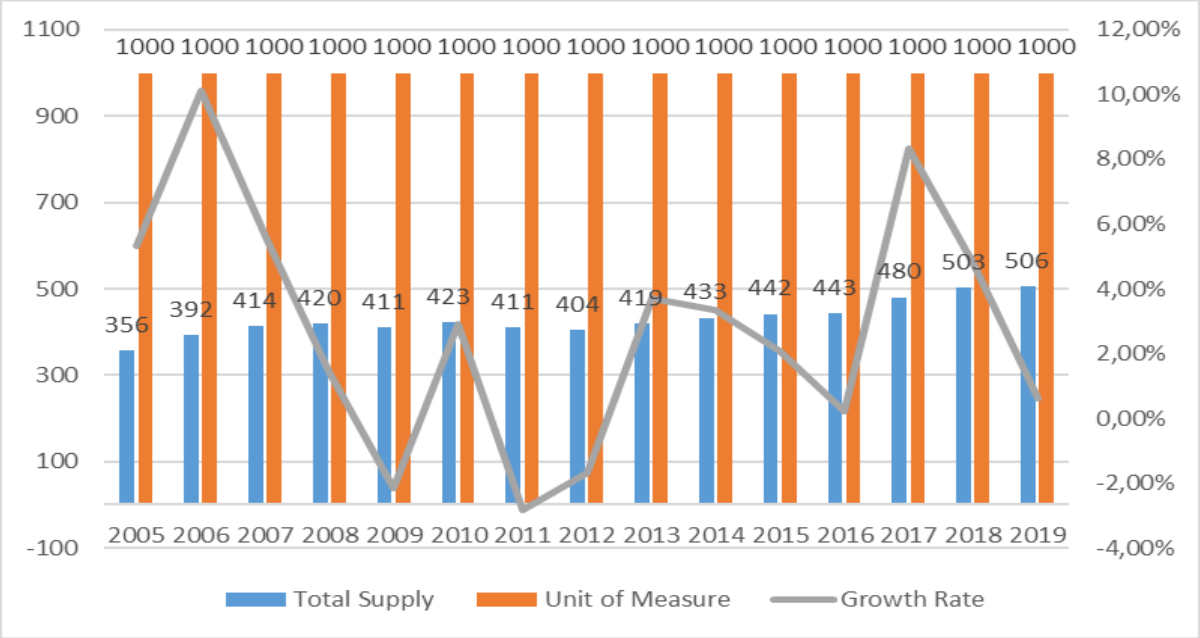

Figure 6. Kazakhstan supplies of beef and veal for 2005–2019

Source: compiled by the authors according to the source Index Mundi
https://www.indexmundi.com/agriculture/?country=kz&commodity=beef–and–veal–meat&graph=ending–stocks

Based on the above figures, the following points shall be considered as recommended solutions:
The import substitution of the Republic of Kazakhstan will be facilitated by the activities of the Eurasian Agricultural Technological Platform, where one of the areas is veterinary medicine (the creation of veterinary drugs using biotechnology). The goal of the Eurasian Agricultural Technology Platform is to carry out systematic work to accumulate advanced national and world achievements in scientific and technical development in the field of agriculture, mobilize the scientific potential of members–states to jointly solution of applied problems in agriculture, develop innovative products and implement them into agriculture.

From 1950 to 1990, Kazakhstan was a major exporter of meat and processed livestock products to Russia.

Consumption of beef and veal in Kazakhstan is growing with an increase in population.

In the Republic of Kazakhstan, the main number of cattle is concentrated in Almaty, South Kazakhstan and East Kazakhstan regions – 2,587 thousand heads, or 45 % of the total number of cattle as of the beginning of 2016.

In Kazakhstan, the number of cattle kept in private farms as of January 01, 2017 showed 65.4%, in peasant farms 27 % and less than 8% in agricultural organizations.

In the Republic of Kazakhstan, support for the meat industry included: state subsidies for the production of livestock products, the development of poultry and livestock breeding, the purchase of feed, the maintenance of the veterinary service and the development of insurance. Despite this, government support for the meat industry was insufficient and was one of the main causes of the crisis in the industry. For example, the size of state subsidies to beef producers from its retail price decreased from 230 % (1989) to 10 % (1993).

The weaknesses of meat industry compared with foreign manufacturers are:
1) undeveloped system of price regulation and pricing;
2) insufficient organization of the protection of enterprises` rights with state structures;
3) poor technical equipment of meat production;
4) low rate of implementation and application of innovative technologies, etc.

Conclusion

Thus, in the process of studying the research topic area, the following conclusions and recommendations are made:

1. There is an obvious reserve for reducing or changing the current trend of increasing import penetration into the domestic market of processed livestock products. Although it will be more difficult in doing that, the increase in oil/gas revenues will lead to further strengthening of the Tenge. The basis for import substitution was an increase in the productivity and competitiveness of domestic producers and processing industries, as well as an improvement in the quality and safety of food products, in accordance with the standards that imported processed products meet.
2. The Republic of Kazakhstan joined the World Trade Organization in July 2015 after 19 years of negotiations.
3. Demand in Kazakhstan for beef and veal is growing, and meat production is growing as well.
4. Kazakhstan has vast pastures, lands for irrigation, labor and a nomadic past, and this is an important success factor for the meat industry development.
5. Middle Eastern and Asian countries (China, Iran, Saudi Arabia, Vietnam, Russia) are very attractive export markets with stable growth rates for beef and mutton imports.
6. 100 thousand family farms with 100–200 heads of cattle/600 sheep will become a key element of the industry. An initial analysis reveals a significant economic advantage and strong economy for farmers. This will have significant advantages for the economy as government plans to create 500,000 new jobs by 2027. And the proceeds from the export of beef and mutton will amount to 2.5 billion USD (with a livestock balance of 5 billion USD), and this will help to develop human capital in rural areas, and increase welfare and labor productivity from 8000 USD per employee per year and many others.

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DEMOGRAPHIC AND MIGRATION PROCESSES OF LABOR POTENTIAL: A CASE STUDY THE AGRICULTURAL SECTOR OF THE REPUBLIC OF KAZAKHSTAN

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Abstract. It is very important to study the demographic and migration processes in the country when forming the labor potential of rural areas. Using these indicators affecting the labor potential, we calculated the parameters of linear trend models, checking their adequacy of the constructed models, calculated the determination coefficients, and built confidential intervals for the forecasts. In order to present a quantitative model expressing the general tendency of the time series change over time, we used the analytical alignment of the time series. In this case, the actual levels were replaced by levels calculated on the basis of certain data. As a result, we got the result of a change in time of the studied indicators in a positive direction. Obtained results: outflow of external and internal migration is the reason for the decline of labor potential in the country, but in general does not affect the efficiency of labor potential of the village; indicators of the population in general, i.e., the population of cities and villages, internal and external migration with natural population growth are quite close to one, what means that their forecast changes are insignificant and do not undergo significant changes in the future. Finally, with a 95% probability, we can expect that in 2020 - 2021, the indicators under consideration will not take values less than the lower limits of confidence forecast intervals and not greater than their upper limits. Obtain results are very important for development of a strategy for the effective use of labor potential.

Keywords: demography; migration; labor potential; agriculture; urban population; rural population; birth rate; labor market

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1. Introduction

Agriculture plays an important role in the economic and social life of any country (Baltgailis, 2019; Vigliarolo, 2020), (Issayeva, 2019). The level of agricultural development largely determines the economic security of the country.

Since the climate and geographical location of Kazakhstan is favorable for agriculture, the country has all the opportunities for the development of a competitive agricultural sector in the world market. In addition, the social situation of almost half of the country's population is in close contact with the countryside. As the village is an important factor in the economic development of the Republic, then the rural population is an important factor in the socio-political stability of the country,

We believe that demographic and migration policy is a multifaceted integrated process that develops in close contact with all socio-political, economic processes in society. Today, demography and migration is not only an economic concept, but also a socially significant concept.

For the continuous reproduction of labor resources, an important prerequisite is the demographic situation in the country. The demographic situation is a complex and integrated process that is directly related to the socio-political, economic development of society.

The country's transition to a market system has also created many favorable conditions for the development of migration. Migration processes effect on the labor supply of the regions, and, as a consequence, on their economic development. Structural transformations of the economy of several regions of Kazakhstan towards the preferential development of the agro-industrial complex raise the value of the reproductive process of the labor potential of a village to a new level.

Taking into account the proportion of Kazakhs living abroad, which make up almost a third of the population of Kazakhstan, the diaspora is a significant social resource of an independent state. Note that presumably more than half of ethnic migrants have agricultural education and skills, and every fourth repatriate is employed in agriculture (Bodaukhan, 2017).

Studies of the quantitative and qualitative characteristics of modern migration movements oriented to the countryside are of great interest, the influence of migrants on the labor market, which is forming in the agricultural sector, as well as the processes of adaptation of migrants in rural areas. In this regard, the study of modern migration processes, the analysis of the extent, directions and factors that determine them, as well as the identification of various aspects of the migration impact on the state of agriculture is very relevant.

The quantitative basis of labor potential, in our opinion, is not labor resources, but the population. As part of the population, labor resources characterize the demographic and migration situation in the country through qualitative and quantitative indicators. Therefore, quantitative changes in labor potential will depend on the general demographic and migration situation.

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2. Literature review

The demography has a set of statistical data on the composition of the population, its size, density, age and gender composition. Among the main concepts of demography, one can name such concepts: fertility, mortality, natural population migration, lifetime, life potential of the population, population migration. Examined a conceptual study of the migration impact on the economy in a more complete and complex state, taking into account not only the genesis and structure, but also the characteristics of activities in a framework of transition economy, and in his dissertation he writes: "We consider population migration as social -economic category, based on the fact that the division of labor relates primarily to the sphere of production, ownership, property " (Mukhammedov 2007).

The theoretical study of the role of international population migration in demographic development is particularly important. At the same time, we emphasize that there is no clear definition of the concept of "demographic development" both in the Kazakh and foreign scientific literature. In our opinion, development in general and demographic development in particular are multifaceted concepts that imply development with a plus sign (progress) and development with a minus sign (regression). Thus, in our understanding, demographic development is both positive and negative changes in the quantitative and qualitative characteristics of the population of a country (Iontsev, Prokhorova, 2014).

An example is a duplicitous demographic situation prevailing in Europe. On the one part, there is an increase in lifetime, infant mortality decreases - progress is obvious. On the other part, fundamental changes in the family — the preference for free relations instead of traditional marriage, the conscious refusal of having children, the spread of marriages of people with a non-traditional orientation — can be considered as indicators of regression. But all this is a demographic development in all its diversity (Iontsev, Prokhorova, 2014).

If we talk about rural-urban migration, it can be assumed that a reduction in land inheritance predicts a significantly greater tendency to migrate to urban areas and find jobs in the non-agricultural sector, i.e. in the city (Holden et al., 2014).

In some scientific studies, it is indicated that intentions to stay in agriculture increase when the inherited land among young people is existing (Bezu, Holden, 2014). They do not find a connection between themselves. However, land inheritance and migration may be due to the broad definition of migration, that they are applicable. Presumably, the expected return to migration will be conditional on the likelihood of employment and the expected wage gap between origin and destination (Harris, Todaro, 1970), both are likely to be more pronounced in case of rural origin and urban direction. This motivates our use of the demographic and migration factor.

Since we consider the influence of demographic and migration processes on labor potential in the article, we consider it necessary to take into account the views of scientists on the concept of "labor potential". Kostakov V. and Popov A. believe that "the labor potential of a country and its regions is the labor resources considered from the point of view of the unity of quantitative and qualitative indicators" (Kostakov, Popov, 1982). Some authors began to include many factors characterizing the totality of socio-economic and organizational-managerial capabilities that allow working in the number of socio-economic criteria. Such a characteristic of labor potential is presented in the article by Vigliarolo (Vigliarolo, 2020). The concept of "labor potential" includes labor resources, working conditions, population and employment, the level of education, the totality of the technical infrastructure of labor, which have been used by employees of planning and statistics bodies for a long time (Fedorov, 2005).

Demography (Greek demos - population, qrapho - I write): 1) scientific discipline on the laws of population growth and its socio-historical substantiated processes;

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2) socio - economic demography - a scientific field that studies the population, its geography, structure and composition, quantitative and spatial - periodic dynamics, birth rate, mortality, lifetime with their socio - historical characteristics;
3) biological demography - a set of statistical data on the density, youth and sexual composition of the population (Dal, 2018). Further, De Brauw, A Mueller and Woldehanna wrote on the relationship between migration and land. Employment opportunities in rural areas are limited outside agriculture (De Brauw et al. 2013). Education was the strongest motivation for migrating from the countryside to the city (De Brauw, 2014).

3. Overview of socio-demographic trends

Today, for the Republic of Kazakhstan, the most important is the methods of forming the labor market, the methods of economic growth, the creation and implementation of employment policies through the methods of efficient use of man power using statistics data.
Labor potential is determined by the average age and gender structure of the population, lifetime, level of education and training, the reserve of man power, which is carried out under certain circumstances, etc.

As of January 1, 2019, the total number of the Republic of Kazakhstan amounted to 18 395.6 thousand people. In 2019, the population was increased by 2 192 300 thousand people compared to 2010 or by 13.53%. Of these, the urban population is 10 509 798 thousand. people, the rural population - 7 647 539 thousand people (Table 1, Figure 1).

Table 1. Dynamics of socio - demographic indicators of the Republic of Kazakhstan for 2010-2019

	Population at the end of the period, thousand people	Urban population, person	Rural population, person	Natural increase (decrease) of population, person	Were born, person	Deceased, person
1	2	3	4	5	6	7
2010	16203,274	8 662919	7 319451	213 378	356261	142 883
2011	16440,47	8 819620	7 383654	221 680	367707	146 027
2012	16673,933	8 973922	7 466548	228 367	372690	144 323
2013	16910,246	9 127543	7 546390	237 742	381153	143 411
2014	17160,855	9 277871	7 632375	250 888	387256	136 368
2015	17415,715	9 433575	7 727280	267 022	399309	132 287
2016	17669,896	9 837025	7 578690	267 647	398458	130 811
2017	17918,2	10 035577	7 634319	269 463	400694	131 231
2018	18157,3	10 250102	7 668112	261 253	390262	129 009
2019	18395,6	10 509798	7 647 539	267 351	397799	130 448
	2019 2010, %	2019 2010, %	2019 2010, %	2019 2010, %	2019 2010, %	2019 2010, %
	113,53 %	121,32%	104,48 %	125,3 %	116,6 %	-8,7

Source: Compiled by the author according to the source (Ministry of National Economy of the Republic of Kazakhstan, year of 2019)

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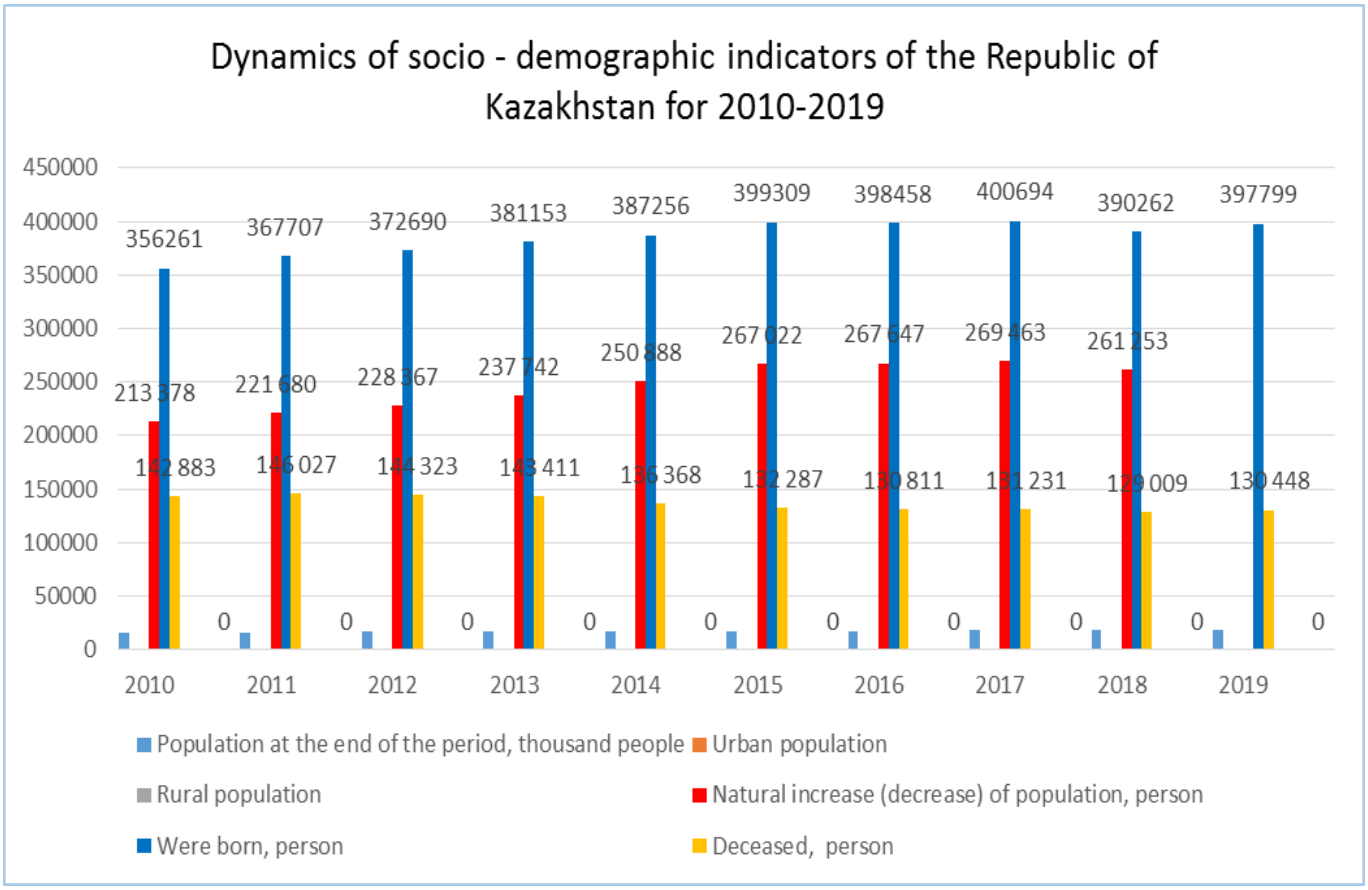

Figure 1. Dynamics of socio - demographic indicators of the Republic of Kazakhstan for 2010-2019

Compared to 2010, the urban population grew by 1,846,879 thousand people, or 21.32%, the rural population by 328,088 thousand people, accordingly, by 4.48 %. We observe an increase in urban population than rural. The natural increase (decrease) in the population in 2010 was 213,378 people, in 2019, was increased up to 267,351 people, or 25.3 %. Meanwhile, we see a decrease in the number of deaths compared to 2010 by 12,435 people at the end of 2019, or -8.7 %. This indicates a significant improvement in the socio-economic situation of the population of Kazakhstan (Ministry of National Economy of the Republic of Kazakhstan in 2019).

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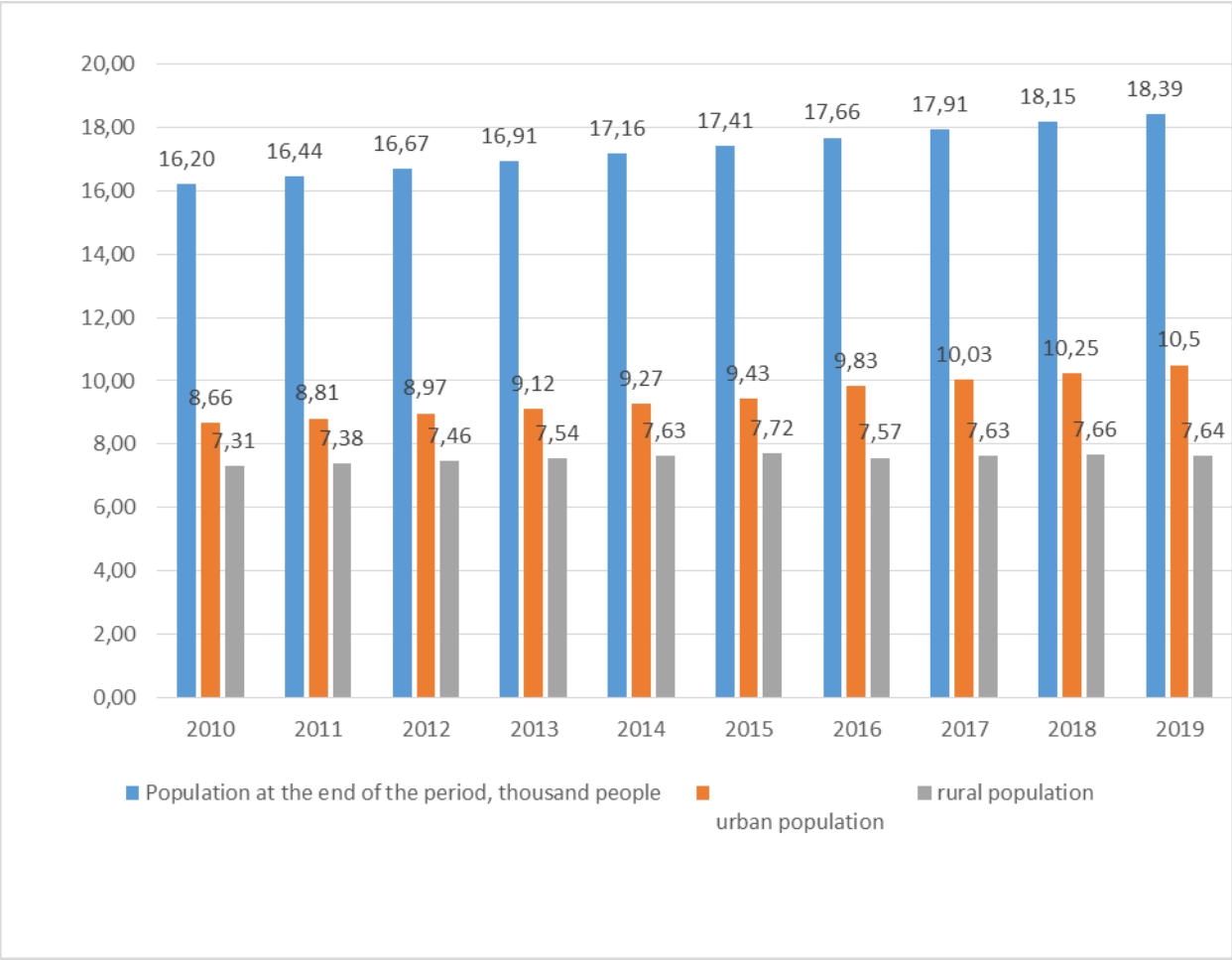

Figure 2. Dynamics of urban and rural population of the Republic of Kazakhstan for 2010 -2019

Labor migration is an important factor in achieving sustainable development of the economic sector (Semenyuk, 2019). Currently, economic and other problems occurring in the world do not reduce the number of labor migrants, but increase the number of people wishing to leave the country.

Table 2. Migration of the population of the Republic of Kazakhstan for 2010-2019, person

Years	Balance of migration (+-)	Arrived, person	Departed, person
Total			
2010	7526	406166	398640
2011	15516	408094	392578
2012	5069	402654	397558
2013	-1426	366137	367563
2014	-279	361372	361651
2015	-12162	422400	434562
2016	-13466	472032	485498
2017	-21145	630649	651794
2018	-22130	946415	968545

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2019	-29121	900931	930052
External migration			
Years	Balance of migration (+-)	Immigrant	Emigrant
2010	7 526	41 511	33 985
2011	15 516	42 057	26 541
2012	5 096	38 016	32 920
2013	-1426	28 296	29 722
2014	-279	24 105	24 384
2015	-12 162	16 784	28 946
2016	-13 466	16 581	30 047
2017	-21 145	13 755	34 900
2018	-22 130	15 595	37 725
2019	-29 121	12 747	41 868
Internal migration			
2010		364655	364655
2011		366037	366 037
2012		364638	364638
2013		337841	337841
2014		337267	337267
2015		405616	405616
2016		455451	455451
2017		616894	616894
2018		930820	930820
2019		888184	888184
Source: Compiled by the author according to the source (Ministry of National Economy of the Republic of Kazakhstan, Committee of statistics, information for the year of 2019)			

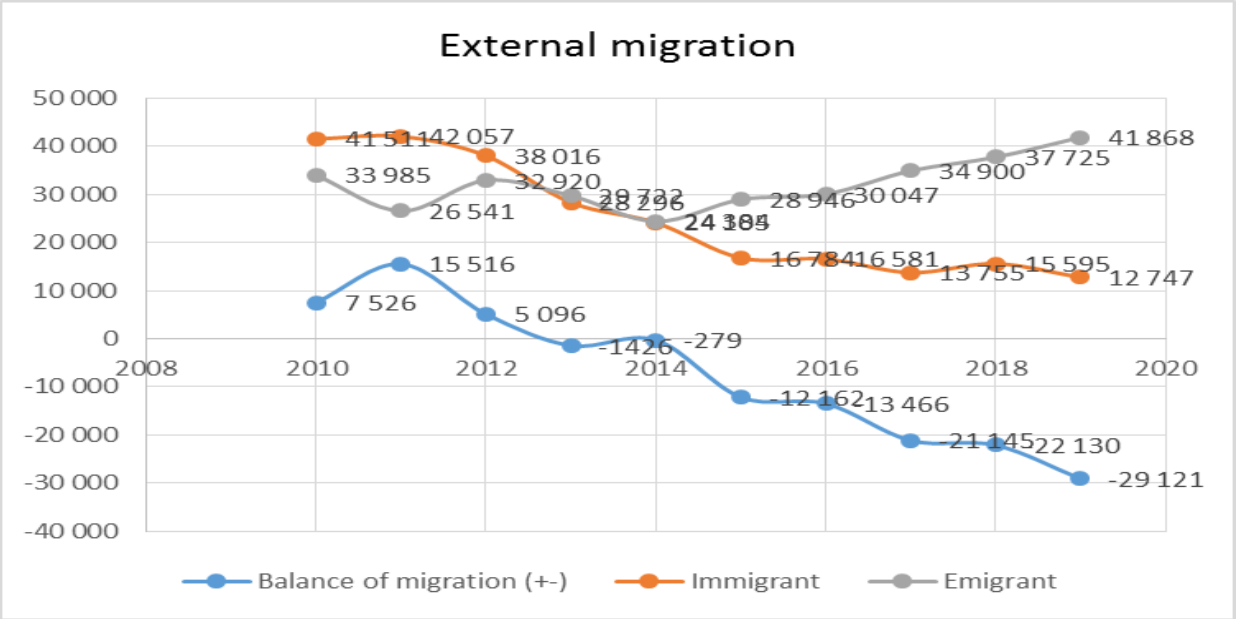

Figure 3. **External migration** of the Republic of Kazakhstan for 2010-2019, person

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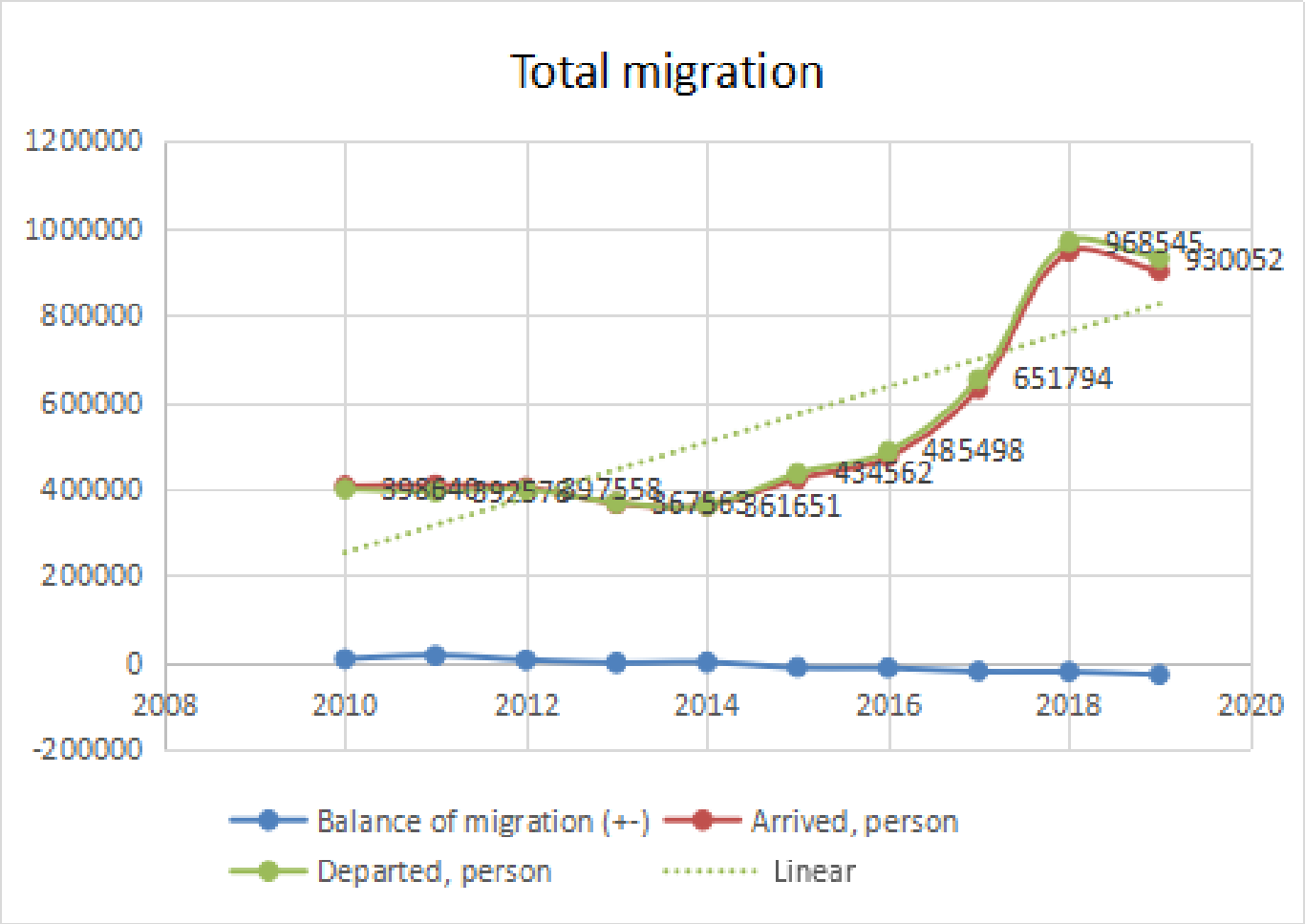

Figure 4. **Total migration** of the Republic of Kazakhstan for 2010-2019, person

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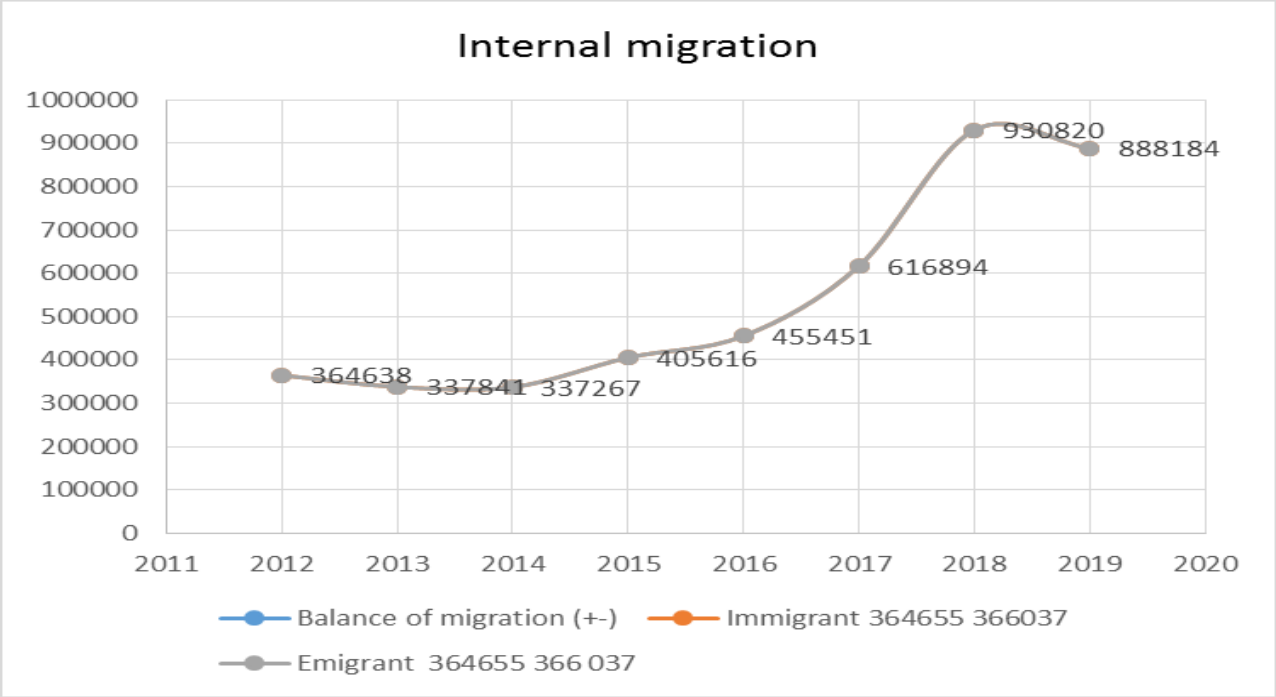

Figure 5. **Internal migration** of the Republic of Kazakhstan for 2010-2019, person

The data in table 1, figure 2-4 shows that the demographic situation in the Republic is not stable. The migration difference of the republic remains negative due to internal migration in recent years. In accordance with the data of the Committee on Statistics of the Ministry of National Economy of the Republic of Kazakhstan 16.4 thousand families moved to Kazakhstan in recent years, which amounted to 34 thousand ethnic Kazakhs. Of these, 66.2 % came from Uzbekistan, 26 % from China. The remaining migrants arrived from countries such as Mongolia (2.68 %), Turkmenistan (1.48 %), Russia (1.42 %), other countries of far abroad (1.5%) and other CIS countries (0.68 %) (Research Report 2017). However, according to the results of the questionnaire and survey conducted by members of the research group among ethnic migrants living in the Akmola region, 65.7% of respondents aggravate the situation with internal migration, moving to cities in search of permanent work and income (Bodaukhan, Djussibaliyeva, 2018).

Now, let`s consider the types of trending models with which we will work and calculate the impact of indicators on labor potential. An important task is to study changes in the analyzed indicators over time. These changes can be studied if you have data on a certain range of indicators for a number of points in time or for a number of time intervals following each other.

3. Methodology

A number of statistical indicators located in a chronological sequence is a *time (dynamic) series*.
Models based on data characterizing one object for a series of consecutive moments (periods) are called *time series models*.
One of the problems arising in the analysis of the series of dynamics is the establishment of patterns of change in the levels of the studied indicator over time, i.e. development trends. Thus, the *trend* is a function of time that determines the main tendency of time indicator development.

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In the analytical alignment of a series of dynamics, a regularly changing level of the studied indicator is estimated as a function of time $\hat{y}_t = f(t)$, where $\hat{y}_t$ - the levels of the dynamic series calculated by the corresponding analytical equation at *t* time. Table 3 shows the various types of trend models that are most often used for analytical alignment.

Table 3. Types of the trend models

Item №	Function name	Function description
1	Lineal	$\hat{y}_t = a + bt$
2	Second-order parabolic curve	$\hat{y}_t = a + b_1 t + b_2 t^2$
3	Cubic parabola	$\hat{y}_t = a + b_1 t + b_2 t^2 + b_3 t^3$
4	Hyperbolic	$\hat{y}_t = a + b\frac{1}{t}$
5	Indicial	$\hat{y}_t = ab^t$
6	Degree	$\hat{y}_t = at^b$

Thus, a trend model is built - an economic-mathematical dynamic model in which the development of a simulated economic system is reflected through the trend of its main indicators.
The choice of curve shape largely determines the results of trend extrapolation. The basis for choosing the type of curve can be a meaningful analysis of the essence of this phenomenon development. You can also rely on the results of previous studies in this field.

In our research, we will use a linear function, which has the form $\hat{y}_t = a + bt$
A linear dependence is selected in those cases when in the initial time series there are more or less constant absolute chain increments that do not show a tendency to either increase or decrease. In this case, a linear trend is built - a straight line equation expressing the trend of the time series.

To estimate the parameters of the time series of model *a* and *b*, the least squares method (LSM) is used, according to which the model parameters are calculated by the following formulas:

$$b = \frac{\overline{yt} - \overline{y} \cdot \overline{t}}{\overline{t^2} - \overline{t}^2}, \qquad a = \overline{y} - b\overline{t}. \qquad (1)$$

The parameter *b* is a regression coefficient that determines the direction of development. If b> 0, then the dynamics levels increase uniformly, and when b <0, they uniformly decrease. The coefficient *b* characterizes the average absolute increase. Coefficient *a* shows the initial level of the time series.

Having built the regression equation, it is necessary to evaluate its adequacy. This is done using the Fisher test (*F*). The actual level ($F_{act.}$) is compared with the theoretical (tabular) value:

$$Fact = \frac{\sigma^2_{act.}(n-k)}{\sigma 2rem.(k-1)}, \qquad (2)$$

where *k* – number of function parameters that describes the trend; *n* is a number of series levels

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$$\sigma^2_{rem.} = \frac{\sum (y_t - \hat{y}_t)^2}{n}, \qquad (3)$$

$$\sigma^2_{act} = \frac{\sum (\hat{y}_t - \bar{y}_t)^2}{n}. \qquad (4)$$

$F_{act.}$ Is compared with $F_{tab.}$ for $v_1=k-1$ and $v_2=n-k$ degrees of freedom and significance level α (usually α =0,05). If $F_{act.}>F_{tab.}$, then the regression equation is significant, i.e. the constructed model is adequate to the actual time trend.

In order to know how well a linear model approximates our data, the coefficient of determination shall be calculated (R^2). *The coefficient of determination* characterizes the share of variance, explained by regression, in the total variance of the effective feature y ($0 \le R^2 \le 1$).

Forecasting in the economy is the transfer of the laws that operated in the past to the future, i.e. the forecast is based on extrapolation. The possibility of extrapolation is provided by two circumstances:

1) the general conditions that determine the development trend in the past do not undergo significant changes in the future;

2) the trend in the development of the phenomenon is characterized by one or another analytical equation.

When making forecasts, they do not operate with a point, but with an interval estimation, determining the so-called confidence intervals of forecasts. The value of the confidence interval is determined in general terms as follows:

$$\hat{y}_t \pm t_\alpha \frac{S_{\hat{y}}}{\sqrt{n}}, \qquad (5)$$

where $S_{\hat{y}}$ - average deviation from the trend; - tabular value of t-student test at a significance level α.

The value $S_{\hat{y}}$ is determined by the formula:

$$S_{\hat{y}} = \sqrt{\frac{\sum_{t=1}^{n} (y_t - \hat{y}_t)^2}{n-m}}, \qquad (6)$$

where m –a number of function parameters that describes the trend; n is a number of levels in the series.

5. Application functionality. Results and Discussion

Let`s calculate the parameters of linear trend models, check the adequacy of the constructed models, calculate the coefficients of determination and construct confidence intervals for the forecasts for 2020-2021 for the following indicators:

- the population at the end of the period of the Republic of Kazakhstan;
- urban population of the Republic of Kazakhstan;
- rural population of the Republic of Kazakhstan;
- Natural increase (decrease) in the population of the Republic of Kazakhstan;
- External migration;
- Internal migration.

Combined results are provided in table 4, figures 5, 6, 7, 8.

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Table 4. The results of analysis of the main demographic, migration indicators

Indicator	Trend model	Coefficient of determination (R^2)	Verification of Fisher`s F-criteria	Forecast values for 2020-2021
Population of the RK at the end of the period, thousand people	$\hat{y}_t = 18395,6 + 42,16t$	$R^2=1$	$F_{act.}>F_{tab.}$	$\hat{y}_8 = 18589,3$ $\hat{y}_9 = 18877,43$
Urban population of the RK	$\hat{y}_t = 10509798 + 29,05t$	$R^2=0,97$	$F_{act.}>F_{tab.}$	$\hat{y}_8 = 1140,41$ $\hat{y}_9 = 1169,46$
Rural population of the RK	$\hat{y}_t = 7647539 + 30,27t$	$R^2=0,98$	$F_{act.}>F_{tab}$	$\hat{y}_8 = 1068,10$ $\hat{y}_9 = 1098,37$
Natural increase (decrease) in the population of the RK	$\hat{y}_t = 9,09 - 0,37t$	$R^2=0,97$	$F_{act.}>F_{tab.}$	$\hat{y}_8 = 6,14$ $\hat{y}_9 = 5,78$
External migration	$\hat{y}_t = 399,41 + 8,49t$	$R^2=0,78$	$F_{act.}>F_{tab}$	$\hat{y}_8 = 467,36$ $\hat{y}_9 = 475,85$
Internal migration	$\hat{y}_t = 3642,71 - 210,46t$	$R^2=0,97$	$F_{act.}>F_{tab.}$	$\hat{y}_8 = 949$ $\hat{y}_9 = 739$

Thus, we can draw the following conclusions:

- the coefficients of determination of the constructed models are quite close to unity, which speaks in favor of the models;
- constructed trend models are adequate;

And so: Forecast values for 2020-2021:

Population at the end of the period of the Republic of Kazakhstan: $\hat{y}_8 = 18589,3$, $\hat{y}_9 = 18877,43$

Urban population of the Republic of Kazakhstan: $\hat{y}_8 = 1140,41$, $\hat{y}_9 = 1169,46$

Rural population of the Republic of Kazakhstan: $\hat{y}_8 = 1068,10$, $\hat{y}_9 = 1098,37$

Natural growth (decrease)population of the Republic of Kazakhstan: $\hat{y}_8 = 6,14$, $\hat{y}_9 = 5,78$

External migration: $\hat{y}_8 = 467,36$, $\hat{y}_9 = 475,85$

Internal migration: $\hat{y}_8 = 949$, $\hat{y}_9 = 739$

With a probability of 95%, it can be expected that in 2020 - 2021 the considered indicators will not take values smaller than the lower bounds of the confidence forecast intervals and not greater than their upper bounds.

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Conclusions

The migration turnover in the country depends on the openness of state borders, the geopolitical situation in the republic, the stability of interethnic relations, as well as the legal framework for migration, and the level of state regulation. North Kazakhstan region occupies the 5th place in terms of population density of 5.66 people / km2, and the regions with low population density include Mangistau and Aktobe regions - population density per 1 sq. km. is 2.3 people. In cities, the leading place in demography and fertility in 2019 is held by Almaty and Nur - Sultan. The process of shredding the rural settlement network, which lasted over 10 years (more than half are small, with a population of less than 500 people, where 9.8% of the rural population lived), complicated the social arrangement of rural areas, which led to a migration outflow of the able-bodied population, especially youth, from village to city and the inevitability of urbanization. In rural areas, socio-economic imbalances between the level and quality of life still persist. Currently, 42 % of the country's population lives in rural areas. The main results of the labor market of urban and rural population are presented in the final table 5, figure 5.

Table 5. Key indicators for comparing the labor market of urban and rural population

	2014		**2015**		**2016**		**2017**		**2018**	
	city	village	city	village	city	village	city	village	city	village
Man power, thousand people	4 973,3	3 988,6	5118,5	3769,1	5 152,3	3 846,6	5187,3	3840,1	5 277,2	3 861,4
Man power share, in percent	69,4	72,4	69,2	70,4	68,8	71,7	68,3	71,7	68,5	72,3
Employed population, thousand people	4 715,3	3 794,8	4858,5	3574,9	4 890,7	3 662,7	4932,0	3653,1	5 017,5	3677,5
Employment level, in percent to:										
The population of 15 years old and more	65,8	68,9	65,7	66,8	65,3	68,3	64,9	68,2	65,1	68,9
Number of man power	94,8	95,1	94,9	94,8	94,9	95,2	95,1	95,1	95,1	95,2
Employees, thousand people	3 884,7	2 225,0	4069,0	2225,9	4 102,0	2 240,9	4160,2	2325,7	4226,7	2385,7
Share in employed amount, in percent	82,4	58,6	83,8	62,3	83,9	61,2	84,4	63,7	84,2	64,9
Self-employed, thousand people	830,6	1 569,8	789,5	1349,0	788,7	1 421,8	771,8	1327,4	790,8	1291,8
Share in employed amount, in percent	17,6	41,4	16,2	37,7	16,1	38,8	15,6	36,3	15,8	35,1
Unemployed people, thousand people	258,1	193,8	260,0	194,2	261,6	183,9	255,3	187,0	259,7	183,9
Level of unemployed people, in percent	5,2	4,9	5,1	5,2	5,1	4,8	4,9	4,9	4,9	4,8
Of youth (at the age of 15-28 years old) unemployment, in percent	5,0	3,4	4,8	3,8	4,6	3,5	4,4	3,3	4,4	3,1
Level of long-term unemployment, in percent	2,1	2,6	2,2	2,8	2,2	2,3	1,9	2,5	1,9	2,7
People not related to man power, thousand people	2 193,1	1 522,8	2281,3	1586,1	2 339,3	1 515,7	2410,0	1517,2	2431,2	1476,1
Share of people not related to man power, in percent	30,6	27,6	30,8	29,6	31,2	28,3	31,7	28,3	31,5	27,7

Source: Compiled by the author according to the calculation of lineal-trend model using a source (Ministry of National Economy of the RK, committee of statistics, information for 2019)

Considering the peculiarities of development of the agri-food sector and the growth of income from agricultural activities, the existing surplus of rural population is one of the reasons for restraining the growth of the standard of population living, which complicates the planning of sustainable development of the country (Akimbekova, 2019).

In the long run, urban employment has a steady upward trend. However, in rural areas there has been a steady decline in employment. In addition, significant differences between urban and rural areas persist in the structure of employed population. So, 84 % of the urban population are employees, the remaining 16% are self-employed. In rural areas, the share of employees is only 61%, and the share of self-employed workers is 39% (Nurzhanova et al., 2020).

As a result of the analysis of migration, demographic processes and their impact on the development of the Republic of Kazakhstan economy at the present stage, the following conclusions can be drawn.
The positive result of labor potential development is influenced by many different, as well as interdependent factors such as urban and rural population, natural increase (decrease) in the population, external migration and internal migration.
Knowledge of the mechanisms of interaction of these factors, as well as its impact on labor potential and the entire economy as a whole, is very important for developing a strategy for the demographic and migration situation.
A factor analysis of the population migration causes, the demographic position of the republic allows us to conclude that the development of external migration is the main cause of historical and ethnic factors, and the development of internal migration of socio-economic factors.
An analysis of internal migration flows shows that in recent years there has been a tendency for migration to cities for rural people. Having studied the topic, we can draw the following conclusions:

- the trend model shows that the coefficients of determination of indicators of total population, urban and rural population, internal and external migration with natural population growth are quite close to unity, which speaks in favor of models;
- constructed trend models are error-free, authentic; research limitations related to accuracy of secondary data are typical to such researchers.

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THE ROLE OF NATIONAL PLANS IN DEVELOPING THE COMPETITIVENESS OF THE STATE ECONOMY

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Abstract. Competition at its core allows to acquire additional benefits to an enterprise by improving the quality of their activities. The activity of an enterprise, in turn, is based on the desire of state authorities to provide an environment for a comfortable business. In the context of the growing crisis, it becomes extremely relevant to determine the principles that can serve the development of the business environment and, accordingly, form the prerequisites for the qualitative development of the country as a whole. The novelty of the study is determined by the fact that the state puts business plans of the national type at the basis of the development of the business environment, which affect not only the possibility of developing entrepreneurial activity in gross form, but also personalised data. The authors show that a similar basis can be expressed in the development of intellectual capital. The practical significance of the study is determined by the need to ensure the development of entrepreneurial activity in the face of overcoming a systemic crisis. It is proposed to reduce the participation of the state as an institutional participant in favour of infrastructure support.

Keywords: business plan; entrepreneurial activity; strategy; crisis; intellectual innovation

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JEL Classifications: F30, F36, G15, G20

1. Introduction

The key tool for the development of any national economy is now becoming intellectual capital – a new and more complex form of capital with significant socio-economic potential (Oh et al., 2011). It is characterised by a high degree of development in comparison with the already known forms of capital (Chatzkel, 2006). Countries, in

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which intellectual capital and new knowledge and high technologies are actively formed and used and the basis for the competitiveness of goods, services, firms, are characterised by a sustainable level of economic development (Maltseva, & Monakhov, 2014; Zavadskyi et al., 2020).

Currently, the technological revolution with information technology in the centre is re-forming the material basis of society. In the new information economy – a knowledge-based economy – the source of productivity lies in knowledge generation technology. The concept of "information economy" was introduced into scientific circulation in the early 60s of the last century (Chowdhury et al., 2019). Knowledge and information are critical elements in all economic systems, since the production process always takes place on the basis of the gained knowledge and the processing of relevant specialised information. The development of fixed capital is an indicator of the extent to which general social knowledge is turning into a direct productive force, and hence an indicator of the extent to which the conditions of the social life process itself are subordinated to the control of universal intelligence and are transformed in accordance with it (Tseng, & Goo, 2005; Vigliarolo, 2020).

It should be noted that factors of economic development have always been the subject of research by scientists (Korshenkov, Ignatyev, 2020). Economists tried to explain the reason for the rapid development of some economic systems in comparison with others. Representatives of theories of economic growth tried to explain this contradiction. It was they who focused considerable attention on the role of knowledge in the socio-economic development of society. Today, advanced technology is radically changing entire sectors of the economy at a rapid pace. The era of innovation, the so-called Fourth Industrial Revolution, is accompanied by the creation of a completely new type of industrial production, which is based on big data, robotics, augmented reality technologies, artificial intelligence. On the one hand, this is a logical and natural course of the technical process, which is designed to bring the life of mankind to a new, qualitatively higher level. On the other hand, the question arises of what negative consequences this may lead to (Tvaronavičienė, 2018; Plėta et al., 2020; Chehabeddine, & Tvaronavičienė, 2020). Partial or full use of materials is allowed only if the first paragraph of the article contains a link to the source (for Internet resources – hyperactive and open for indexing by search engines).

Business is mainly looking for simple ways, which is, first of all, "capitalisation on natural resources". However, for "capitalisation on the intellect", the key is the state's activity aimed at creating incentives for digitalisation and the formation of digitalisation needs. Otherwise, the "resource economy" will win in the future. As is known, the official and objective vision of the development of "intellectually intensive, creative, innovative markets", including "digital", is only being formed. The key principle of successful policy in this area is not the expectation that everything will go away by itself, but stimulation, help – in order to develop, increase and use the capabilities of the intellect to create digital value added (Rudenko, 2019; Rudenko, & Hochradel, 2017).

2. Literature Review

The integration of knowledge allows to solve new problems, relying on experience, avoiding mistakes repetition. Knowledge management in today's economy is an important task. Today, production efficiency largely depends on the speed and quality of processing knowledge accumulated by the company's specialists (Popkova et al., 2015). After all, knowledge that is not used and does not grow – become obsolete and useless, in turn, the knowledge that is distributed and exchanged, on the contrary, generates new knowledge. Many modern companies that have achieved success and have won a significant percentage of the market have already recognised the fact that knowledge, the ability to use it correctly and generate new knowledge is the secret to their success (McPhail, 2009). Based on this, knowledge can be defined as information organised to solve a particular problem. In the process of its development, knowledge acquires new qualities through the addition of additional skills and experience. Knowledge involves taking advantage of data and information enriched by individual experience, talents, and skills in order to be able to make the right decisions (Young et al., 2009).

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Obviously, there is a way to make wise and informed decisions, which is built on the basis of data through training and knowledge assessment. This decision-making process is summarised using a learning curve that goes a few lines. The data set is not yet information; it needs to be processed (Van Hoa et al., 2018). Information is generated during the processing of data that relate to descriptions, definitions, classifications and answer questions: how, what, who, when, where. Knowledge is formed, in turn, in the conditions of information processing, when the picture and consequences will be realised. Therefore, the answer to the question of "how" includes a strategy, experience, method or approach. Knowledge contains patterns and must be defined for codification. Information and society are the environment in which a person function. Man is a creative organisational and unifying element of the information environment with society. Intellectual capital is created by a person who turns information into knowledge. Almost all components of intellectual capital can function only in conjunction with a person, since their direct or indirect carriers are driven by human knowledge and skills (Kong, 2010). Therefore, the absence or inappropriate investment in the development of human resources leads to the depreciation of intellectual capital. Based on this, it is worth noting that the "information – knowledge" system is the main economic component of intellectual capital (Sharma, & Dharni, 2017; Nurgaliyev et al., 2014).

As they are used, information and knowledge, acquiring new properties in the production process, are realised in the form of intellectual capital. The rapid development of services and intangible production increase the role and importance of information and knowledge in the modern economy of the world. A high level of development of the service sector means profound changes in production factors, when information and knowledge turn into the main production resource, and a person is the carrier of this factor and the force that applies and uses it takes the form of intellectual capital (Mustafin et al., 2016). Intellectual capital characterises the formation and development of the information post-industrial society, in which information and knowledge play an increasingly important role. In the modern informational post-industrial society, a person is a carrier of knowledge, since they are its property. Owing to his own labour force, which is manifested in experience, abilities, skills, a person turns knowledge into production results. Thus, a new type of capital is formed – human capital, which is capable of independently using its own knowledge and ability to generate new products (Nadeem et al., 2017).

It should be emphasised that competitive advantages are achieved precisely through the use of intellectual resources that support a more flexible business model. Therefore, in addition to the development of traditional economic factors (capital, land, labour), an analysis of theoretical problems and improvement of the process of using intellectual capital is necessary. Humanity is already living in the era of the information society and intellectual economy. Today, without attracting serious investment in science, it is impossible to talk not only about economic leadership, but also about economic development as such. Recent trends in the development of the global economy prove that production, science and education are the most economically viable and interconnected industries (Molodchik et al., 2014). The world is undergoing a rapid process of intellectualisation of the economy (Nurgaliyev et al., 2015; Konurbayeva et al., 2015).

It can be concluded that the concept of intellectual capital reflects the stage in the development of society in which information and knowledge become qualitatively new factors of production. In the case of such traditional factors of production as land, labour and capital, the realisation and multiplication of the physical forces of a person took place, and as for intellectual capital, the mental potential of a person is realised and increased (Maji, & Goswami, 2016). In addition, if the use of traditional factors of production reduced their measurement, the use of information and knowledge, on the contrary, increases their number.

3. Materials and Methods

The study of intellectual capital and its impact on socio-economic development pays considerable attention, both among foreign and domestic scientists. In this case, it is necessary to note a somewhat limited number of works

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by scientists devoted to this issue. Therefore, the authors faced the task of constructing a model of the relationship of the components of intellectual capital with the main development indicator, in particular, statistical data on the gross domestic product were taken for analysis.

When determining an econometric model, the choice of an econometric modelling method is essential, which must satisfy the following conditions: high values of the correlation and determination coefficients of the model; statistical significance of the obtained estimates of the model parameters. Based on the data of the official site of Rosstat, for the construction of an economic and mathematical model of the relationship between the components of intellectual capital and gross domestic product, the initial data were generated (Table 1).

Table 1. Dynamics of macroeconomic indicators for constructing an economic and mathematical model of the relationship between the components of intellectual capital and gross domestic product

Indicators	2012	2013	2014	2015	2016	2017	2018	2019
Share of the population (graduated specialists) with higher education (HE), %	5.6	5.6	5.2	5.2	4.4	4	3.6	4
The proportion of the number of employees involved in the implementation of R&D, %	16	15.2	14.4	13.6	12	11.6	9.2	8.8
The share of domestic spending on R&D in GDP, %	2.8	2.4	2.8	2.8	2.4	2.4	2	1.6
The share of exports of goods and services in GDP, %	202.8	215.2	203.6	187.6	196.8	211.2	197.2	191.6
The share of foreign investment in capital, %	8.4	8.4	7.2	6.8	10.4	12	10.8	5.6
Nominal GDP, billion dollars	4330.4	5266.4	5635.6	5819.6	6266.8	7918	9532.8	11931.6

It should be noted that the relationship between the coefficient of the nominal gross domestic product total for the country characterises its economic development (Y) in billions of dollars with the components of intellectual capital: the share of the population (graduated specialists) with higher education (X_{il}) – human capital, the proportion of the number of workers involved in R&D (X_{i2}), the share of internal R&D costs in GDP (X_{i3}) – structural capital, and the share of exports of goods and services in GDP (X_{i4}), the share of investment in capital (X_{i5}) – client capital. Thus, linear regression will have the following form:

$$Y_i = \beta_0 + \beta_1 X_{i1} + \beta_2 X_{i2} + \beta_3 X_{i3} + \beta_4 X_{i4} + \beta_5 X_{i5} + \varepsilon_i \tag{1}$$

where: β – regression parameters (coefficients), x – influence factors, i – number of model factors.

Results and Discussion

Checking the resulting model for the phenomenon of multicollinearity is of great importance during correlation and regression analysis. For a more visual presentation, the input data on macroeconomic indicators were reduced

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to a correlation matrix, which is used to measure the strength of the relationship between the selected factor values and the effective indicator (Table 2). Calculation of the correlation matrix allows to conclude that there is a significant relationship between the effective GDP and factor values, and especially with the share of the population with higher education, the share of workers involved in performing research and the share of internal research costs. On the worksheet the source data in the form of columns of an array is formulated (Table 2).

Table 2. The correlation matrix of the relationship of the components of intellectual capital and gross domestic product

	Share of the population (graduated specialists) with higher education (HE), %	**The proportion of the number of employees involved in the implementation of R&D, %**	**The share of domestic spending on R&D in GDP, %**	**The share of exports of goods and services in GDP, %**	**The share of foreign investment in capital, %**	**Nominal GDP, billion dollars**
Share of the population (graduated specialists) with higher education (HE), %	1					
The proportion of the number of employees involved in the implementation of R&D, %	0.9500	1				
The share of domestic spending on R&D in GDP, %	0.7416	0.8607	1			
The share of exports of goods and services in GDP, %	0.2668	0.4296	0.1939	1		
The share of foreign investment in capital, %	-0.4261	-0.1479	0.2431	0.4466	1	
Nominal GDP, billion dollars	-0.8413	-0.9459	-0.9236	-0.3619	-0.6569	1

Using these indicators, a regression analysis of variance was performed and the influence of all factors on the effective indicator of the gross domestic product was analysed (Table 3).

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Table 3. Regression analysis between the components of intellectual capital and gross domestic product

Regression equations	Determination coefficient
$Y = 5346 - 2971x_1 + 32x_2 - 1695x_3 + 43x_4 - 600x_5$ where: x_1 – share of the population (graduated specialists) with higher education, %; x_2 – the proportion of the number of employees involved in the implementation of R&D, %; x_3 – the share of domestic spending on R&D in GDP, %; x_4 – the share of exports of goods and services in GDP, %; x_5 – the share of foreign investment in assets, %.	$R^2 = 0,9863$

There are the following results: a correlation coefficient $(r = 0,9931)$ that lies within (-1; 1) and indicates a direct, strong, linear relationship; the results of the study show that a 98.63% variation in the gross domestic product (determination coefficient $R^2 = 0,9863$) depends on a variation in the values of the components of intellectual capital – human, structural, and client – and only 1.37% from other random variables, including the stochastic component.

Also, to check the constructed linear regression model, F-statistics were calculated, in this case $F_{pozp} > F_{tabl}\left(F_{pozp} = 28,76, F_{tabl} = 19,3\right)$. Based on this, the model is considered adequate. Moreover, the calculated t-criterion of Student's statistics (1.55) is greater than the tabular value $(t_{tabl} = 1,39)$), but not for all indicators due to insufficient information series (the 5-factor model should contain 40 points for analysis). Since the points on the graph schematically form an ascending line, it can be noted that the data are distributed approximately normally (Fig. 1).

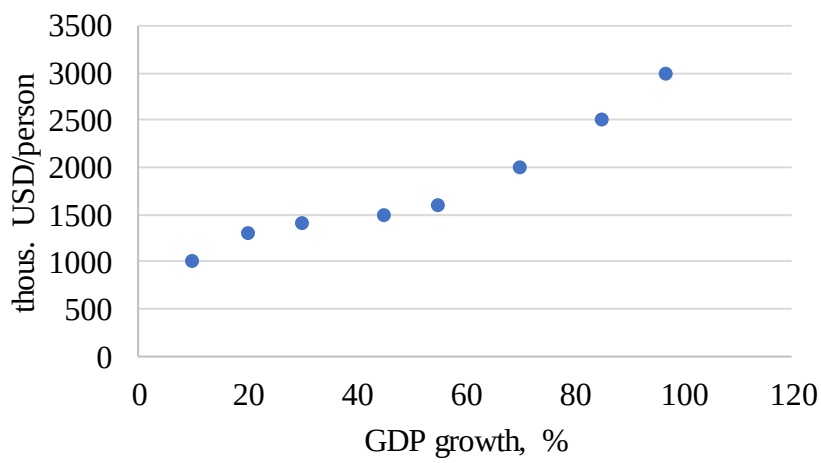

Fig. 1. The graph of the normal distribution of gross domestic product

In addition, the graphs of residuals on the absence of disturbance in the autocorrelation model, as well as on the possible absence of heteroskedasticity were studied (Figs. 2-4). Having analysed the graph of the residuals of the linear model of the dependence of the gross domestic product coefficient on the structural capital indicator

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represented by the specific gravity of the number of workers involved in R&D, it can be concluded that there is no disturbance in the autocorrelation model, as well as a possible lack of heteroskedasticity (Fig. 2).

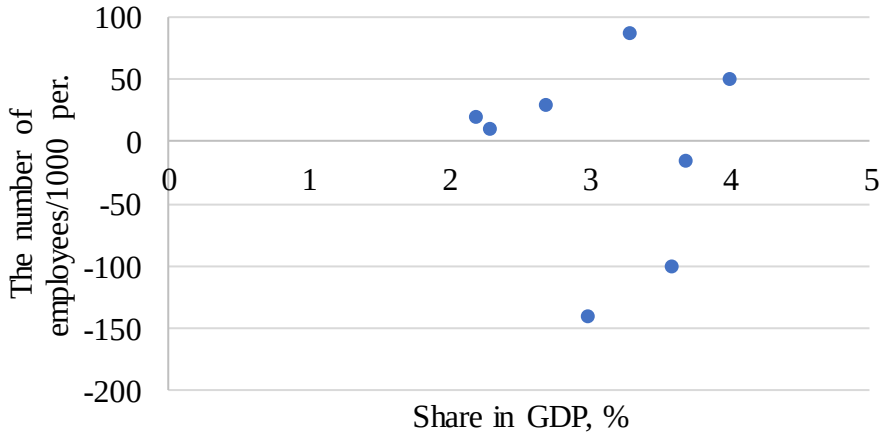

Fig. 2. Graph of the residues of the share of the population with higher education, %

The same thing happens with the schedule of balances from human and client capital, which helps us to verify the adequacy of the model and the possibility of its use for further forecasting (Fig. 3-4).

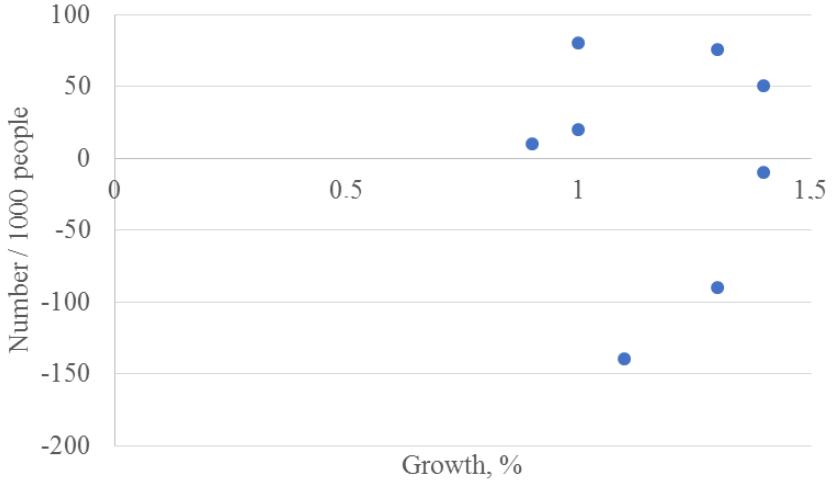

Fig. 3. Graph of the remainder of the share of the population with higher education, %

As it can be seen, the residues are concentrated on the horizontal axis along the abscissa, so the linear model can be considered adequate.

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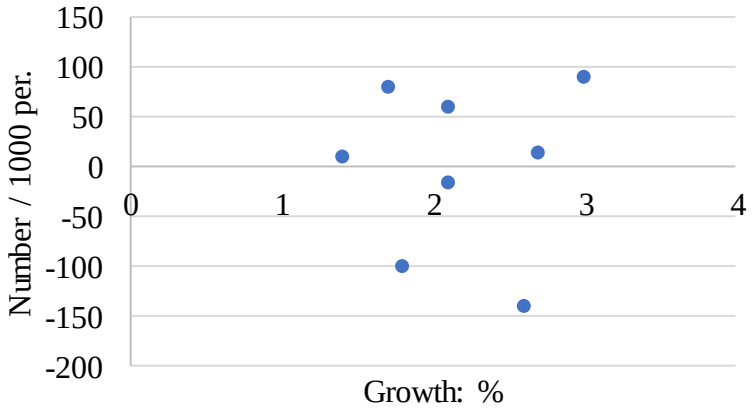

Fig. 4. Graph of the balance of the share of investments in intangible assets, %

Following all the changes in the regression statistics of the constructed model, the following result can be summarised: the results obtained correspond to the logical interpretation of economic processes and reflect the close relationship between the indicators. In this case, the country's economic development and its competitive position is associated with the development of intellectual capital, and this indicates the country's ability to improve its position by developing an effective mechanism for managing the components of intellectual capital.

Having made sure that the components of intellectual capital are interconnected with the development of the country as a whole, it was decided to build a forecast for the development of the coefficient of efficiency of use of intellectual capital using the Excel environment. The forecast was decided to be implemented using several options: based on the use of the trend line, using the Moving Average methodology and the "Forecast Sheet" setting. Using the trend line, the level of development of intellectual capital for the next four years was predicted, and this our case, 2020-2023 fell into this range (Fig. 5).

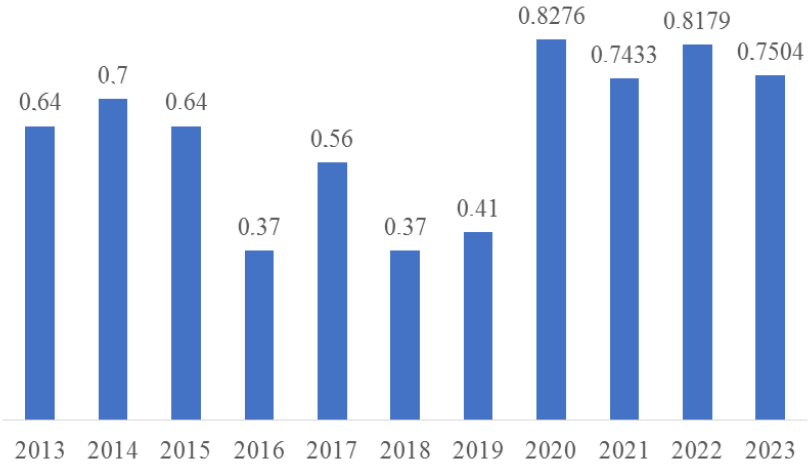

Fig. 5. Dynamics of the efficiency coefficient of intellectual capital use for 2013-2019 and forecast for 2020-2023

Having found the most successful trend equation, time series were presented in the form of a histogram relative to the indicator of intellectual capital, and the results are grouped in Table 4.

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Table 4. Selection of a trend equation in Excel

Equation form	Equation value	Determination coefficient, R^2
Linear	$y = -0,073x + 0,8473$	$R^2 = 0,7504$
Logarithm	$y = -0,241ln(x) + 0,8481$	$R^2 = 0,8179$
Polynomial of the 2nd order	$y = 0,0135x^2 - 0,1813x1 + 1,0097$	$R^2 = 0,8276$
Exponential	Y=0,879x-0,416	$R^2 = 0,7433$

Taking into account the results of analytical alignment, for the mathematical model of the trend, a polynomial equation of the 2nd order is selected, since the determination coefficient is the highest. As it can be seen, in the forecast case, the value of the intellectual capital indicator will fall more and more under constant circumstances, including the dynamics of past years on the basis of three models (linear, logarithmic and exponential). However, the most adequate model of the trend of the second-order polynomial equation indicates a partial stabilisation of the indicator and its alignment to a value of 0.43 unit in 2020 and 0.48 unit in 2020, which is still less than the results of 2013-2015.

The predicted values of the coefficient of effective use of intellectual capital, which were calculated using the Excel setting "Forecast Sheet", allowed to simulate the situation for the period 2020-2023 and identified certain confidence intervals with an upper and lower limit. Confidence intervals are formed in order to overlap the forecast of fluctuations and take into account the forecast accuracy of about 95%. The constructed forecast showed very disappointing values for 2020-2023. On average, a decrease occurs by – 0.08 percentage points and amounts to 0.23 unit in 2020 and 0.25 unit in 2021, which demonstrates a downward trend and indicates the need for active action on the part of state authorities in order to avoid a negative effect on all spheres of economic life (Fig. 6).

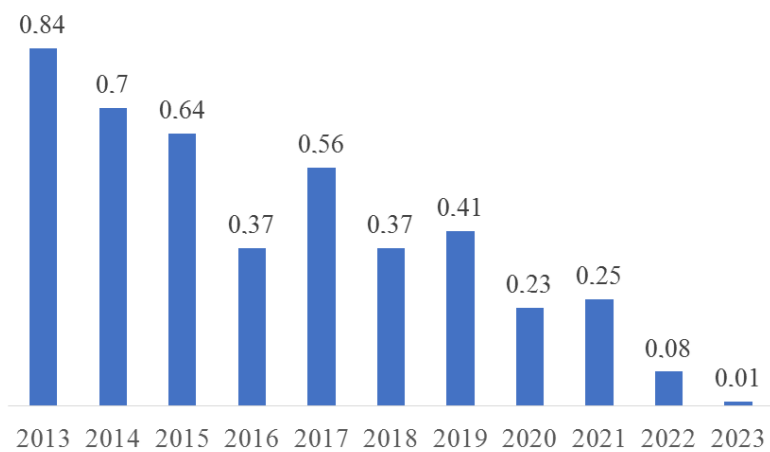

Fig. 6. The predicted value of the indicator of the effectiveness of the use of intellectual capital for 2020-2023

As for the third method of forecasting "Moving average", it can be used for short periods of time, this is both an advantage and a disadvantage, since it will not be indicative for a long-term period of time. To verify the adequacy of the forecast for 2020 and 2021, a forecast was built for the period of actual calculation data, namely for 2017-2020. Also, the accuracy of the forecast was calculated, which made it possible to determine the correctness of such an approach. The accuracy of the forecast, which is within 10%, indicates a high accuracy of the forecast made, in this case, 2018-2020. A high percentage of discrepancies in 2017, due to fundamental changes in the socio-economic situation. A similar tool can be used, but more in the short term. In this case, the forecast figure is 0.44 unit in 2021 and 0.39 unit in 2022 (Table 5).

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Table 5. The predicted value of the intellectual capital effectiveness ratio according to the method of "Moving average"

Year	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Intellectual capital effectiveness ratio (|ICER)	0.84	0.7	0	0.64	0.37	0.56	0.37	0.41		
ICER fforecast according to «Moving average»					0.73	0.57	0.52	0.43	0.44	0.39
Error forecast predicting its accuracy					49%	3%	9%	6%		

It should be noted that the constructed forecasts, according to the three above methods, passed the test for adequacy and can be recommended for further use.Based on the forecasts made, it was decided to form the so-called scenarios for the development of intellectual capital effectiveness ratio for 2020 and 2022: optimistic, realistic, pessimistic and optimally realistic. The optimistic scenario database (Table 6) contains the results of the linear trend of the second order polynomial equation, the realistic scenario is based on the forecast using the Moving average method, the pessimistic forecast is built by setting the "Forecast Sheet" with the indicated high probability of execution within 95%.

Table 6. Scenarios for the development intellectual capital effectiveness ratio (ICER) for 2020 and 2022

Development scenarios	2020	2022
Optimistic	0.43	0.48
Realistic	0.44	0.39
Pessimistic	0.23	0.25
Optimally realistic	0.38	0.40

As for the alternative scenario, the basis is the constructed upper confidence border of the forecast for setting the "Forecast Sheet". As it can be seen, each of the forecast scenarios does not show high results in the next 2 years. The most optimistic forecast indicator is 0.48 unit in 2022, which will allow to slightly improve a position compared to 2019, but still lags behind 2013-2015. The most pessimistic forecast indicator is 0.23 unit in 2020, of course, this value is quite low and causes some doubts, but in the case of inaction and lack of proper support for the development of the country's intellectual capital is highly probable.

Thus, the obtained simulation result indicates a direct, fairly close relationship between intellectual capital and gross domestic product, and the predicted values of the analysed indicator according to three calculation methods, and, accordingly, the formed development scenarios, indicate its decline and require operational decisions to improve the existing situations of development of intellectual capital in the country. An important step is to determine the significance of the influence of each component of intellectual capital on the competitiveness of the national economy. For this purpose, an expert group was created, the members of which determined the ranks of the identified areas of development of the components of intellectual capital according to the degree of materiality of influence.

The experts were specialists from various fields of activity whose positions are as follows: accountant, English teacher, project coordinator for launching new products, programmer, business development specialist, forecasting coordinator, etc. The paired method was chosen to simplify the expert assessment procedure comparisons, which does not require expert knowledge of mathematics or statistics. The essence of this method can be described as follows. It is necessary to compare the elements in pairs by the strength of their influence on the trait under study, namely: the competitiveness of the national economy. The next step is to write into the matrix of numbers, which reflects the agreement reached in the judgment in the judgments, and calculate the eigenvector with the largest eigenvalue. The eigenvector provides an ordering of priorities, and the eigenvalue acts as a measure of consistency of judgments.

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For further analysis on the importance of the components of intellectual capital on the competitiveness of the national economy, the following general areas of the state were identified:

1. Science (the number of employees involved in the implementation of research and development, participants in doctoral studies, the proportion of the volume of research and scientific and technical work performed in the gross domestic product, etc.).
2. Education (the proportion of the population with higher education, the share of household spending on education, etc.).
3. Innovation (the number of organisations engaged in research and development, research and development costs, etc.).
4. Technologies (the number of enterprises that have created advanced technologies, the number of technologies created).
5. Reputation/Brand (export share, public debt, etc.).
6. Investments (the share of foreign investment in capital, the share of investments in intangible assets, etc.).

The second step was a pairwise comparison of factors. For comparison, the scale developed by Saati was used (Table 7).

Table 7. The scale of the relative importance of objects

Importance degree	Definition	Characteristics
1	Equal significance	Two factors have the same effect.
3	Some prevalence of the significance of one factor over another (weak significance)	Experience and judgment provide a slight advantage of one factor over another.
5	Significant or strong significance	Experience and judgment give prerogative to one factor over another
7	Very strong or obvious significance	A significant advantage of one factor over another. Its priority is almost overt.
9	Absolute value	The dominance of one factor over another
2, 4, 6, 8	Intermediate values between adjacent scale indicators	Compromise options
Numbers refer to the above	If, in comparing the object x_i with the object x_j, the first object received one of the above ranks, then the other object receives a rank inverse to the value the first object's rank	

By general agreement, a comparison is always made for the factor in the left column, relative to the factor from the top row. Thus, there is a matrix of pairwise comparisons for six columns and six rows (6x6 matrix). The results of the analysis are shown in Table 8.

Table 8. The matrix of pairwise comparisons according to Saati method

	Science	Education	Innovation	Technologies	Reputation / Brand	Investments
Science	1	1	2	1/4	1/5	1/8
Education	1	1	2	1/5	1/4	1/6
Innovation	1/2	1/2	1	1/8	1/6	1/8
Technologies	4	5	8	1	2	1/3
Reputation/Brand	5	4	6	1/2	1	1/2
Investments	8	6	8	3	2	1

Based on the matrix presented in Table 8, using the geometric mean formula W_i, the relative value of each combination is calculated:

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$$W_i = \frac{\sqrt[m]{a_{i1}...a_{im}}}{\sum_{i=1}^{m}\sqrt[m]{a_{i1}...a_{im}}} \tag{2}$$

where a_i – the elements of the matrix; m – number of objects; $i = \overline{1,m}$ – index.

$$W = \begin{pmatrix} 0,054396 \\ 0,057068 \\ 0,033242 \\ 0,245898 \\ 0,199038 \\ 0,410358 \end{pmatrix} \tag{3}$$

Note that the vector of relative values calculated above makes it possible not only to determine the weighting coefficients for the main components of the state's intellectual capital, but also to streamline priorities. The next phase of the process of calculating weight coefficients is to determine the degree of consistency of expert judgments. To do this, according to the algorithm, it is necessary to multiply the original matrix of pairwise comparisons by the corresponding values of geometric mean:

$$A_w = \begin{pmatrix} 1 & 1 & 2 & 1/4 & 1/5 & 1/8 \\ 1 & 1 & 2 & 1/5 & 1/4 & 1/6 \\ 1/2 & 1/2 & 1 & 1/8 & 1/6 & 1/8 \\ 4 & 5 & 8 & 1 & 2 & 1/3 \\ 5 & 4 & 6 & 1/2 & 1 & 1/2 \\ 8 & 6 & 8 & 3 & 2 & 1 \end{pmatrix} \times \begin{pmatrix} 0,054396 \\ 0,057068 \\ 0,033242 \\ 0,245898 \\ 0,199038 \\ 0,410358 \end{pmatrix} = \begin{pmatrix} 0,330524 \\ 0,345280 \\ 0,204179 \\ 1,549618 \\ 1,226869 \\ 2,589638 \end{pmatrix} \tag{4}$$

The result A_w is divided by components into the corresponding values of the relative values of the objects:

$$\lambda_1 = \begin{pmatrix} 6,076248 \\ 6,050342 \\ 6,142232 \\ 6,301882 \\ 6,163986 \\ 6,310673 \end{pmatrix} \tag{5}$$

And to calculate the maximum eigenvalue of the matrix λ_{max} as the arithmetic mean:

$$\lambda_{max} = \frac{\sum_{i=1}^{m}\lambda_i}{m} = 6,1 \tag{6}$$

The final step in determining the consistency of expert responses is to calculate the Saati Consistency Index using the formula:

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$$J = \frac{\lambda_{max} - m}{m-1} = \frac{6,1-6}{5} = 0,02 \tag{7}$$

It should be noted that expert answers are considered consistent if the calculated consistency index is up to 10% of the reference. The reference value for a given number of objects is determined using the table of reference values of the consistency index depending on the number of compared objects (Table 9).

Table 9. Reference Consistency Index

The number of compared objects	3	4	5	6	7	8	9	10	11	12	13	14	15
Reference value	0.58	0.9	1.12	1.24	1.32	1.41	1.45	1.49	1.51	1.54	1.56	1.57	1.59

In this case, the reference value is 1.24. It follows that the consistency index is 1.61% of the benchmark. Such a value of the level of consistency gives grounds to assert that weighting factors for the components of intellectual capital can be indicated. The development of weight coefficients of intellectual capital in the Table 10, which can be used for further research was conducted, namely when developing a national plan to improve the competitiveness of the country's economy. Based on the obtained weight coefficients, it is possible to build a model for the development of the country's intellectual capital (4), according to which the state should stimulate and support primarily client capital.

Table 10. Weight coefficients for priority components of intellectual capital as a competitive factor

Factor name	**Weight coefficient**
Science	0.054396
Education	0.057068
Innovation	0.033242
Technologies	0.245898
Reputation/Brand	0.199038
Investments	0.410358

In this analysis, client capital is represented by the country's investments and reputation. The data of Table 10 indicate the necessity to focus on paragraph 6 (investment), which is of the utmost importance among the experts surveyed, which is also confirmed by the positive results of the investment attractiveness index. The results of the index indicate negative business sentiment at the end of 2019 (the indicator was 3.03 points out of 5 possible), 58% of entrepreneurs are not satisfied with the investment climate. The lowest values of the index were recorded in 2017 and the beginning of 2018 (in January-February 2018, it amounted to 2.51 points out of 5 possible), which was largely due to political instability and the economic downturn. Structural capital, namely technology, requires special attention, and further on, human capital – science and education. And the final component, according to experts, is innovation.

Conclusions

Now scientists pay considerable attention to the importance of intellectual capital in achieving the effective functioning of economic systems and raising the level of production. This problem is relevant for countries whose economies are undergoing a deep recession. A sharp devaluation of the national currency, high inflation and a prolonged decline in industrial production significantly reduce economic activity, domestic demand, and weaken the position of the banking system. The prospect of the development of civilised states in the transition to a post-industrial society is associated with solving the problems of protecting, supporting, building up, using and commercialising intellectual capital as one of the most important strategic factors of economic growth. In the

developed countries of the world, the process of formation and development of a new branch of social production, the industry of the so-called "information-intellectual products", is underway. In this situation, the development of the market of information and intellectual products and services becomes the main strategic direction.

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STATE SUPPORT OF AGRICULTURAL PRODUCERS AS A FACTOR IN INCREASING THE COMPETITIVENESS OF THE AGRICULTURAL SECTOR

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Abstract. Support for an agricultural enterprise lies in the presentation of a set of state subsidies and economic privileges to determine the essential development and the possibility of continuing functioning within the market. With that, the dynamics of production and consumption of agricultural products cannot always be positive due to the seasonality of doing business and the dynamics of prices for materials and equipment. The novelty of the study is determined by the fact that the formation of state support must be based on assessments of the reality of conducting business and forecasting operational indicators. The paper shows that the main importance of competitiveness should be considered by expert methods. The authors show that this enables an additional assessment of the level of economic security. The paper defines the level of permissible economic load and, accordingly, the enterprise's ability to achieve a stable financial situation both in the standard economic situation and in crisis situations. The practical significance of the study is determined by the structural component of ensuring the integrated economic security of the agricultural enterprise. The highlighted points of the paper allow to suggest ways of optimal structuring of current activities for the enterprise of the agricultural complex.

Keywords: agricultural enterprise; economic security; sustainability; development

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1. Introduction

A generalized assessment of the tax competitiveness of an enterprise with the use of the hierarchy analysis method includes a purpose, as well as assessment parameters and criteria. This, as well as the options under comparison, are the main elements of the corresponding system (Abumhadi et al., 2012). Thanks to pairwise comparisons of the elements of each level of the indicated hierarchical structure, an inverse symmetric matrix can be obtained as a result, whose eigenvectors are the priority vectors of the options that are assessed and compared (Stadnyk, 2014; Rudenko, 2019).

The formation of an expert group and the organisation of its work constitute the first stage of a generalised sequence of assessing the tax competitiveness of an enterprise (Le Coq et al., 1997). The effectiveness of all subsequent steps will largely depend on the professionalism of such experts. They will analyse the parameters of comparing the tax policy of the enterprise and the possibilities of the tax environment, analyse the actual state of affairs, identify problems, and form conclusions and recommendations. Evidently, such experts must be selected according to certain criteria (Zhang, & Zhu, 1994). First of all, it is important that each member of the expert group possesses extensive knowledge on taxation of enterprises and is a practitioner in this subject area (Nefedova, 2016). Moreover, the expert's position must be as objective and independent of external influence as possible (Jiang et al., 2018; Rudenko et al., 2016; Trusova et al., 2019a).

A study of theory and practice suggests that it is advisable to identify the level of confidence in each expert, which is understood as a number that means the probability or level of probability with which the expert can be considered competent in the respective field (Tata, & McNamara, 2016; Rezk et al., 2019). It should be noted that the literature contains many important points concerning the formation of expert groups, as well as the use of expert methods in economic research, which, in particular, is confirmed by a review and generalisation of works (Hallová et al., 2019). The study of theory and practice allows to propose the formation of an interim committee for assessing the tax competitiveness of enterprises, which may include both employees and specialists from the external environment (Hoy, 2015; Moumen et al., 2019). This will ensure the highest level of objectivity, impartiality, and independence of such an assessment (Trusova et al., 2019b).

2. Literature Review

The specifics of the experts' activities in assessing the tax competitiveness of an enterprise is manifested primarily in the fact that they have to deal with two different aspects of taxes: on the one hand, this is the tax policy of the enterprise and everything connected with it, and on the other, designing the actual state of such a policy on the possibilities of the external tax environment (Kandulu et al., 2012). With that, it is important to emphasise that the task of experts is not to ascertain the fact that the existing tax policy of the enterprise complies with the current legislation, but to determine whether such a policy is optimised with the possibilities of the tax environment (which is much more complicated than solving the problem of establishing the fact of compliance). Thus, under these conditions, the level of subjectivity increases, which creates additional requirements for the professionalism of experts (Borodina et al., 2012; Sasongko et al., 219).

It should be remembered that the work of experts in assessing the tax competitiveness of an enterprise is not limited only to the assessment as such (Rui, 2019). Based on its results, conclusions and recommendations should be formulated for managers and owners of a business entity regarding a better use of the tax environment (Odnorog, 2015). And this, in turn, indicates a fairly high level of responsibility of experts, because specific management decisions can be proposed to change individual elements of the tax policy of the enterprise, which will affect the object, tax base, periods for determining the tax base, the timing and procedure for paying taxes, etc. (Laurie et al., 2015). Potential changes can be either insignificant or dramatic (for example, when the form of entrepreneurship changes or certain areas of activity are liquidated) (Brummett et al., 2011). It should not

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be forgotten that experts should be able to justify their position to the management and owners of enterprises on the appropriateness and necessity of changes, and this should be done by providing reasoned and particular facts, figures, and calculations (Turral et al., 2010; Pashtetsky et al., 2018; Tarshilova et al., 2017).

A review and synthesis of literary sources, as well as a study of the practice of domestic enterprises, allows to conclude that the expert should be a practitioner who is thoroughly aware of the provisions of the current tax legislation (Nkhoma, 2018). Moreover, it is important that the expert knowledge is not only static, but also dynamic (past – present – future) (Guenthner et al., 2012). This is necessary because (as noted above) the tax environment is very dynamic and many changes are expected in the future.

3. Materials and Methods

Upon assessing the tax competitiveness of the enterprise, we shall denote the set of comparison options as follows (Eq. 1):

$$\theta = \{n_1, n_2\}, \tag{1}$$

where Θ – the set of comparison options upon assessing the tax competitiveness of an enterprise; n_1 – tax policy of the analysed company; n_2 – ideal tax policy, which can be interpreted as such due to the possibilities of the tax environment. Furthermore, we refer to seven generalised comparison parameters in the given case (taxpayers; objects and tax bases; tax rates; procedure for calculating taxes; tax periods; dates and procedure for paying taxes; dates of occurrence of tax obligations) and two comparison options *n*.

Considering the above, at the stage of problem statement and its structuring in the form of a hierarchy, the generalised hierarchical model for assessing the tax competitiveness of an enterprise will include 3 levels. However, it should be noted that, if necessary, it is possible to increase the number of levels, for example, through the refinement of sub-parameters of the above seven generalised comparison parameters *m* While forming a hierarchical model of assessing the tax competitiveness of an enterprise, one should agree with the opinion cited in the literature that a hierarchy can be considered complete provided that each element of the corresponding level functions as a criterion for all elements of a lower level.

The next and one of the most important stages of assessing the tax competitiveness of an enterprise should be its diagnosis of the actual tax policy by certain parameters. It is important to have complete and reliable information regarding all taxes and fees that a business entity pays, regarding its internal tax environment, tax administration, tax risk management system, etc. Evidently, the values of such parameters for each legal entity will differ, because enterprises differ from each other in many ways, in particular, due to legal form, scale and type of activity, size, industry, property structure, sources of its formation, etc. Diagnostics of the tax policy of an enterprise by certain parameters allows to proceed to the next stage of assessing the tax competitiveness of an enterprise – identifying the possibilities of the tax environment. At this stage, one should not merely diagnose such opportunities, but form an ideal tax policy for a business entity in certain conditions of the external tax environment (Melnichuk et al., 2020; Kazambayeva et al., 2019).

The next stage of the generalised sequence of assessing the tax competitiveness of an enterprise should include comparison of the existing tax policy of the organisation with the possibilities of the tax environment by building matrices of pairwise comparisons *A*. Based on the study of publications on the problem of using the hierarchy analysis method to solve various problems, it is advisable to pay attention to the fact that when building the matrix pairwise comparisons of the parameters of different levels of the hierarchy and the evaluated options, each element of such a_{ij} matrix will have a positive value, that is, $a_{ij}>0$ for all $ij=1, \ldots, n$. With that, the element a_{ij} in

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case of assessing the tax competitiveness of the enterprise will indicate the prevalence of option *i* over option *j* on a certain relative scale, which is most often accepted by the Saaty universal nine-point scale (Table 1).

Table 1. Saaty Universal Nine-Point Scale

Importance level	Definition of importance	Characteristics
1	Similar importance	Two actions contribute equally to the achievement of the goal.
3	Certain predominance of the importance of one criterion over another (minor importance)	Experience and judgment suggest the superiority of one criterion over another
5	Significant or strong advantage	Experience and judgments allow to assert a significant advantage of one criterion over another
7	Very strong or obvious advantage	The superiority of one criterion over another is much greater
9	Absolute advantage	Experience and judgments allow to assert the absolute substantial advantage of one criterion over another
2, 4, 6, 8	Intermediate importance values between adjacent scale values	A situation where a compromise solution is needed
Inverse values of the above numbers	If option *i*, in comparison with option *j*, is assigned one of the above numbers on a certain scale, then option *j* is assigned the opposite value compared to option *i*	Reasoned prediction

It is advisable to emphasise that the Saaty universal nine-point scale presented in Table 1 is scientifically substantiated by E. Weber, G. Fechner and S. Stevenson, as well as the upper limit of this scale of 9 points. Thus, upon assessing the tax competitiveness of an enterprise, the Saaty universal nine-point scale will be somewhat transformed (Table 2).

Table 2. The relative scale of comparison of the existing tax policy of the enterprise with the possibilities of the tax environment, formed on the basis of Saaty's universal nine-point scale

Scores	Characteristics
1	The tax policy of the company meets all the possibilities of the tax environment
3	The possibilities of the tax environment are slightly greater than the existing tax policy of the enterprise
5	The possibilities of the tax environment are much greater than the existing tax policy of the enterprise
7	The possibilities of the tax environment are substantially greater than the existing tax policy of the enterprise
9	The possibilities of the tax environment are absolutely greater than the existing tax policy of the enterprise
2, 4, 6, 8	Intermediate importance values between adjacent scale values

Results and Discussion

3.1. The developed methodology for assessing the tax competitiveness of the enterprise

During the formation of matrixes of pairwise comparisons within the framework of assessing the tax competitiveness of an enterprise, it is advisable to pay attention to the fact that at the intersection of a row of a matrix *A* with a column of the same matrix in position *(A, A)* the value will be 1, therefore, the main diagonal of the matrix will reflect units, which is known from the theoretical and practical justification for the use of the hierarchy analysis method. The generalised corresponding propositional matrix *A* will look as follows (Eq. 2):

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$$A = \begin{bmatrix} 1 & a_{12} & \dots & a_{1j} & \dots & a_{1n} \\ a_{21} & 1 & \dots & a_{2j} & \dots & a_{2n} \\ \dots & \dots & 1 & \dots & \dots & \dots \\ a_{i1} & a_{i2} & \dots & 1 & \dots & a_{in} \\ \dots & \dots & \dots & \dots & 1 & \dots \\ a_{n1} & a_{n2} & \dots & a_{nj} & \dots & 1 \end{bmatrix} \quad (2)$$

where A – matrix of pairwise comparisons for each of the comparison parameters; a_{ij} – inverse symmetric matrix elements A, which show the relative prevalence of option i over option j (where the indices i and j refer to the row and column of the matrix, respectively); n – number of comparison options. Generalized matrices of pairwise comparisons have dimension n x n are described as follows (Eq. 3):

$$A = (a_{ij}), i, j = 1,2, \dots, n \quad (3)$$

where n – number of comparison options. Considering the information presented in Tables 1 and 2, it should be noted that in any case if $a_{ij}=a$, $a_{ij}=1/\alpha$ or, in other words, if $a_{12} =\equiv \alpha, a_{21} = 1/\alpha, \alpha \neq 0$. Furthermore, as noted above, if the generalized comparison parameter has identical relative importance with respect to m_i then $m_j, a_{ij} = 1\ a_{ji} = 1$. In our case, it is true that if the generalised comparison parameter m_1 has a similar relative importance with respect to m_2, then $a_{12} = 1$ and $a_{21} = 1$. It is worth noting that each element a_{ij} of the matrix A can be represented as a correlation (Eq. 4):

$$a_{ij} = \frac{\omega_i}{\omega_j}, i, j = 1,2, \dots, n \quad (4)$$

where ω_{ij} – relative prevalence of option i over option j. Based on the foregoing, equation (3) can be represented in the following form (Eq. 5):

$$A = (a_{ij}), a_{ii} = 1, a_{ji} = \frac{1}{a_{ij}}, i, j = 1,2, \dots, n \quad (5)$$

It must be emphasized that in case of increasing levels of the hierarchical structure upon assessing the tax competitiveness of an enterprise, matrixes of pairwise comparisons should be formed at each such level. The next stage in assessing the tax competitiveness of an enterprise is the determination of eigenvectors and their normalised estimates for each matrix of pairwise comparisons in order to obtain priority vectors. As is known from the theory and practice of using the hierarchy analysis method, the elements of eigenvectors for each matrix of pairwise comparisons x are calculated by the formula of the average geometric rows of matrix A (Eq. 6):

$$x_i = \sqrt[n]{\Pi_{j=1}^{n} a_{ij}, i, j = 1,2, \dots, n} \quad (6)$$

where x_i – i value of an element of the eigenvector of the matrix of pairwise comparisons. In turn, the normalised estimate of the ith value of the element of the eigenvector of the matrix of pairwise comparisons y is calculated according to the following formula (Eq. 7):

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$$y_i = \frac{x_i}{\sum_{i=1}^{n} x_i} \tag{7}$$

where y_i – normalised estimate of the ith value of the element of the priority vector. Since according to the formula (7), the ith value of the element of the priority vector is normalised, the following equality will be valid (Eq. 8):

$$\sum_{i=1}^{n} y_i = 1 \tag{8}$$

It should be noted that under certain conditions, when assessing the tax competitiveness of an enterprise, the consistency of matrices of pairwise comparisons can also be assessed by calculating the consistency index I_U. It allows to identify cases of numerical (cardinal $a_{ij}a_{jk} = a_{ik}$) and transitive (ordinal) consistency, which can lead to a violation of consistency as such. This situation occurs when, according to experts, option *i* is better than option *j*, option *j* is better than option *k*, however option *k* is better than option *i*.

Most often, the reason for this is the proximity of the values of the analysed options. With that, it is obvious that, subject to analysis upon assessing the tax competitiveness of an enterprise, only two options for such a violation of the level of consistency will not occur (in other words, for pairwise comparisons of the second level, the consistency index is zero). Despite that, if in the future, apart from the tax policy of the enterprise and the possibilities of the tax environment, for example, the tax policy of a competitor is also analysed, the consistency index will need to be calculated. Calculation of such an index is also necessary to determine the row vector of weighting coefficients when using more than two comparison parameters (in our case there are seven). This index is calculated using the formula below (Eq. 9):

$$I_u = \frac{\gamma_{max} - n}{n-1} \tag{9}$$

where γ_{max} – maximum eigenvalue of the matrix of pairwise comparisons; I_u – consistency index. In turn, the maximum eigenvalue of the matrix of pairwise comparisons γ_{max} is calculated as follows (Eq. 10):

$$\gamma_{max} \approx \sum_{j=1}^{n} y_i \left(\sum_{i=1}^{n} a_{ij} \right) \tag{10}$$

The theory of hierarchy analysis proves that for an inversely symmetric matrix, always $\gamma_{max} \geq n$. At the stage of assessing the consistency of matrices of pairwise comparisons, one should also consider the consistency relation and calculate the index of the consistency relation V_u, which is justified in the work of T. Saaty. The author understands it as the relation of the consistency index I_u with the random consistency index V_{iu}, the value of which is justified for matrices 1 to 15 based on 100 random samples at the Oakridge National Laboratory and is presented in Table 3.

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Table 3. The value of the random consistency index V_{iu} of the matrices of pairwise comparisons

Matrix order	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
V_{iu} values	0.00	0.00	0.58	0.90	1.12	1.24	1.32	1.41	1.45	1.49	1.51	1.48	1.56	1.57	1.59

Under the condition $V_u \leq 0.10$, it is possible to state the consistency of estimates. Under other conditions, experts should return to the previous stages. The construction of a generalised vector of priorities is the next step in the generalised sequence of assessing the tax competitiveness of an enterprise. At this stage, one should actually "integrate" the constructed priority vectors into one final vector, considering the number of hierarchy levels. The option proposed above involves the integration of seven matrices of pairwise comparisons of the 2nd level with respect to comparison options of the 3rd level, factoring in the matrix of comparisons of such parameters with each other to identify a normalised estimate of the priority vector or, in other words, to factor in their weighting coefficients. As is known from the theory of using the hierarchy analysis method, at this stage, to construct a generalised vector of priorities, several operations should be performed with matrices, namely, multiplication of the combined normalised matrix of estimates of elements of priority vectors by a transposed row vector of weight coefficients.

The final stage of the generalised sequence of assessing the tax competitiveness of an enterprise should include the formation of conclusions and recommendations that can relate to both competitiveness in general and the improvement of the parameters that form it at different levels. Considering the above, it is possible to draw a general conclusion that assessing the tax competitiveness of an enterprise can be considered a rather complicated process, which requires both an understanding of all the in-depth knowledge of the current tax legislation and the ability to "design" the actual tax policy of a business entity. Recommended methodological provisions allow, if necessary, to include a greater number of levels in the hierarchy, which reflect various aspects of the tax policy of the enterprise. Despite this, a rather simple mathematical apparatus allows to obtain reasonable conclusions for the adoption of various managerial decisions to ensure the multi-vector development of business entities on the principles of using tax leverage. With that, all structural and functional relations between various elements of the tax policy of the enterprise will be retained and factored in.

3.2. Analysis of the proposed methodology for assessing the tax competitiveness of enterprises

The application of the proposed provisions for assessing the tax competitiveness of enterprises is carried out on the example of LLC "Vektor". The expert group for assessing such tax competitiveness included 7 experts, 4 of whom were representatives of "Audit Company "Kontrol" LLC, and the rest were specialists from state control and audit. All experts have in-depth knowledge in taxation of the activities of subjects of entrepreneurial activity, extensive practical experience, as well as experience in consulting business representatives on this subject area. The number of experts was substantiated based on scientific provisions. The statement of the problem and its structuring in the form of hierarchies is performed similarly to the generalised sequence of assessing tax competitiveness. The number of comparison parameters considered by the expert group was also seven (taxpayers, tax objects and the tax base, tax calculation procedure, tax periods, tax rates, dates of occurrence of tax obligations, as well as the timing and procedure for paying taxes). Specification of these comparison parameters at the lower levels of the hierarchy was not carried out.

Diagnostics of the tax policy of "Vektor" LLC by certain parameters for comparing the possibilities of the external tax environment, as well as designing an ideal tax policy for the company, was carried out with the use of a combination of methods such as collective notebook, expert focusing, and brainstorming, with the participation

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of all experts of the working group for 23 days. The expert competence coefficient was not calculated. To form a generalised assessment of experts in the context of each comparison parameter, the method of average values was used. During the study, the Saaty relative scale was used, which is presented in Table 2. As a result, a number of pairwise comparison matrices were obtained for each of seven such parameters, the first of which is the matrix for the parameter "Taxpayers" (Table 4).

Table 4. Matrix of pairwise comparisons for LLC "Vektor" according to the parameter "taxpayers"

"Taxpayers" parameter	**Enterprise Tax Policy**	**Perfect tax policy**	**Normalised assessment of the elements of the enterprise vector y_i**
Enterprise Tax Policy	1	1/3	0.250
Ideal tax environment tax policy	3	1	0.750
$\gamma_{max} = 2.00$			

According to formulas (6) and (7), we shall obtain the following:

$$x_1 = \sqrt[2]{\frac{1}{3} \times 1} = 0.577 \tag{11}$$

$$x_2 = \sqrt[2]{1 \times 3} = 1.732 \tag{12}$$

$$\sum_{i=1}^{2} 1.732 + 0.577 = 2.309 \tag{13}$$

$$y_1 = \frac{0.577}{2.309} = 0.250 \tag{14}$$

$$y_2 = \frac{1.732}{2.309} = 0.750 \tag{15}$$

Using formula (10), we shall calculate the maximum eigenvalue of the matrix of pairwise comparisons γ_{max}:

$$\gamma_{max} = 0.750 \times \left(1 + \frac{1}{3}\right) + 0.250 \times (3 + 1) = 2.00 \tag{16}$$

We shall provide similar calculation results relative to other comparison parameters at the third level (Tables 5-10).

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Table 5. Matrix of pairwise comparisons for LLC "Vektor" according to the parameter "tax objects and tax bases"

"Tax objects and tax bases" parameter	Enterprise Tax Policy	Perfect tax policy	Normalised assessment of the elements of the enterprise vector y_i
Enterprise Tax Policy	1	1/5	0.167
Ideal tax environment tax policy	5	1	0.833
$\gamma_{max} = 2.00$			

According to formulas (6), (7) and (10), we shall obtain the following:

$$x_1 = \sqrt[2]{\frac{1}{5} \times 1} = 0.447 \tag{17}$$

$$x_2 = \sqrt[2]{1 \times 5} = 2.236 \tag{18}$$

$$\sum_{i=1}^{2} 2.236 + 0.447 = 2.683 \tag{19}$$

$$y_1 = \frac{0.447}{2.683} = 0.167 \tag{20}$$

$$y_2 = \frac{2.236}{2.683} = 0.833 \tag{21}$$

$$\gamma_{max} = 0.833 \times \left(1 + \frac{1}{5}\right) + 0.167 \times (5 + 1) = 2.00 \tag{22}$$

Table 6. Matrix of pairwise comparisons for LLC "Vector" according to the parameter "procedure for calculating taxes"

"Procedure for calculating taxes" parameter	Enterprise Tax Policy	Perfect tax policy	Normalised assessment of the elements of the enterprise vector y_i
Enterprise Tax Policy	1	1/7	0.125
Ideal tax environment tax policy	7	1	0.875
$\gamma_{max} = 2.00$			

According to formulas (6), (7) and (10), we shall obtain the following:

$$x_1 = \sqrt[2]{\frac{1}{7} \times 1} = 0.378 \tag{23}$$

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$$x_2 = \sqrt[2]{1 \times 7} = 2.646 \tag{24}$$

$$\sum_{i=1}^{2} 2.646 + 0.378 = 3.024 \tag{25}$$

$$y_1 = \frac{0.378}{3.024} = 0.125 \tag{26}$$

$$y_2 = \frac{2.646}{3.024} = 0.875 \tag{27}$$

$$\gamma_{max} = 0.875 \times \left(1 + \frac{1}{7}\right) + 0.125 \times (7 + 1) = 2.00 \tag{28}$$

Table 7. Matrix of pairwise comparisons for LLC "Vektor" according to the parameter "tax periods"

"Tax periods" parameter	**Enterprise Tax Policy**	**Perfect tax policy**	**Normalised assessment of the elements of the enterprise vector y_i**
Enterprise Tax Policy	1	1/7	0.125
Ideal tax environment tax policy	7	1	0.875
$\gamma_{max} = 2.00$			

According to formulas (6), (7) and (10), we shall obtain the following:

$$x_1 = \sqrt[2]{\frac{1}{7} \times 1} = 0.378 \tag{29}$$

$$x_2 = \sqrt[2]{1 \times 7} = 2.646 \tag{30}$$

$$\sum_{i=1}^{2} 2.646 + 0.378 = 3.024 \tag{31}$$

$$y_1 = \frac{0.378}{3.024} = 0.125 \tag{32}$$

$$y_2 = \frac{2.646}{3.024} = 0.875 \tag{33}$$

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$$\gamma_{max} = 0.875 \times \left(1 + \frac{1}{7}\right) + 0.125 \times (7 + 1) = 2.00 \tag{34}$$

Table 8. Matrix of pairwise comparisons for LLC "Vektor" according to the parameter "tax rates"

"Tax rates" parameter	Enterprise Tax Policy	Perfect tax policy	Normalised assessment of the elements of the enterprise vector y_i
Enterprise Tax Policy	1	1/4	0.200
Ideal tax environment tax policy	4	1	0.800
$\gamma_{max} = 2.00$			

According to formulas (6), (7) and (10), we shall obtain the following:

$$x_1 = \sqrt[2]{\frac{1}{4} \times 1} = 0.500 \tag{35}$$

$$x_2 = \sqrt[2]{1 \times 4} = 2.000 \tag{36}$$

$$\sum_{i=1}^{2} 2.000 + 0.500 = 2.500 \tag{37}$$

$$y_1 = \frac{0.500}{2.500} = 0.200 \tag{38}$$

$$y_2 = \frac{2.000}{3.500} = 0.800 \tag{39}$$

$$\gamma_{max} = 0.800 \times \left(1 + \frac{1}{4}\right) + 0.200 \times (4 + 1) = 2.00 \tag{40}$$

Table 9. Matrix of pairwise comparisons for LLC "Vektor" according to the parameter "terms and procedure for paying taxes"

"Terms and procedure for paying taxes" parameter	Enterprise Tax Policy	Perfect tax policy	Normalised assessment of the elements of the enterprise vector y_i
Enterprise Tax Policy	1	1/3	0.250
Ideal tax environment tax policy	3	1	0.750
$\gamma_{max} = 2.00$			

According to formulas (6), (7) and (10), we shall obtain the following:

$$x_1 = \sqrt[2]{\frac{1}{3} \times 1} = 0.577 \tag{41}$$

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$$x_2 = \sqrt[2]{1 \times 3} = 1.732 \tag{42}$$

$$\sum_{i=1}^{2} 1.732 + 0.577 = 2.309 \tag{43}$$

$$y_1 = \frac{0.577}{2.309} = 0.250 \tag{44}$$

$$y_2 = \frac{1.732}{2.309} = 0.750 \tag{45}$$

$$\gamma_{max} = 0.750 \times \left(1 + \frac{1}{3}\right) + 0.250 \times (3 + 1) = 2.00 \tag{46}$$

Table 10. Matrix of pairwise comparisons for LLC "Vektor" according to the parameter "dates of occurrence of tax obligations"

"Dates of occurrence of tax obligations" parameter	**Enterprise Tax Policy**	**Perfect tax policy**	**Normalised assessment of the elements of the enterprise vector y_i**
Enterprise Tax Policy	1	1/9	0.100
Ideal tax environment tax policy	9	1	0.900
$\gamma_{max} = 2.00$			

According to formulas (6), (7) and (10), we shall obtain the following:

$$x_1 = \sqrt[2]{\frac{1}{9} \times 1} = 0.333 \tag{47}$$

$$x_2 = \sqrt[2]{1 \times 9} = 3.000 \tag{48}$$

$$\sum_{i=1}^{2} 3.000 + 0.333 = 3.333 \tag{49}$$

$$y_1 = \frac{0.333}{3.333} = 0.100 \tag{50}$$

$$y_2 = \frac{3.000}{3.333} = 0.900 \tag{51}$$

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$$\gamma_{max} = 0.900 \times \left(1 + \frac{1}{9}\right) + 0.100 \times (9 + 1) = 2.00 \tag{52}$$

Apart from the above matrices of pairwise comparisons for 3rd level parameters, the expert group also built a matrix for 2nd level parameters (Table 11).

Table 11. The general matrix of pairwise comparisons for LLC "Vektor" relative to the 2nd level parameters

2nd level parameters	**Taxpayers**	**Tax objects and tax bases**	**Tax calculation procedure**	**Tax periods**	**Tax rates**	**Terms and procedure for paying taxes**	**Dates of occurrence of tax obligations**	**Normalised assessment of elements of priority vector y_i**
Taxpayers	1	3	1	1	3	1/3	1/3	0.120
Tax objects and tax bases	1/3	1	1/3	1	1/3	1	1/3	0.064
Tax calculation procedure	1	3	1	3	3	1	1/5	0.153
Tax periods	1	1	1/3	1	1	1	1/5	0.081
Tax rates	1/3	3	1/3	1	1	1	1/3	0.087
Terms and procedure for paying taxes	3	1	1	1	1	1	1/5	0.112
Dates of occurrence of tax obligations	3	3	5	5	3	5	1	0.383
$\gamma_{max} = 7.788$ $I_u = 0.131$ $V_u = 0.099$								

According to formulas (6), (7) and (10), we shall obtain the following:

$$x_1 = \sqrt[7]{1 \times 3 \times 1 \times 1 \times 3 \times \frac{1}{3} \times \frac{1}{3}} = 1.000 \tag{53}$$

$$x_2 = \sqrt[7]{\frac{1}{3} \times 1 \times \frac{1}{3} \times 1 \times \frac{1}{3} \times 1 \times \frac{1}{3}} = 0.534 \tag{54}$$

$$x_3 = \sqrt[7]{1 \times 3 \times 1 \times 3 \times 3 \times 1 \times \frac{1}{5}} = 1.272 \tag{55}$$

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$$x_4 = \sqrt[7]{1 \times 1 \times \frac{1}{3} \times 1 \times 1 \times 1 \times \frac{1}{5}} = 0.679 \tag{56}$$

$$x_5 = \sqrt[7]{\frac{1}{3} \times 3 \times \frac{1}{3} \times 1 \times 1 \times 1 \times \frac{1}{3}} = 0.731 \tag{57}$$

$$x_6 = \sqrt[7]{3 \times 1 \times 1 \times 1 \times 1 \times 1 \times \frac{1}{5}} = 0.929 \tag{58}$$

$$x_7 = \sqrt[7]{3 \times 3 \times 5 \times 5 \times 3 \times 5 \times 1} = 3.192 \tag{59}$$

$$\sum_{i=1}^{7} 1.000 + 0.534 + 1.272 + 0.679 + 0.731 + 0.929 + 3.192 = 8.337 \tag{60}$$

$$y_1 = \frac{1.000}{8.337} = 0.120 \tag{61}$$

$$y_2 = \frac{0.534}{8.337} = 0.064 \tag{62}$$

$$y_3 = \frac{1.272}{8.337} = 1.153 \tag{63}$$

$$y_4 = \frac{0.679}{8.337} = 0.081 \tag{64}$$

$$y_5 = \frac{0.731}{8.337} = 0.088 \tag{65}$$

$$y_6 = \frac{0.929}{8.337} = 0.112 \tag{66}$$

$$y_7 = \frac{3.192}{8.337} = 0.383 \tag{67}$$

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$$\gamma_{max} = 0.120 \times \left(1 + \frac{1}{3} + 1 + 1 + \frac{1}{3} + 3 + 3\right) + 0.064 \times (3 + 1 + 3 + ! + 3 + 1 + 3) +$$
$$+0.153 \times \left(1 + \frac{1}{3} + 1 + \frac{1}{3} + \frac{1}{3} + 1 + 5\right) + 0.081 \times (1 + 1 + 3 + 1 + 1 + 1 + 5) +$$
$$+0.088 \times \left(3 + \frac{1}{3} + 3 + 1 + 1 + 1 + 3\right) + 0.112 \times \left(\frac{1}{3} + 1 + 1 + 1 + 1 + 1 + 5\right) +$$
$$+0.383 \times \left(\frac{1}{3} + \frac{1}{3} + \frac{1}{5} + \frac{1}{5} + \frac{1}{3} + \frac{1}{5} + 1\right) = 7.788 \tag{67}$$

$$I_u = \frac{\gamma_{max} - n}{n - 1} = \frac{7.788 - 7}{7 - 1} = 0.131 \tag{68}$$

$$V_u = \frac{I_u}{V_{iu}} = \frac{0.131}{1.32} = 0.099 \tag{69}$$

Thus, the value of the consistency ratio index V_u calculated by experts is within the previously indicated acceptable limits $(V_u \leq 0.10)$, which allows to confirm the consistency of expert opinions on tax competitiveness of "Vektor" LLC against the background of market opportunities. At the stage of constructing a generalised vector of priorities, the members of the expert group multiplied the normalised summary matrix of estimates of the elements of the priority vectors by the transposed vector row of weight coefficients, which can be represented in the form of a matrix (Eq. 12):

$$\begin{bmatrix} 0.250 & 0.167 & 0.125 & 0.125 & 0.200 & 0.250 & 0.100 \\ 0.750 & 0.833 & 0.875 & 0.875 & 0.800 & 0.750 & 0.900 \end{bmatrix} \begin{bmatrix} 0.120 \\ 0.064 \\ 0.153 \\ 0.081 \\ 0.087 \\ 0.112 \\ 0.383 \end{bmatrix} \tag{70}$$

As a result of the calculations, a set of normalised estimates were obtained (Table 12), which allow to form a holistic view of the tax competitiveness of "Vektor" LLC.

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Table 12. The generalised results of the assessment of tax competitiveness of LLC "Vektor"

Comparison options	Comparison parameters, their weighting coefficients and normalised assessments of the elements of priority vectors							Final assessments
	Taxpayers (0.120)	**Tax objects and tax bases (0.064)**	**Tax calculation procedure (0.153)**	**Tax periods (0.081)**	**Tax rates (0.087)**	**Terms and procedure for paying taxes (0.112)**	**Dates of occurrence of tax obligations (0.383)**	
Enterprise Tax Policy	0.250	0.167	0.125	0.125	0.200	0.250	0.100	0.154
Ideal tax environment tax policy	0.750	0.833	0.875	0.875	0.800	0.750	0.900	0.846

Conclusions

Thus, according to the results of calculations, we can conclude that the tax policy of any enterprise can be considered maximally competitive (that is, one that maximises the potential of the tax environment), provided that either partial normalised assessments of the elements of the priority vector, or a generalised priority vector with consideration of weighting factors illustrates the ratio of 50x50. All other "imbalances" in favour of the possibilities of the tax environment automatically cause a decrease in the assessment of the tax competitiveness of a subject of entrepreneurial activity and a decrease in its level. In the case of "Vektor" LLC, it is obvious that its level of tax competitiveness is significantly lower than the potential of the external tax environment (generalised by 34.6%). This is despite the fact that according to certain parameters of competitiveness, the company did not use about 40% of market opportunities (for example, the dates of tax liabilities). Identification of the existing gaps between the actual and the maximum possible state allows "Vektor" LLC to generate conclusions and recommendations on ways to increase its tax competitiveness.

The results of assessing the tax competitiveness of an enterprise can be one of the information sources for improving the tax policy of a subject of entrepreneurial activity, ensuring a higher level of dynamism, which, in general, will allow to obtain sustainable competitive advantages by optimising tax payments. Furthermore, such results constitute the basis for the adoption of various management decisions to increase the level of tax competitiveness of a subject of entrepreneurial activity by influencing certain parameters that form such competitiveness. The proposed approach allows to identify both strong and weak positions of the actual tax competitiveness of enterprises. Improvement of the tax competitiveness of enterprises for domestic business should be one of the priority tasks on the path to ensuring multi-vector development.

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RURAL ENTREPRENEURSHIP: TOWARDS COLLABORATIVE PARTICIPATIVE MODELS FOR ECONOMIC SUSTAINABILITY

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Abstract. Rural entrepreneurship development is one of the strategies for encouraging the acceleration of rural development by focusing on the exploration of local resources. The role of rural entrepreneurship is crucial in creating new economic activities that can help to reduce unemployment and poverty, especially in rural areas. One of the Indonesian government's programs for encouraging rural entrepreneurship is establishing BUMDes - a village-owned enterprise. This study aims to propose a participatory rural development model to optimize stakeholder collaboration in promoting local economic growth in rural areas. This study uses a qualitative method with a multi-case study approach. There are three BUMDes from three regencies in West Java, Indonesia participated in this research. Triangulation used to check the validity of the data by comparing the results of interviews, FGD's, observations and secondary data. The results of the study found three sustainability dimensions to measure the success of BUMDes performance such as economic sustainability, social sustainability and market sustainability. The results suggest a collaborative model to optimizing BUMDes performance. The new model illustrates the collaboration between stakeholders to pursue rural entrepreneurship sustainability.

Keywords: rural entrepreneurship, participatory rural development, local economic, economic sustainability, BUMDes, stakeholder

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1. Introduction

Entrepreneurship growth in a country is one of a nation's welfare indicators. Entrepreneurship is the driving force for economic development by posit of creating employment, welfare, and innovation (Raudeliūnienė, 2014). The role of entrepreneurship is crucial in creating new economic activities in rural areas (Ansari et al., 2013; Chatterjee et al., 2017). However, sustainability of rural entrepreneurship is a challenge because it requires integration between human resources and natural resources in the village. Sustainable entrepreneurship in the rural context implies various obstacles including lack of resources, networks or expertise (Muñoz & Kimmitt, 2019; Chitsaz et al., 2019) due to the emphasis on high growth, high technology, and innovative entrepreneurship that dominates the current approach (Luda, 2011; Autio et al., 2014).

Rural entrepreneurship development model has been widely applied in various countries such as OVOP (One Village One Product) in Japan and OTOP (One Tambon One Product) in Thailand (Kurokawa, 2009; Natsuda et al, 2012). OVOP is also known as "strategy to develop value based on local available resources in rural area" (Issa & Lawal, 2014). The success of these programs shows that developing entrepreneurial activity in rural areas is highly crucial. The success of OVOP and OTOP programs has spread widely in every nation, especially in developing countries. Many developing countries attempt to develop an inclusive entrepreneurial program with the same concept as OVOP and OTOP. Entrepreneurial activities will increase the number of entrepreneurs and reduce the amount of unemployment so that inequality and the social discrepancy can be overcome (Dhewanto et al., 2012, Dhewanto et al., 2016). Vietnam follows the concept of OVOP with a program called One Commune One Product (OCOP) as a strategy to generate employment opportunities, incomes and enhance creativity and capability of local people (Thanh et al., 2018). So, how about Indonesia? What kind of rural entrepreneurship development program has been established in Indonesia?

Village-Owned Enterprise (*Badan Usaha Milik Desa or BUMDes*) is one of the rural entrepreneurship development programs in Indonesia. Based on the BUMDes report, from 74,910 villages in Indonesia, 25% of them have established BUMDes while the remaining 75% have not. Among the 18,446 BUMDes that have been established, only 20% of the villages have run their BUMDes. The rest of these villages have not yet operated their BUMDes well (Bumdes.id, 2019). The results of the study indicate that the implementation of the BUMDes model has not been optimally successful. Many BUMDes have stopped their operation due to many challenges and obstacles. One of the obstacles is the absence of strong natural resources to be exploited as their economic potencies. Therefore, the objective of this research is to identify the problems and challenges that are faced by BUMDes implementation, focusing on rural areas that lack potencies on natural resources. This study adopts a place-based lens (Creswell, 2013) to understand the meso-level holistic context for the implementation of rural entrepreneurship. This research examines the feasibility of the rural entrepreneurship participatory model implemented in three BUMDes in West Java, Indonesia and the strength of the model contribution in achieving the goals of BUMDes program.

This study offers three main contributions to foster a broader discussion of rural entrepreneurship. First, based on our results, we propose a collaborative participatory rural entrepreneurship model to encourage collaboration between villagers and various stakeholders to strengthen the local economy of rural areas. Second, the results of this study enable important contributions to research and entrepreneurial-related policies in a rural context. Third, the findings and the conceptual model developed are useful for the evaluation and decision-making process from a policy perspective.

Next, we discuss a literature review of rural entrepreneurship programs, village-owned enterprise (BUMDes) and the empirical context of the implementation of them in West Java, Indonesia. Afterwards, the research method used in this study is explained. The findings in this study are presented in the following section with the proposed

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model of rural entrepreneurship sustainability. Finally, we discuss some of the implications of our research on the theory of rural entrepreneurship.

2. Literature Review

2.1. Rural Entrepreneurship

According to Yang, Cerneviciute, & Strazdas (2020), the performance of rural areas is determined by troupes that emerge as new forces in improving welfare, one of which is entrepreneurial activity. Chitsaz et al. (2019) stated "the difference between rural entrepreneurship and entrepreneurship lies in the special conditions of rural areas such as the high risk, lack of facilities, and weak management". Similarly, Ansari et al (2013) acknowledged that "rural entrepreneurship considered as one of the solutions to reduce poverty, migration and develop employment in rural areas". Additionally, other studies also define it as local economic-based entrepreneurial activities (McElwee & Atherton, 2011). Rural entrepreneurship creates a new combination of resources, based on the place or local area and results in value for both entrepreneurs and the local area (Müller & Korsgaard, 2018). Thus, the purpose of rural entrepreneurship is to foster the enthusiasm of youth and rural communities to explore the potential in their area (local potential) through entrepreneurship (Larasdiputra et al., 2019).

Rural entrepreneurship is one of the most important solutions for sustainable rural development (Ansari et al., 2013). Meera & Vinodan, 2018 stated "rural entrepreneurship seeks to identify new opportunities, innovation, creativity in agricultural and non-agricultural activities, and tourism". Rural entrepreneurship is a local economic development that involves government and community organizations. Olafsen & Cook (2016) described local economic development as a process whereby development actors work collectively with partners from the public, private and non-government sectors, to create changes and better conditions for economic growth and employment opportunities. According to Alheet (2019), entrepreneurial activities have a positive effect on economic growth (GDP growth). Therefore, this effect indicates that the implementation of entrepreneurship activities in villages contributes to economic growth in villages (Ansari et al., 2013; Meera & Vinodan, 2018).

According to Raudeliūnienė et al. (2014), "sustainable entrepreneurship is a concept that combines and balances two dimensions of economic goals and social ecological goals, creating viable economic performance of business enterprise". As mentioned above, the regional government and/or community-based groups manage available resources to create employment opportunities and strengthen regional economic activities. These resources are characterized based on the potential of local human resources, institutions, and physical resources. Undoubtedly, local economic growth that has improved through the development practice in rural areas is considered as a socio-economic impact (Raudeliūnienė et al, 2014; Goyal & Sergi, 2015). This is in line with Baierl et al. (2014) that defined social impact as changes occur in humans and societies that arise from development activities such as programs, projects or policies that are applied to the community.

Several studies have identified the role of entrepreneurship in rural economic growth and development (Goetz et al., 2010). Some focus on its sustainability rural entrepreneurship (Luda, 2011; Ansari et al., 2013), marketing (Polo-Peña et al., 2012), and some on human and social capital (Chitsaz et al., 2019). Additionally, rural economic activities require social relationships that have an important role in growing trust and expanding networks. Furthermore, the importance of policies and strategies to support entrepreneurship development has been explored (Ansari et al., 2013). Therefore, a more strategic and coordinated approach is needed to build entrepreneurial capacity in rural areas (Welter, 2011; Chitsaz et al., 2019), so the rural can perform well.

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2.2. Village-owned Enterprise (BUMDes)

The village-owned enterprise (BUMDes) is one of the implementations of the rural entrepreneurship program initiated by the Indonesian government. The implementation of the program has strong relationships with the concept of Community-Based Enterprises (CBEs). CBEs can be formed as a result of a local community's entrepreneurial activities, by employing their social resources, structures and networks (Natsuda et al., 2012). Indonesian Law No. 6 of 2014 about Villages provides great opportunities for the development of villages. According to the law, the village has the authority to manage its own assets, including the management of the village economy. The problems of village economic need to be resolved with comprehensive handling, including the construction of infrastructure facilities, the economic potential development of the village, and this potential optimization for the village communities' welfare (Kania, Akbar, & Budiman, 2019).

BUMDes is a policy implementation rolled out by the Ministry of Village and Transmigration to facilitate infrastructure development support and expand the productive economic efforts in rural communities. BUMDes is a form of village economic independence by moving strategic business units to the collective village ownership by optimizing village assets and empowering community businesses and increase the income of village communities (Purbasari, Soeling, & Wijaya, 2019).

Moreover, BUMDes is an institution formed by the village government and the community to fulfil the economic needs of the village. BUMDes is established to accommodate all activities in the economic sector and/or public services managed by villages and/or communities, and not merely for profit (Kusuma & Krisnadewara, 2019). BUMDes has contributed positively to rural development, especially in the economic and social fields through economic empowerment and growth (Sudaryana, 2016; Purbasari, Soeling, & Wijaya, 2019).

BUMDes is formed as a village business institution that functions to improve the welfare of citizens by utilizing the assets and village potential with the allocation of village capital. The urgency of BUMDes establishment in Indonesia is emphasized in the Regulation of the Minister of Villages, Development of Underdeveloped Regions, and Transmigration (*Permendesa*) No. 4 of 2015. It describes BUMDes as "business entities whose entire or part of their capital is owned by the village through direct participation originating from village assets separated to manage assets, services, and other businesses for the greatest welfare of the village community". Additionally, the Minister of Home Affairs Regulation No. 39 of 2010 recognizes BUMDes as a village business entity with a spirit of independence, togetherness and cooperation between the village government and the community. The presence of BUMDes is expected to be the driving force of the village economy, not only to generate institutional profits but also to provide both economic and social benefits for the villagers (Sudaryana, 2016).

2.3. Research Context: Village-owned Enterprise (BUMDes) in West Java, Indonesia

West Java is a province in Indonesia that consists of 18 regencies and 9 cities. To this day, the number of BUMDes in West Java has reached 2,921 (Ministry of Villages, Development of Underdeveloped Areas, and Transmigration, 2020). However, its implementation faces several obstacles and challenges which is evidenced by growth failure and discontinuation of many of these village-owned enterprises. One such reasons is that the BUMDes concept was adopted from the OVOP program, which focuses more on establishing enterprises rather than marketing its products. This had implicated failure for many BUMDes products in the market.

Therefore, the Government of West Java Province developed a one-village one company (OVOC) program aimed to increase local economic growth and provide employment opportunities in rural areas. The program also intended to support the sustainability of BUMDes programs in West Java. Compared to BUMDes, the feasibility of the enterprises has been tested by validating product-market fit. The West Java government's priority strategic plan for the period 2018-2023 is to solve the problem of unemployment and increase economic growth based on

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potential local resources. One of its government programs is One Village One Company (OVOC), an umbrella program that aims to emancipate villages by utilizing and optimizing the potential of both human and natural resources by Village-Owned Enterprise (BUMDes) (One Village One Company, 2020). The goal of the program is to boost economic activity and improve community welfare in rural areas.

Therefore, this study examines the implementation of the program to support BUMDes performance. This study also identifies the implementation of a participatory rural entrepreneurship program to help communities to improve their local economic growth in three regencies in West Java: Bandung, Bekasi and Garut.

3. Research Methods

3.1. Research Design

This research was employed using a qualitative method with case study design. The qualitative method was selected to have in-depth understanding, description and a detailed explanation about social phenomena (Saunders & Lewis, 2012). While, case study is defined as "an empirical inquiry that investigates a contemporary phenomenon (the 'case') in depth and within its real-world context" (Yin, 2014). For this research, multiple case studies were examined to illustrate the phenomena of rural entrepreneurship development in West Java, Indonesia. The multiple case studies is an approach that utilizes more than a single issue or case on single research (Creswell et al, 2013). Gustafsson (2017) also stated that multiple cases used to understand the differences and the similarities between the cases. Therefore, this study focusing on unique cases of BUMDes as village-owned enterprises from West Java Province, Indonesia. We believes that multiple cases method is capable to understand the context of BUMDes. The other benefit from multiple cases method is able to analyse the data within across different situations.

3.2. Sample Design

According to Yin (2014), in multiple case studies, "the researcher has to identify the case and the specific type of the case that shall be implemented". A sample design is road map to define sample selection. This study used purposive sampling technique based on the priority of sustainability issues. This research focused on three regencies in West Java: Bandung, Bekasi and Garut. Those three regencies have 743 BUMDes. However, only 273 are active while 470 require further development (One Village One Company, 2020). Next, we choosed three active BUMDes to participate as a sample. An active BUMDes is an enterprise that is managed based on the laws and regulations, through the management of village assets and potential activities and is not only oriented towards institutional profit. The sample units (BUMDes) were selected based on few characteristics. First is the complexity of the problems in each rural area. Second is the year of establishment. They are the BUMDes that have already implemented participatory rural entrepreneurship in their respective village for more than two years. The last is the uniqueness. The uniqueness of these samples is related to their success in developing BUMDes based on human resource capability and economic potential rather than natural resources that support their area. The three BUMDes selected have different potencies such as human resource, natural resource and technology. From those point of view, we notice the three BUMDes are the perfect samples for collaborative model to support BUMDes sustainability.

3.3. Data Collection

The research is based on social context; therefore the data was gathered from field observations, in-depth interviews and *Focus Group Discussion* (FGD) with local entrepreneurs and stakeholders. Further observation was carried out by directly observing business processes and relevant documents in the BUMDes of the three

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regencies. Semi-structured interviews were conducted face-to-face with each informant, and follow-up interviews were conducted by telephone for additional questions. Informants were appointed based on recommendations from Regency Government Institution in Rural and Communities Development. There are a total of twelve informants that participated in this research. The interviews lasted between 60 to 120 minutes and were digitally recorded and transcribed verbatim. Then, the findings during individual interviews were reconfirmed with all informants through an FGD session. Next, we mapped the relationships between BUMDes actors and clarified some of the social ties of the informants, especially the BUMDes top managements, the government, and the community. Information from these sources enabled us to reexamine data and improve consistency and reliability.

The profile of the informants is shown in Table 1. Referring to the table, the majority of key informants are actors who have a role in succeeding the BUMDes program. Among the participants are civil servants from Local Village and Community Village Empowerment Agency (*Dinas Pemberdayaan Masyarakat dan Desa* or *DPMD*), BUMDes Chairperson, Association Chairperson and the community. All informants respond well to the questions and understand the problems that occurred in the management of BUMDes.

Table 1. Informant Profiles

No.	Code	Gender	Position of Informant
1	BA1	M	Staff-DPMD Bandung
2	BA2	F	Director-BUMDes A
3	BA3	F	Community
4	BK1	M	Head of BUMDes Association in Bekasi
5	BK2	F	Co-Head of BUMDes Association
6	BK3	M	Director of BUMDes B
7	BK4	M	Member of BUMDes Association
8	BK5	F	Staff-DPMD Bekasi
9	BK6	M	Staff-DPMD Bekasi
10	GR1	F	BUMDes Team Coordinator in Garut
11	GR2	F	BUMDes Developer in Garut
12	GR3	M	CEO Holistika Institute-BUMDes Trainer

3.4 Data Analysis

Data analysis was performed to provide a better understanding of each case study by describing the findings of the collected data. This research adopted an inductive approach for the category in the first level, to the theme at the second level and related theoretical dimensions at the third level. This allowed us to identify themes and patterns that emerge in each case (Gioia, Corley, & Hamilton 2013). Additionally, the researcher also employed a comparative study to interpret the relationships that arise among different concepts and further compared these patterns in the three case studies. The comparative information for each case is presented in a table to clarify the context and enhance the credibility of our analysis. Triangulation also was used to validate the interrelation of data from the field research (Saunders & Lewis, 2012). Finally, the data interpretation was illustrated on a model implication of the local economic development and local resources management toward rural sustainability in West Java.

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4. Findings

4.1 Multiple Case Studies

This section presents three cases of BUMDes implementation in three differences regencies of West Java. We provide an overview of each case at BUMDes based on our exploration and analysis.

4.1.1 Case 1. BUMDes A

The Table 2 below shows the profile of BUMDes A as one of the case studies in this research. BUMDes A was established in Wangisagara village in 2002 through a community forum (*musyawarah*). This BUMDes is the oldest and most advanced commerce in the Bandung Regency. Last year, BUMDes Niagara won 2nd place in the BUMDes award in West Java Festival 2019.

Table 2. BUMDes A Profile

BUMDes A	
Regency	Bandung
Province	West Java
District	Majalaya
Rural/Village	Wangisagara
Area	195 Ha
Population	15.546
BUMDes Established	2002
Equity (Start-up)	IDR 150 Million
Last Year Income (2018)	IDR 1.6 Billion
Achievement	2nd place in the BUMDes award in West Java Festival 2019
Business Scale	Growing
Product/Services	- Trading (traditional market) - Credit Finance - Manufacturing industry based on Local Resource (Sandals, Mineral Water)

BUMDes A refers to a business model in implementing their business, and they claim that it is one of the best example of the BUMDes business model in Indonesia. BA1 stated:*" the great example of BUMDes Model is BUMDes A because the business grows significantly"* BUMDes A has three business divisions, such as village market (traditional-trading), credit finance, and manufacturing industry (mineral water and sandal production). BUMDes A explores the potential of villages to help the people to earn income. According to the informant BA2,*"the key success factors of BUMDes A are the potentials of human resources and economic owned by Wangisagara communities. Those potencies are captured and utilized by BUMDes A."*

BUMDes Niagara plans a specified target to be achieved every year. The target measures the existence of BUMDes A positive impact on community welfare. The expected positive impact is that BUMDes A can provide the necessary assistance to every community with business potentials to be developed. BUMDes A collaborates with third parties such as financial institutions to help communities with funding to expand their business. It also cooperates with several universities for assistance in developing the marketing strategy. The implementation of the business model at BUMDes A has proven successful. Informant BA2 conveyed, "*the success factor of BUMDes is the team management, including technicians and experts, that demonstrates good leadership".* However, BUMDes A still faces obstacles such as business management development, particularly in marketing and financial aspects.

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4.1.2 Case 2. BUMDes B

BUMDes B has been established since 2017 in Simpangan, Bekasi Regency. BUMDes B located in Cikarang Utara District, surrounded by manufacturing industry area. Table 3 below shows the profile of BUMDes B.

Table 3. BUMDes B Profile

BUMDes B	
Regency	Bekasi
Province	West Java
District	Cikarang Utara
Rural/Village	Simpangan
Area	310 Ha
Population	31.825
BUMDes Established	2017
Equity	IDR 160 Million
Last Year Income (2018)	IDR 800 Million
Achievement	1st Winner BUMDes Award in Bekasi Regency 2018
Business Scale	Growing
Product/Services	-Trading (BUMDes Mart, POM -Mini, Stationary, Photocopy) - Credit Finance - Manufacturing Industry based on Local Resources (Sandals, Snack, Craft, Waste Bank)

The manufacturing industry has reduced the potential of natural resources in Cikarang region. Thus, the biggest potencies are from human and economic resources. BUMDes B has developed three business units such as trading, credit finance and home industry manufacture. Another potency of BUMDes B is waste management generated from their manufacturing industry, which they have successfully managed. The company was established with IDR 160 Million equity from Rural Budget. In 2018, the turnover has reached IDR 800 Million. BK2 mentioned:*" now since the profit of BUMDes has reached the break-even point, we can support funding for rural development"*. BUMDes B may still be new or an infant, but they exhibit good performances, especially this year. In 2018, BUMDes B won the 1st Winner of BUMDes Award Competition in Bekasi Regency.

4.1.3 Case 3. BUMDes C

BUMDes C was established in 2016 in the Cigawir village, Selaawi District, Garut Regency. The establishment of BUMDes C was chosen as an alternative to developing the economy in the Cigawir village. Table 4 below shows the profile of BUMDes C. The establishment of BUMDes C is regulated in the Village Regulation (*Perdes*) No. 3 of 2016. It has been established and operating since 2016 with IDR 150 million funding. Initially, their primary business units were in trading such as photocopying, stationery and food stall businesses. In 2018, BUMDes C has gained capital to improve the agricultural sector. In 2019, it won the 2nd place in the Appropriate Technology (TTG) competition held in Garut Regency. BUMDes C has produced an innovative internet signal capture repeater transmitter. This innovative product is very useful in accelerating the economic growth of Cigawir and surrounding villages. However, based on observations and interviews, the presence of BUMDes C has few impacts to stimulate and move the wheels of the village economy.

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Table 4. BUMDes C Profile

BUMDes C	
Regency	Garut
Province	West Java
District	Selaawi
Rural/Village	Cigawir
Area	510.5 Ha
Population	5.095
BUMDes Established	2016
Equity	IDR 150 Million
Last Year Income (2018)	IDR 730 Million
Achievement	1st Winner in Appropriate Technology Competition in Garut Regency 2019
Business Scale	Developed
Product/Services	- Trading (Stationary, Photocopy) - Farming Fertilizer - Public Services (IT Development)

4.2 Case Studies Analysis

Based on the interview, we highlighted several important findings that emerged from the analysis results. This insight was employed to develop propositions about how the BUMDes approach can effectively encourage rural entrepreneurship. Additionally, the findings were also used as a basis for proposing a participatory rural development model to optimize stakeholder collaboration in promoting local economic growth in rural areas. Figure 1 below provides an overview of the findings. All concepts and themes that emerge from the data are given in this figure.

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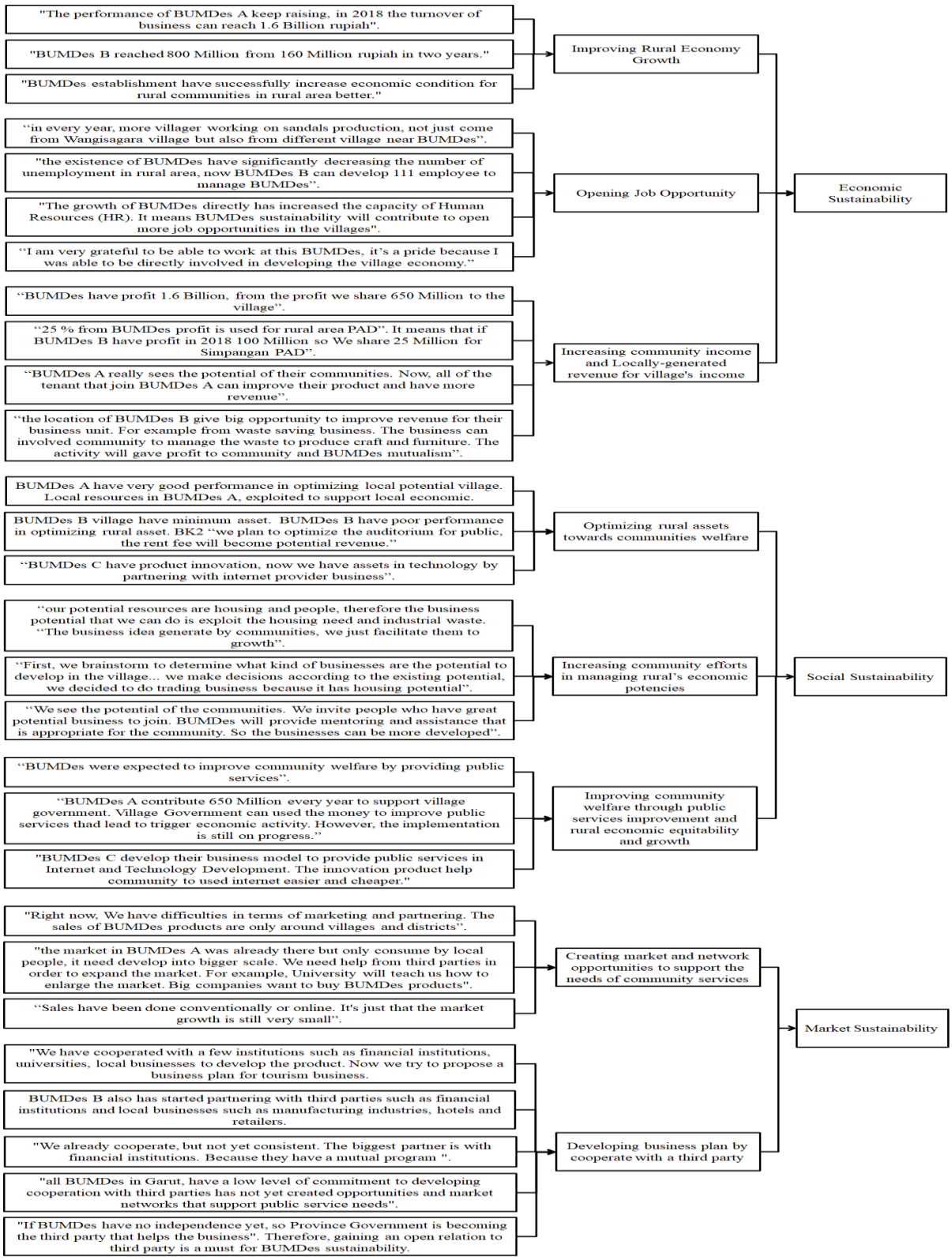

Fig 1. The Dimension and Factors of BUMDes for Economic, Market and Social Sustainability

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Figure 1 above shows the results of interviews with key informants using the inductive approach, where the analysis of interview results at the first level, identification of factors at the second level, and identification of dimensions at the third level (Gioia, Corley, & Hamilton 2013). We identified 8 factors related to BUMDes as rural entrepreneurship programs including improving rural economy growth, opening job opportunity, increasing community income and locally-generated revenue for village's income, optimizing rural assets towards communities welfare, increasing community efforts in managing rural's economic potencies, improving community welfare through public services improvement and rural economic equitability and growth, creating market and network opportunities to support the needs of community services, and developing business plan by cooperate with a third party. These factors are in accordance with the objectives of establishing BUMDes stated in Regulation of the Minister of Villages, Development of Underdeveloped Regions, and Transmigration (*Permendesa*) No. 4 year 2015. Based on the results of the analysis, we grouped these 8 factors into 3 dimensions (economic sustainability, social sustainability, and market sustainability). To show themes and patterns that emerge in the case studies, these factors are grouped based on the similarity of characteristics and objectives of the BUMDes program. The explanation of every dimensions and its factors will be further discussed below.

4.2.1 Economic Sustainability

The underlying theory claimed that "there is a positive relationship between entrepreneurship and economic growth in a country both in the short and long term" (Alheet, 2019). So, it can be implied that BUMDes is an alternative strategy to improve the rural economy. The results show that BUMDes A, B and C demonstrate good performances on improving rural economic growth. BUMDes A started from equity support from the village around IDR 150 Million in 2002. The performance keeps increasing, with the turnover of business reached up to IDR 1.6 Billion in 2018. Meanwhile, BUMDes B has reached IDR 800 Million from IDR 160 Million in two years. The growth performance has proven that BUMDes A, B and C have significant impacts on local economic development in rural areas. All the BUMDes informants have the same perception that the establishment of BUMDes has succeeded in better improving economic conditions for rural communities.

BUMDes performances also increase the number of start-up businesses in rural areas and improve the income for several business units that were established. However, the impact of BUMDes is measured by not only the economic aspect but also the social aspect. On the social aspect, improvements can be seen through the increasing number of community welfare, job opportunity and public services. Overall, the impacts of BUMDes A, B and C performances are more visible if measured from the economic aspect.

The rural entrepreneurs are the key drivers for job creation and welfare in villages (Chatterjee et al, 2017). BUMDes A, B and C have fair success in recruiting unemployed villagers. The result shows that the existence of BUMDes positively affects the opening of job opportunity in rural areas. However, the quantity of business still cannot provide sufficient job opportunity for the entire villagers. For example, in BUMDes A, the development of sandal production creates job opportunities in the village. BA2 stated: *"in every year, more villagers will be working on the sandal production. They come from not only Wangisagara village but also different villages near BUMDes"*. Informant BK4 also mentioned that *"the existence of BUMDes has significantly decreased the number of unemployment in rural areas. Now, BUMDes B can employ 111 employees to manage BUMDes"*. BK 5 added that *"I am very grateful to be working at this BUMDes. It's pride because I can be directly involved in developing the village economy."* GR 1 also conveyed that *"the growth of BUMDes has directly increased the capacity of Human Resources (HR). It means that BUMDes sustainability will contribute to creating more job opportunities in the villages"*.

The most important role of BUMDes is to increase rural economic growth. There is no perfect instrument to measure the impact of BUMDes performance on the village income. However, it can be perceived from BUMDes

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contributions to it. The finding shows that BUMDes A and B performances have significant contributions to increase village income in rural areas, signified by the revenue sharing from BUMDEs. For example, BUMDes A contributes IDR 650 million annually for the income of Wangisagara village. BA2 stated: *"BUMDes has profited IDR 1.6 Billion, and we allocate IDR 650 Million for the village"*. Meanwhile, BUMDes B, as disclosed by BK1 that *"25 % of the BUMDes profit is allocated as rural area village income. It means that if BUMDes B earned IDR 100 Million in 2018, we assigned 25 Million as the income of Simpangan village"*. It is concluded that BUMDes positively contributes to increasing rural income.

Overall, BUMDes performance of this study in increasing community income is sufficient. Based on the interviews, communities can increase their business income significantly through BUMDes. For example, one of the sandal crafters in BUMDes A previously only produced sandals and had funding constraints to improve the product. Now after joining BUMDes A, the community receives funding to increase production and marketing assistance. BA2 expressed that *"BUMDes A really sees the potential of their communities. Now, all tenants that join BUMDes A can improve their products and earn more revenue"*. BA3 said that *"the average daily income of my business has increased up to around IDR 300 thousand"* - and more if there is an event. In Bekasi Regency, BUMDes B has successfully managed waste from the nearby manufacturing industry to increase village income. BK2 mentioned that *"the location of BUMDes B provides a big opportunity to improve revenue for their business unit such as waste management. It can employ the community to manage the waste and produce crafts and furniture. The activity will yield a profit for the community and BUMDes mutualism"*. Generally, BUMDes earns great income in savings and loan businesses (credit finance) as the priority programs. However, BUMDes needs to explore wider opportunities from different business sectors.

4.2.2 Social Sustainability

The finding shows that BUMDes A exhibits good performance in optimizing the local village potential, such as the traditional market building. BUMDes A also maximizes the mineral water industry by involving communities in its production. In the future, the company plans to build sports facilities and tourist attractions. On the other hand, BUMDes B performs poorly in optimizing rural assets due to the village's relatively small assets and BUMDes being newly operated. The only asset owned by BUMDes B is the Auditorium. BK2 disclosed that *"next year, we plan to optimize the auditorium for the public; the rental fee could become the potential revenue".* Meanwhile, BUMDes C performance in optimizing asset is fair. Presently, BUMDes C sees business opportunities in IT development by creating innovative products to help local people. As stated by GA1, *"BUMDes C has performed a product innovation, now we have assets in technology by partnering with the internet service provider business"*. It was seen from the beginning of these BUMDes establishments, despite only had minimal assets and less natural resource potentials to improve the welfare of the community, their ventures become a driver for community economic activities.

BUMDes existence is an effort to improve the village economy based on the needs and potential of the rural area, as the respective communities have strong social and cultural ties with traditional values. These findings indicate that BUMDes A, B and C have great success in increasing community efforts to manage economic potential in rural areas. They also have great potencies in economic and human resources. For example, the Bekasi Regency location near the manufacturing industry creates potentials for housing development and waste management. BK2 mentioned that *"our potential resources are housing and people. Therefore, the business potential that we can do is making use of the housing need and industrial waste"*. The condition is also supported by a statement from BA2, *"the business idea was generated by communities; we just facilitate them to grow"*.

Additionally, BUMDes has also proven to empower communities in the village to start businesses. BK2 conveyed that *"first, we brainstormed to determine what kind of business potential to be developed in the village. We made decisions according to the existing potential, (and then) we decided to do trading because it has housing*

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potentials". BA2 also informed that *"we see the potential of the communities. We invite people who have a great potential business to join. BUMDes will provide mentoring and assistance that is appropriate for the community, so the businesses can be more developed"*.

The great concept of BUMDes is to help community's start-ups by empowering them with knowledge and skills to grow a business. But, most of the communities only expect BUMDes for financing. Therefore, to increase the community effort, BUMDes develops business on the credit financial system. By managing this business, most of BUMDes are successful in increasing their profits.

All of the BUMDes of this study are established based on the approval from the chief of the rural area and their communities. They also allocate a budget to invest in BUMDes operational management. Hence, BUMDes management should dedicate its goals to support community welfare. BA1 stated: *"BUMDes were expected to improve community welfare by providing public services"*. In an ideal condition, BUMDes profits will be allocated to provide good public services to the community, which will trigger economic activities in rural areas. Thus, the sustainability of BUMDes will improve community welfare. BA2 also disclosed that *"BUMDes A contributes IDR 650 Million annually to support the village government. The village government can use the money to improve public services that trigger economic activities. However, the implementation is still in progress."* Meanwhile, BUMDes B encourages its business units to utilize internet facilities from the village for business marketing and modernizing their behavior. In another case, BUMDes C develops its business model to provide public services in Internet and Technology Development. BUMDes C creation is the innovative product called a repeater, a transmitter to amplify the internet signal. This product helps the community to use the internet easier and cheaper. The product is also commercialized to other villages. Therefore, BUMDes A, B and C have demonstrated good commitment to improving community welfare. Still, it calls for better coordination with the rural government and communities.

4.2.3 Market Sustainability

The biggest challenge to optimize BUMDes performances is creating a market. BK1 stated: *"right now, we have difficulties in terms of marketing and partnering. The sales of BUMDes products are only around villages and districts"*. GR2 also mentioned that *"sales have been done conventionally or online. It's just that the market growth is still very small"*. BUMDes B hopes that there would be an intervention from the Bekasi Regency or West Java Provincial Government to create a special policy that helps the BUMDes market growth. BK2 said, *"for example, BUMDESMART cannot compete with retail stores such as Alfamart and Indomaret (since) people prefer buying goods at retail stores than BUMDESMART. So, what should we do?"* BA1 also added, *"the market in BUMDes A is already available, but it is only consumed by the local people. It needs to develop into bigger scales. We need help from third parties to expand the market. For example, the university (professionals will) teach us how to enlarge the market (so) big companies choose to buy BUMDes products"*. Therefore, to fill the gap between BUMDes and the business, it needs support from provincial and regency governments. They can be intermediaries to develop a good marketing strategy for BUMDes products.

The role of BUMDes in managing local resources in rural areas is very crucial. However, the sustainability of BUMDes requires support from their stakeholder or third parties, particularly developed business institutions. Based on the results of the study, BUMDes A already has a permanent partnership with a third party to expand its business. As stated by BA2, *"we have cooperated with several institutions such as financial institutions, universities, and local businesses to develop the product. Now we try to propose a business plan for a tourism business"*. BUMDes B has also begun to partner with third parties, such as financial institutions and local businesses, which include the manufacturing, hotel and retailer industries. BK2 mentioned that *"we already cooperate (with third parties), but not yet consistent. The main partners are financial institutions because they have a mutual program"*. Meanwhile, BUMDes C has difficulties developing business plans with third parties.

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GR2 disclosed that *"all BUMDes in Garut have a low level of commitment to developing cooperation with third parties. They have not yet created opportunities and market networks that support public service needs"*. In business, third party involvement is very important to expand markets and generate more benefits. GA1 also added that *"if BUMDes has no independence yet, the Provincial Government should become the third party that aids the business"*. Therefore, securing an open relation to a third party is a must for BUMDes sustainability.

4.3 Developing a Model of Collaborative Participatory Rural Entrepreneurship

Indonesian Government has formally established BUMDes to implement economic empowerment programs in rural areas. Furthermore, West Java Provincial Government implement One Village One Company (OVOC) program to empower BUMDes. The existence of BUMDes will help West Java Government to provide community welfare. In practices, BUMDes adopted social entrepreneurship (hybrid) goals on creating profit and social impact. Social enterprises encourage social initiatives to overcome social problems by adopting a business approach (Goyal & Sergi, 2015; Pratono et al., 2020). The critical role of BUMDes is as an agent for rural development changes (Baierl et al, 2014). While, Pratono et al. (2020) stated that social enterprise involves the role of stakeholders, social role, mission drifting and social performance. Therefore, BUMDes embody social enterprise character, which is focusing on solving problems in the village and increasing economic condition in the rural area.

Based on the evaluation results from the implementation of three BUMDes in three regencies, all BUMDes of this study has successfully improved goals related to economic. BUMDes A is one of the ideal models that have proven to significantly impact rural economic growth, opening job opportunity and increasing village income (Natsuda et al., 2012; Issa & Lawal, 2014). However, BUMDes faces challenges in managing revenue to improve community welfare (the social aspect) (Baierl et al., 2014). BUMDes A & B implementations show that the model of participatory rural entrepreneurship has significant impacts on local economic growths. The model supports BUMDes A and B to perform very well, while BUMDes C model has not been adequately implemented due to their lack of collaboration. BUMDes A, B and C also face the difficulties to expand their market and collaborate with third parties. The results supporting previous research from Tousi et al. (2014) which found that rural entrepreneurship development barriers such as "lack of financial support, lack of access to accurate information, absence of a supportive culture, and a long distance between villages and markets and services". Therefore, this research suggests a new model to overcome the barriers by providing collaboration between stakeholders in West Java Province.

The village-owned enterprise is implemented to encourage the collaboration between villagers and various stakeholders to strengthen the local economy of rural areas (Welter, 2011; and Zahra, Wright, & Abdelgawad, 2014). This study tries to fill the gap that occurs in the implementation management by proposing a collaborative participatory rural entrepreneurship model (Figure 2). The model shows the collaboration between actors; with every BUMDes has its own potencies and business priority. The revenue from BUMDes performances will be invested in community services that support economic activity.

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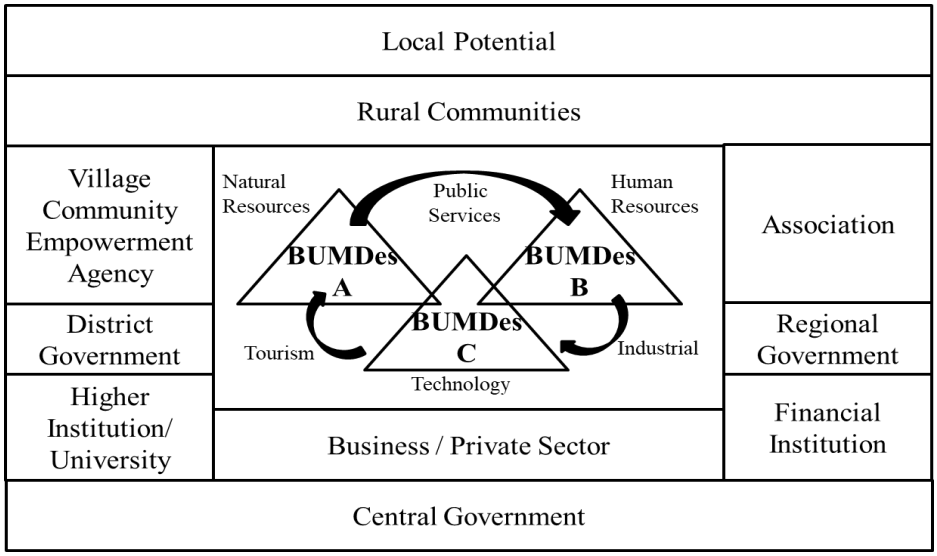

Fig 2. The Conceptual Model of Collaborative Participatory Rural Entrepreneurship of BUMDes

4.4 Discussions

Sustainable entrepreneurship is a key factor to achieve organization's uniqueness and value creation (Raudeliūnienė, 2014). Drucker (2014) stated that the challenge in the sustainability of entrepreneurship is related to one's ability to create something new and innovative. Therefore, the implementation of rural entrepreneurship model can be sustained if the model can manage their local resources and create innovation (Luda, 2011; Ramadani, et al, 2014). The role of active community participation in rural development programs has not yet been measured. Participation is an active role, although it does not always play a direct role in community decisions or affects knowledge of local issues and presence in public meetings, it impacts proposed actions through the individual, group, and community contributions to the economy.

Chitsaz et al. (2019) defined human capital and social capital as significant factors to develop entrepreneurial activities in rural area. Social capital includes networking, trust, cooperation, participation, equality, responsibility and responsive, and commitment and collaboration between community members. While, human capital includes knowledge, skill and self–efficacy. BUMDes has similar characteristics with the concept of ethnic entrepreneurship. Ramadani et al. (2014) described ethnic entrepreneur characteristics such as lower levels of education, strong economic reasons, unique management methods based on their culture and structure of enterprises, less entrepreneurial/ management experience, business supported by informal sources like personal networks and their communities. Finding a third party becomes a solution to deliver benefit for communities. For example, the development of the village's infrastructure requires involvement from different actors so that BUMDes can focus on developing their business. This aims to return the rural initial investment and allocate it as a source of development funds for communities' welfare.

The model pillars in Figure 2 was developed based on the Chatterjee et al. (2017) that defined the growth of entrepreneurship in rural areas are influenced by human quality, financial and physical capital. The model suggests collaboration between Central Government, Provincial Government and Regency Government. Ja'fari, Hoseinzadeh, & Ahmadian (2017) suggested that governments should strengthen their role in entrepreneurship developments. In West Java, the Regency Government does not have a clear controlled and evaluated program to be implemented in each BUMDes. BUMDes is a village business institution managed by the community and village government to strengthen the village economy and build social cohesion of the community, formed based on the needs as well as potential of the village (Sudaryana, 2016). The research suggested that the government

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offers mentoring sessions for entrepreneurship and youth education by university professors. Entrepreneurship growth is also positively influenced by the motivation, socio-cultural and skill factors. Therefore, empowerment programs that consist of those factors should be conducted in the rural area intensively. Azzahra & Dhewanto (2015) suggested training materials for entrepreneurship development program in the rural area need to cultivate entrepreneurial motivation and basic entrepreneurial knowledge.

The proposed model is based on an analysis of case studies from 3 BUMDes in West Java. The uniqueness of the case study approach does not require a large sample. Therefore, this proposed model cannot be generalized. However, this model can be applied to BUMDes in Indonesia which have similar characteristics. The implementation of this model requires intervention from the central government. The central government should use its power to engage major state-owned enterprises to establish small industrial workshops in rural centers (Ja'fari et al, 2017). Therefore, programs for the targeted provincial government should be prepared. By adopting the new model as a strategic model, the implementation could assist BUMDes to achieve the eight goals factors more effectively: improving rural economy growth, opening job opportunity, increasing community income and locally-generated revenue for village's income, optimizing rural assets towards communities welfare, increasing community efforts in managing rural's economic potencies, improving community welfare through public services improvement and rural economic equitability and growth, creating market and network opportunities to support the needs of community services, and developing business plan by cooperate with a third party. The success of BUMDes program does not only affect the community and villages but also affect the national economic growth.

5. Conclusion and Research Implications

This study focused on the rural entrepreneurship case studies of three BUMDEs in West Java Province. The results showed that the performance of BUMDes in three regencies in West Java had been managed appropriate. This study proposes sustainability dimensions to improve the performance of BUMDes so that they can proceed their functions effectively and sustainably. The evaluation results show three sustainability dimensions in rural entrepreneurship performance that must be implemented by BUMDes, namely economic sustainability, social sustainability and market sustainability. As a rural business agency that adopts social entrepreneurship, BUMDes has the disadvantage of synergizing the stakeholders in managing BUMDes. While ideally, BUMDes management is a responsibility that involves the collaboration of stakeholders.

This study proposes a rural entrepreneurship model that involves stakeholder collaboration. This model aims to maintain the sustainability of BUMDes for the rural economy and community growth. The stakeholder collaboration model can be a solution to improve the success of BUMDes performance. We find that each BUMDes has difference potential of local resources. The proposed model suggests BUMDes to find an appropriate approach in managing potential local resources (human, institutional and physical) using stakeholder collaboration. BUMDes need to increase community participation in economic growth in rural areas and must encourage third parties to support BUMDes investments in business and public services. One way is to involve a third party as a resource partner, thus BUMDes will have better access to advance their local resources. BUMDes also needs to expand its market and network. The action needs to be initiated by the provincial or central government to involve BUMDes and stakeholders in creating new market potential.

This novel study implication guide policymakers towards the sustainability of rural entrepreneurship through BUMDes activities. This rural entrepreneurship model considers that the diversity of potential resources in each region is different, so this model is appropriate to be used to explore the potential of local resources in rural areas through the implementation of the BUMDes program.

Limitation in this research is related to time series and research locations; for further study, we suggest doing longitudinal research and expanding research locations on a national scale. The implementation of BUMDes in three areas has not been able to reflect the success of BUMDes performance. The results of this study propose a collaborative model for the development of rural entrepreneurship that can be implemented in other provinces in Indonesia which has similar characteristics to the case studies of this research. In addition, the output of this study can be implemented for similar rural entrepreneurship programs by other developing countries.

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MODERATING EFFECT OF GENDER ON THE OPPORTUNITY RECOGNITION AND ENTREPRENEURIAL INTENTION

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Abstract. This study investigated the relationship between opportunity recognition and entrepreneurial intention at the national level. It hypothesized that the gender equality, measured based on national perceptions of women as human resources, would moderate this relationship. The data of 15 countries from the Global Entrepreneurship Monitor (GEM) and the Gender Gap Index (GGI) of the World Economic Forum (WEF) were used for the analysis. The results showed that opportunity recognition affects entrepreneurial intention. The analysis also suggested that gender had a moderating effect on this relationship, although the size of the gender moderation effect was not directly related to the level of gender inequality in the sampled countries.

Keywords: opportunity recognition; entrepreneurial intention; gender; GEM; APS; GGI

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JEL Classifications: M13, O15, J16

1. Introduction

Recently, many countries have begun promoting entrepreneurship as the key driving force of economic growth (Lumpkin, Dess 1996; Acs 2006; Acs et al. 2018). Encouraging entrepreneurship requires an understanding of the process of starting a business and entrepreneurs' decision-making (Markman et al. 2002). Although previous studies have examined the initial process of founding a business (Gartner 1988; Shane, Venkatamaran 2000; Sutter et al. 2019; Mitra 2020), empirical studies of the early stages of founding a business that include the discovery of opportunities remain scarce (Davidsson, Honig 2003; Gupta et al. 2014).

Opportunities are one of the most important research topics in entrepreneurship. Entrepreneurship behavior is initiated when potential entrepreneurs recognize entrepreneurial opportunities (Wang et al. 2013; Shane, Nicolaou 2015). In the 2000s, researchers emphasized the importance of the opportunities identified by entrepreneurs (Shane, Venkataraman 2000). Since then, researchers have examined where opportunities come from and how they are discovered and used (Foss, Klein 2018; Alvarez, Barney 2019; Shepherd et al. 2019). However, studies

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showing how potential entrepreneurs' perceptions of opportunities affect their entrepreneurship decisions are still lacking (Hill, Birkinshaw 2010; Shane, Nicolaou 2015).

Although the importance of female workers in the national economy has been emphasized in recent years, finding female entrepreneurs remains difficult. Terjesen et al. (2015) found that men and women are not equal competitors in terms of opportunity recognition and resource access, meaning gender can affect the process of starting a business. Recent studies have considered gender equality to be a factor that explains economic differences between countries. Therefore, studying how gender equality affects the start-up process is meaningful. World Economic Forum (2017) suggested that when gender equality is improved or gender differences are reduced, entrepreneurship would be strengthened leading economic ripple effects. The authors are motivated to develop how gender equality engages in the entrepreneurial process in which opportunity recognition leads to entrepreneurial intention. To put in differentially, the study set out to analyze the effects of opportunity recognition on entrepreneurial intentions, and to determine whether gender moderates this relationship.

2. Background

2.1. Entrepreneurial Intention

Kruger et al. (2000) explained that intentions are the single best predictor of any planned behavior, including entrepreneurship. Bird (1988) described entrepreneurial intentions as an attempt to start a business or to create a new value. Schumpeter (1934) defined entrepreneurship as a process and regarded entrepreneurs as innovators who reintegrate resources and disrupt existing approaches by implementing new ones. As such, entrepreneurial intention can be seen as the first step in the process of starting a business and the foundation on which an entrepreneur creates a company (Veciana et al. 2005). Two representative studies of entrepreneurial intention (Shapero 1975; Ajzen 1991) developed seminal models—Shapero's SEE (Start-up Event) and Ajzen's TPB (Theory of Planned Behavior).

2.2. Opportunity Recognition

Opportunity recognition is a cognitive process that involves thinking, creating ideas, and solving problems for start-up businesses (Bird 1988; Ardichvili et al. 2003; Wasdani, Mathew 2014; Shane, Nicolaou 2015). Kirzner (1973) defined opportunity as the possibility of creatively combining resources and creating value to meet market demands. Similarly, Shane (2003) described entrepreneurship as the process of finding and organizing opportunities. Meanwhile, entrepreneurship research has shown that interest in discovering and exploiting opportunities has been increasing (Alvarez, Barney 2019; Foss, Klein 2018). Moreover, some studies have found connections between people who want to be entrepreneurs and valuable entrepreneurial opportunities (Venkataraman 1997; Shane, Venkataraman 2000; Cantner et al. 2020).

2.3. Gender Differences

Gender in entrepreneurship has been loosely studied through the lens of human resources (Gupta et al. 2014). However, interest in and studies of women's entrepreneurship and entrepreneurship-related gender differences have increased in recent years. Studies explaining gender differences in entrepreneurship have highlighted the formation of gender stereotypes from gender role expectations (Eagly 1987; Burgess, Borgida 1999). Gender and social roles are generated by countries' cultural values (De Vita et al. 2014; Kong Hye-won 2018). Women tend not to choose entrepreneurial careers because entrepreneurship is generally regarded as a field for men (Thébaud 2015). Thus, attitudes toward entrepreneurial intentions can be more positive for men than for women. Despite progress in recent years, gender differences in entrepreneurial activity still remain (Hechavarría et al. 2018; Boudreaux, Nikolaev 2019). And some studies have also found that men have higher entrepreneurial intentions than women (Zhao et al. 2005; Westhead, Solsvik 2016).

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2.4. Gender Equality

Gender equality exists when one's gender has no impact on the social opportunities and life possibilities one can access. Seguino (2000) found a positive correlation between gender equality and economic growth. Klasen (2000) also found that gender inequalities in education and employment could slow economic growth. Meanwhile, the World Economic Forum reported that female workforces are important for sustainable economic growth. The GGI (Gender Gap Index) of the WEF (World Economic Forum) used in this study (WEF 2017) focuses on the development of female workforces for economic growth and consists of male-to-female ratios. The GGI is located between 0 and 1, with higher values indicating higher levels of gender equality.

3. Research Design

3.1. Hypothesis

3.1.1. Relationship between Opportunity Recognition and Entrepreneurial Intention

Opportunity recognition is a key factor in increasing the feasibility of starting a business (Bird, 1988; Ardichvili et al., 2003). The discovery and recognition of opportunities fuels entrepreneurial intentions, which critically affect decisions to start businesses (Hill, Birkinshaw 2010; Wasdani, Mathew 2014; Shane, Nicolaou 2015). Krueger (2009) found that perceived opportunities raise entrepreneurial intentions. Therefore, this study hypothesized that opportunity recognition will influence entrepreneurial intention.

Hypothesis 1. Opportunity recognition will positively (+) affect entrepreneurial intention.

3.1.2. Gender Moderating Effect

Fewer women participate in entrepreneurship than men in almost all countries, indicating that women's entrepreneurial intentions are relatively low (Arenius, Minniti 2005; De Bruin et al. 2006; Kelley et al. 2012).
Douglas, Shepherd (2002) reported that women showed higher risk aversion and lower independence than men. Walter, Dohse (2012) found that women were influenced by the contexts of their countries and societies. A few more studies also suggest the causes of gender differences in entrepreneurial intentions. De Vita et al. (2014) found that perceptions of social gender roles differ based on countries' cultural values. Burgess, Borgida (1999) likewise noted that gender stereotypes are shaped by differences in cultural values and gender role expectations in different countries.

Therefore, this study hypothesized that gender will moderate the relationship between opportunity recognition and entrepreneurial intention

Hypothesis 2. The relationship between opportunity recognition and entrepreneurial intention will be weaker for women.

3.1.3. Relationship between the Gender Equality Level by Country and the Gender Moderating Effect Size by Country

Hypothesis 3 tests the relationship between gender equality level and the effect size of gender moderation on opportunity recognition and entrepreneurial intention in different countries. In the 2000s, some scholars argued that gender equality was an important factor in promoting economic growth (Lofstrom 2001; Esteve-Volart 2004). In addition, the WEF (2017) found that improving gender equality narrows gender gaps, thereby increasing economic ripple effects. Thus, if the extent of the effect of gender on the relationship between opportunity recognition and entrepreneurial intention differs between countries, is the difference related to countries' levels of gender equality? This study hypothesized that if the level of gender equality in a given country is low, the relationship between women's opportunity recognition and entrepreneurial intentions will be weakened, and the country's gender moderating effect size will increase.

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Hypothesis 3. A country's gender equality level will have a negative relationship with the magnitude of the gender moderating effect size in said country. Researc model is presented in figure 1 below.

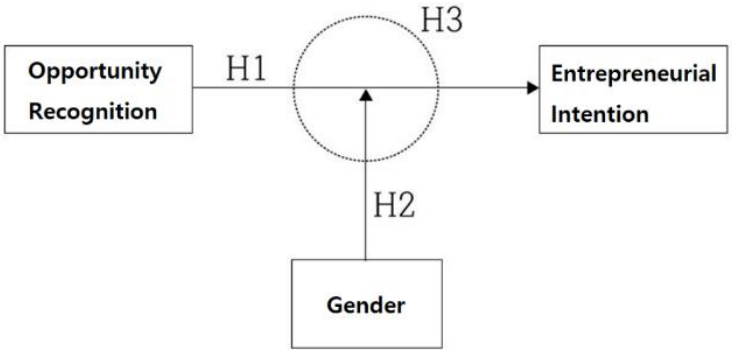

Figure 1. Research Model

4. Methodology

4.1. Data Collection and Sample Characteristics

4.1.1. Sample

This study used data from the 2017 GEM and the 2017 GGI (Gender Gap Index) of the WEF (World Economic Forum). The GEM is a survey conducted in about 50 countries annually, to analyze the relationship between entrepreneurship and national economic growth. The analyzed countries were selected based on two criteria: first, they had to be among the top 40 OECD countries for three consecutive years as of 2017; and second, they had to have participated in the GEM for three consecutive years. The control variables include age and family numbers (at the individual level) and the social status of entrepreneurs as a good career choice (at the national level)

4.1.2. Characteristics of the Sample

Table 1. Demographic Characteristics of the Sample

Variables	Factors	Frequency (No. of People)	Percentage (%)	Male (%)	Female (%)
Country	United States	1718	5.5	839(48.8)	879(51.2)
	Netherlands	1426	4.6	759(53.2)	667(46.8)
	France	1590	5.1	770(48.4)	820(51.6)
	Switzerland	1417	4.6	738(52.1)	679(47.9)
	Sweden	1430	4.6	758(53.0)	672(47.0)
	Poland	1029	3.3	591(57.4)	438(42.6)
	Chile	2998	9.7	1440(48.0)	1558(52.0)
	Australia	7627	24.6	3907(51.2)	3720(48.8)
	Japan	1229	4.0	700(57.0)	529(43.0)
	South Korea	1669	5.4	847(50.7)	822(49.3)
	China	3240	10.4	1627(50.2)	1613(49.8)
	India	2832	9.1	1578(55.7)	1254(44.3)
	Luxembourg	684	2.2	346(50.6)	338(49.4)
	Ireland	1323	4.3	676(51.1)	647(48.9)
	Israel	826	2.7	404(48.9)	422(51.1)

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	Sub Total	31038	100	15980(51.0)	15058(49.0)
Gender	Male	15980	51		
	Female	15058	49		
Age	Mean	42.27			
	S.D	13.56			
Number of Family	Mean	3.61			
	S.D	1.51			
Entrepreneurship as a good career choice	No	11297	36		
	Yes	20083	64		
Social status of entrepreneurs	No	10014	32		
	Yes	21024	68		
	Total	31038	100		

The table 1 above shows the results of a frequency analysis of the general characteristics of the study subjects. Looking at the countries first, the US accounted for 5.5% (1718) of the sample, the Netherlands for 4.6% (1426), France for 5.1% (1590), Italy for 4.6% (1417), Switzerland for 4.6% (1430), Sweden for 3.3% (1029), Poland for 9.7% (2998), Chile for 24.6% (7627), Japan for 4.0% (1229), Korea for 5.4% (1669), China for 10.4% (3240), India for 9.1% (2832), Luxemburg for 2.2% (684), Ireland for 4.3% (1323) and Israel for 2.7% (826). Meanwhile, 51% (15980) of the study subjects were male and 49% (15058) were female. The mean age was 42.27 (SD = 13.56) and the average family size was 3.61 (SD = 1.508). Next, 46% (20083) viewed entrepreneurship as a good career choice and 36% (11297) held the opposite view.

4.2. Feasibility and Reliability Analysis of Measuring Tools

4.2.1. Feasibility and Reliability Analysis of Opportunity Recognition and Entrepreneurial Intention
Reliability analyses confirm whether survey respondents' responses provide accurate and consistent measures of a concept. The confidence value for opportunity recognition was .708, which shows a high level of confidence. Next, the reliability value for entrepreneurial intention was .811, which shows a high level of reliability.

4.2.2. Descriptive Statistics and Correlation Analysis

Table 2. Technical Statistics Analysis of Opportunity Recognition and Entrepreneurial Intention

	N	Min	Max	Mean	Std. deviation	skewness	kurtosis
Opportunity Recognition	31038	0	3	1.369	1.009	.134	-1.079
Entrepreneurial Intention	31038	0	3	.454	.757	1.612	1.795

Descriptive statistical analysis was conducted to determine the descriptive statistical values of the variables. As Table 2 shows, the mean opportunity recognition value was 1.37 and the standard deviation was 1.01. Meanwhile, the mean entrepreneurial intention value was .46 and the S.D was .76.

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Table 3. Correlation Between Major Variables

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
GENDER(1)	1						
AGE(2)	.022**	1					
HHSIZE(3)	.011	-.203**	1				
NBGOODC(4)	-.001	.023**	.029**	1			
EQUALINC(5)	-.014*	-.002	-.007	.233**	1		
Opportunity Recognition(6)	-.088**	.011	.004	.186**	.131**	1	
Entrepreneurial Intention(7)	-.098**	-.149**	.114**	.086**	.039**	.247**	1

N=31038
Gender(0=Male, 1=Female), Age(years old), Number of Family(people), Entrepreneur as a good career choice, Social status of entrepreneurs
*p<.05, **p<.01

Table 3 shows the results of the analysis of the relationship between opportunity recognition and entrepreneurial intention, showing the degree of linear relationship between the variables. First, the analysis showed a positive correlation of .247 (p<.01) between opportunity recognition and entrepreneurial intention. The higher the opportunity recognition, number of families, entrepreneur as a good career choice, and the social status of the entrepreneur, the higher the entrepreneurial intention will be. On the other hand, the entrepreneurial intentions decreased for older women. This is consistent with the previous studies as introduced in 2.3 and 2.4.

4.4. Hierarchical Regression

4.4.1. Regression Analysis

A hierarchical regression analysis was conducted to determine whether gender affected the relationship between opportunity recognition and entrepreneurial intention (Table 4).

Table 4. Hierarchical Regression Results (All)

DV	Stages	IV	β	t	VIF	DW	R^2	F
Entrepreneurial Intention	1	AGE	-.007	-24.373**	1.044	1.145	.090	597.185**
		HHSIZE	.040	14.833**	1.045			
		NBGOODC	.070	7.713**	1.084			
		EQUALINC	-.001	-.156	1.064			
		Opportunity Recognition(A)	.176	41.661**	1.043			
	2	AGE	-.007	-24.096**	1.045		.095	174.519**
		HHSIZE	.040	15.089**	1.045			
		NBGOODC	.071	7.923**	1.084			
		EQUALINC	-.002	-.227	1.064			
		Opportunity Recognition	.171	40.380**	1.052			
		GENDER(B)	-.110	-13.211**	1.010			
	3	AGE	-.007	-24.128**	1.045		.096	14.110**
		HHSIZE	.040	15.097**	1.045			
		NBGOODC	.072	7.951**	1.084			
		EQUALINC	-.003	-.287	1.064			
		Opportunity Recognition(A)	.179	37.669**	1.327			
		GENDER(B)	-.111	-13.248**	1.010			
		(A)×(B)	-.031	-3.756**	1.276			

*p<.05, **p<.01, Country = All

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The analysis results showed that the explanatory power in the first stage of the model with opportunity recognition was 9.0%, and the explanatory power in the second stage with gender increased by 0.5% (.005) to 9.5%. The gender, along with control variables, had a significant influence a statistically significant influence ($p < .05$) on entrepreneurial intention. When the interaction term (opportunity recognition × gender) was added, the explanatory power increased by 0.1% to 9.6%, a statistically significant increase ($p<.05$). This suggests that gender moderates the impact of opportunity recognition on entrepreneurial intention.

4.4.2. Regression Analysis for each country

Table 5 illustrates compares the change in R^2 between 2nd and 3rd stages of hierarchical regression analysis for each country. It is to determine whether the impacts of gender between opportunity recognition on entrepreneurial intention differs vary across by 15 sampled countries.

Table 5. Hierarchical Regression Analyses Results (all individual countries, 3 stages)

Country	Variables Interaction terms (stage 3rd)	β	t	ΔR^2 (L 2→3)	R^2	F
United States	Opportunity Recognition X Gender	-.060	-1.563	.001	.094	24.281
Netherlands	Opportunity Recognition X Gender	.044	1.444	.001	.095	21.124
France	Opportunity Recognition X Gender	-.051	-1.744	.002	.156	41.533
Switzerland	Opportunity Recognition X Gender	-.148	-4.295**	.011	.143	32.954
Sweden	Opportunity Recognition X Gender	-.076	-2.621**	.004	.088	19.569
Poland	Opportunity Recognition X Gender	.008	.203	.000	.064	9.800
Chile	Opportunity Recognition X Gender	-.044	-2.211*	.002	.038	14.642
Australia	Opportunity Recognition X Gender	.021	1.084	.001	.105	124.988
Japan	Opportunity Recognition X Gender	-.175	-3.415**	.008	.182	37.177
South Korea	Opportunity Recognition X Gender	-.049	-1.306	.001	.114	30.310
China	Opportunity Recognition X Gender	.007	.241	.000	.245	148.170
India	Opportunity Recognition X Gender	-.090	-3.074**	.003	.128	57.752
Luxembourg	Opportunity Recognition X Gender	-.099	-1.734	.004	.128	13.993
Ireland	Opportunity Recognition X Gender	-.053	-1.285	.001	.122	25.385
Israel	Opportunity Recognition X Gender	.082	1.391	.002	.027	3.203
*p<.05, **p<.01, Country = All						

The analyses showed no statistically significant increases in explanatory power in the 2nd and 3rd stages for 10 countries—the United States, the Netherlands, France, Sweden, Chile, South Korea, China, Luxembourg, Ireland, and Israel. However, it showed statistically significant increases in explanatory power in the 2nd and 3rd stages for the remaining 5 countries—Italy, Switzerland, Poland, Japan, and India.

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4.5. Post Hoc Analysis: T test

Table 6. Post-hoc Analysis Independent Sample T-Test Results

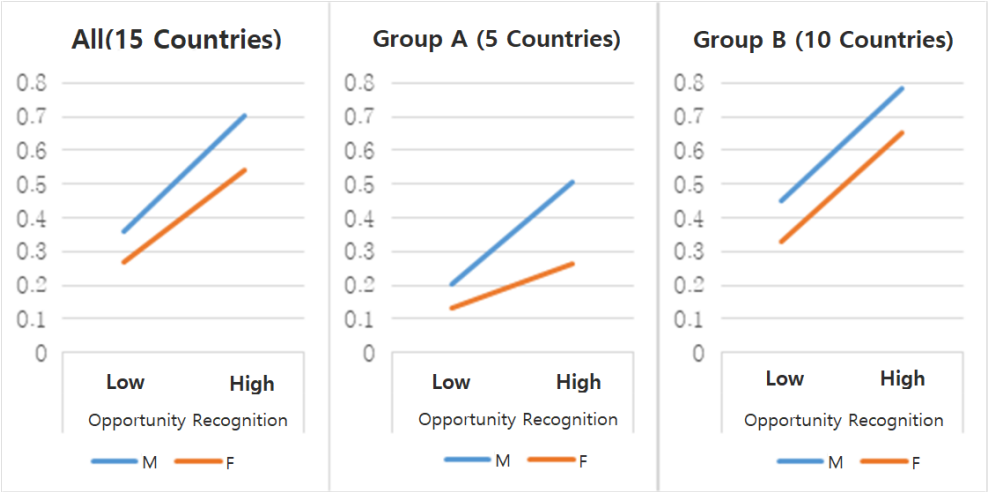
Factors	Mean		SD		t	p
	Gender Moderating Effect		Gender Moderating Effect			
	Significant (5 countries, n = 9906)	Not significant (10 countries, n = 21132)	Significant (5 countries, n = 9906)	Not significant (10 countries, n = 21132)		
O.R	1.289	1.405	1.048	.988	9.287	.000**
E.I	.258	.539	.637	.788	31.108	.000**
Gender	.467	.489	.499	.549	-2.768	.006**

*p<.05, **p<.01
O.R =Opportunity recognition, E.I=Entrepreneurial Intention

- Countries with significant gender control effects (5): Italy, Switzerland, Poland, Japan, India
- Countries with no significant gender control effects (10): United States, Netherlands, France, Sweden, Chile, Korea, China, Luxembourg, Ireland, Israel

Presenting the results of a t-test of the gender control effects in the 15 sampled countries, Table 6 highlights the statistical significance of the difference between the two groups of countries.

The mean of opportunity recognition of Group A (defined as the group of countries with gender moderation) was 1.29 and that of Group B (defined as the group of countries without gender moderation) was 1.40. The difference was .29, which is statistically significant (t = 9.29, p <.01). In addition, the mean of entrepreneurial intention of Group A was .26 and that of Group B was .54. The difference was 0.28, again statistically significant (t = 31.11, p <. 01).



X-axis: Opportunity Recognition, Y-axis: Entrepreneurial Intention

- Group A: Countries with significant gender control effects (Italy, Switzerland, Poland, Japan, India)
- Group B: Countries with no significant gender control effects (the United States, Netherlands, France, Sweden, Chile, South Korea, China, Luxembourg, Ireland, Israel)

Figure 2. Gender Moderating Effects on Opportunity Recognition and Entrepreneurial Intention

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Figure 2 illustrates the moderating effect of gender on opportunity recognition (x-axis) and entrepreneurial intention (y-axis). In all countries, men had higher opportunity recognition, higher entrepreneurial intention by opportunity recognition, and gender control effects. Group A—Italy, Switzerland, Poland, Japan, and India—had relatively lower opportunity recognition and entrepreneurial intention than the other group, and gender moderating effect for women.
On the other hand, Group B—the United States, the Netherlands, France, Sweden, Chile, South Korea, China, Luxembourg, Ireland, and Israel—had higher levels of opportunity recognition and entrepreneurial intention than Group A. In these countries, men had higher opportunity recognition and entrepreneurial intentions than women, but the gender moderating effect is not statistically significant.

4.6. Correlation Analysis of Gender Moderating Effect Size and the Gender Gap Index

Pearson correlation analysis was used to determine the correlation between the effect size of gender moderation and the Gender Gap Index (GGI). If a gender moderating effect exists, the relationship between opportunity recognition and entrepreneurial intention will be weakened for women relative to men. This study attempted to find whether this gender moderating effects correlate the gender equality levels in each country, as measured by GGI.

To compare the gender moderating effect size, as discussed above, the effect size analysis developed by Cohen (1992) was used. Cohen's f^2 refers to the effect size normalized to the stated variance (R^2) ratio for the variance($1-R^2$) (Cohen 1988).

$$\text{cohen's } f^2 = \frac{R^2}{1-R^2}$$

Table 7. Gender Moderating Effect Size and the WEF GGI

Country	GEM APS (2017)		WEF GGI (2017)				
	R^2	Cohen's f^2	GGI	Economic Participation and Opportunity	Educational Attainment	Health and Survival	Political Empowerment
United States	.094	.104	.718	.776	1	.973	.124
Netherlands	.095	.105	.737	.657	1	.970	.323
France	.156	.185	.778	.683	1	.977	.453
Switzerland	.143	.167	.692	.571	.995	.967	.234
Sweden	.088	.096	.755	.743	.993	.972	.314
Poland	.064	.068	.816	.809	.999	.969	.486
Chile	.038	.040	.728	.702	1	.980	.230
Australia	.105	.117	.704	.573	.999	.978	.266
Japan	.182	.222	.657	.58	.991	.980	.078
South Korea	.114	.129	.650	.533	.960	.973	.134
China	.245	.325	.674	.654	.963	.918	.160
India	.128	.147	.669	.376	.952	.942	.407
Luxembourg	.128	.147	.706	.667	1	.973	.184
Ireland	.122	.139	.794	.710	1	.971	.493
Israel	.027	.028	.721	.681	1	.971	.232

Cohen's f^2 (the gender moderating effect size) = $R^2/(1-R^2)$

GGI = (Economic Participation and Opportunity + Educational Attainment + Health and Survival + Political Empowerment)/1

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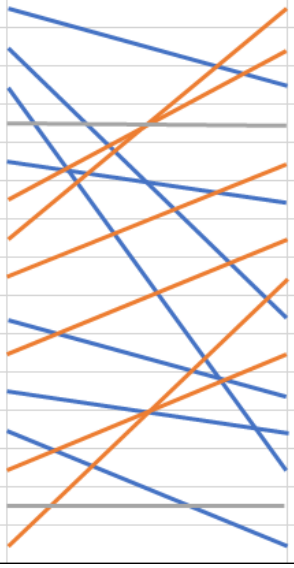
Table 7 and Figure 3 show the gender-regulated effect sizes (Cohen's f^2 value) by country as well as the GGI of the WEF (World Economic Forum). The correlations between the country indexes were not statistically significant.

WEF GGI 1)			GEM APS 2)		
RANK	COUNTRY	GGI	RANK	COUNTRY	Cohen's f square
1	Sweden	.816	1	Israel	.028
2	Ireland	.794	2	Poland	.040
3	France	.778	3	Sweden	.068
4	Switzerland	.755	4	Switzerland	.096
5	Netherlands	.737	5	Unitetd States	.104
6	Poland	.728	6	Netherlands	.105
7	Israel	.721	7	Chile	.117
8	Unitetd States	.718	8	South Korea	.129
9	Luxembourg	.706	9	Ireland	.139
10	Chile	.704	10	India	.147
11	Italy	.692	11	Luxembourg	.147
12	China	.674	12	Italy	.167
13	India	.669	13	France	.185
14	Japan	.657	14	Japan	.222
15	South Korea	.650	15	China	.325



1) WEF GGI: Sort by high gender equality (high gender gap index)
2) GEM APS: Sort by high gender equality (low gender moderating effect size)

Figure 3. Size and Ranking of GGI and Gender Moderating Effect Size

5. Results

The results of analysis can be summarized as follows. First, opportunity recognition had a positive (+) effect on entrepreneurial intention. Just as Krueger et al. (2000) argued that perceived opportunities increased entrepreneurial intentions, this study found that opportunity recognition had a positive (+) effect on entrepreneurial intention. Second, the analysis of the moderating effects of gender showed that the relationship between opportunity recognition and entrepreneurial intention was weaker for women. In addition, this study revealed between-country differences. The statistical significance of the differences between the two country groups may be attributed to cultural values or gender role expectations. De Vita et al. (2014) found that perceptions of social gender roles depend on countries' cultural values. For example, India is a society in which women's perceived opportunities and entrepreneurial intentions are lower than men's because gender inequality and conservative social practices prevail (Cho, 2011). Meanwhile, a study by Burgess, Borgida (1999) reported that gender stereotypes form from gender role expectations. Lee (2019), for example, argued that the gender stereotypes in Japan have influenced Japanese women's opportunity recognition and entrepreneurial intentions. That study inferred that perceptions of women's gender roles formed gender stereotypes under the influence of Japan's childbirth promotion policy and the male livelihood model.

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Third, the gender equality level of the WEF GGI did not affect the gender moderating effect size calculated through the GEM. It can be inferred that the cause of the index is different from that of information. The WEF GGI is an indicator of women's development. It also focuses on gender gaps in four limited areas (economic participation and opportunity, educational attainment, health and survival, political empowerment). In other words, the factors affecting the strength of the effect of gender moderation calculated through the GEM are different from the four GGI perspectives and the nature of the information contained in the data may not be relevant.

6. Conclusions

This study confirmed the relationship between opportunity recognition and entrepreneurial intention. The analysis also showed that opportunity recognition and entrepreneurial intentions were weaker for women than men and measured the effect of gender moderation, however, it found no gender moderation effects in 10 of the 15 surveyed countries. In these 10 countries, women's opportunity recognition and entrepreneurial intentions were higher on average than in the other 5 countries. Finally, the analysis confirmed that there was no correlation between the gender moderation effects and the WEF GGI. The study thus confirmed the degree of female workers' participation in start-ups in each country.

6.1. Implications and Contribution

Taken together, these findings have three important implications related to levels of opportunity recognition, entrepreneurial intention, and the use of female human resources. First, the findings of this study highlight the importance—both practically and academically—of paying attention to the process of opportunity formation and utilization in the early stages of the start-up process. Recently, entrepreneurship has emerged as a new growth engine due to global economic slowdown. This study contributes to establishing a basis to support the fact that raising the level of opportunity recognition can strengthen entrepreneurship and lead to starting a business (Hill, Birkinshaw 2010; Wasdani, Mathew 2014; Shane, Nicolaou 2015). Second, this study provides a basis for justifying national policies related to the utilization of all human resources. It suggested that countries' cultural and social environments influence the effects of gender regulation on the relationship between opportunity recognition and entrepreneurial intention. This study also contributes to improve the level of gender equality in order to encourage entrepreneurship. Lastly, this study provides new insights about women and start-ups using country-specific data from start-ups' early stages. It has the academic value of examining the female entrepreneurship, a field that has, to this point, received scant attention. Another contribution of this study is that GEM APS and the WEF GGI were first used in the study of entrerpreneurship. Although the gender equality has been emphasized in economic perspective as well as other societal perspective, the mechanism studies are not very plentiful. Especially, in the area of entrepreneurship, the studies linking the gender equality and entrepreneurial outcomes are very rare. This study may contribute to open the discussion.

6.2. Limitations of Research and Future Directions

This study had three limitations, which highlight areas that require further study. First, the number of countries studied was limited. This article examined the relationship between (1) opportunity perception and entrepreneurial intention and (2) the level of gender equality in the utilization of female human resources through limited secondary data. Future studies should include more countries with a wider variety of conditions. Second, this study was conducted with opportunity recognition as the sole independent variable among the factors that influence entrepreneurial intention. Follow-up studies should consider the various variables suggested by Ajzen's TPB or Shapero's SEE. Third, certain control variables were excluded from this study's analyses. Indeed, the personal- and social-level variables used in this study's analyses were by no means comprehensive. Future analyses of variables affecting entrepreneurial intention would be more meaningful if they included additional control variables such as children's status, education level, and salary.

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INTANGIBLE RESOURCES FOR AN ORGANIZATION'S SUSTAINABILITY POTENTIAL

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Abstract. The purpose of this paper is to develop and investigate the relationship between intangible resources such as employee relationships and workplace collaboration in building sustainability potential. A research model and hypotheses were constructed on the grounds of Resource-based-view Theory (RBV) and Cooperation theory (CT). The data was obtained from 175 employees' from the telecommunications sector in Poland. The results were used to carry out a two-step structural equation modelling analysis, including confirmatory analysis and verification of the hypothesized relationship. The findings indicate that there is a linkage between intangible resources such as employee relationships and sustainability potential. Additionally, the results imply that workplace collaboration impacts the development of sustainability potential. Furthermore, collaboration strengthens the explicit knowledge flow within organizations. This research demonstrated the importance of employee relationships as a key component of organizational sustainability. Collaboration is positively related to explicit knowledge transfer. Managers should promote positive employee relationships in order to enhance the organization's sustainability potential.

Keywords: Intangible resources; resource-based-view theory; employee relationships; cooperation theory; sustainability potential

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1. Introduction

Sustainability is a key characteristic that helps organizations to gain a competitive advantage in a volatile, uncertain, complex and ambiguous (VUCA) environment. A potential for sustainability provides an organization with a flexibility and resilience to react and adjust to a changeable economy. To address the ongoing pressure, organizations need to attain sustainability (Wijethilake, Ekanayake 2018). The proper identification of the sources facilitating sustainability potential are essential for companies' successful adaptation to a changeable environment. According to the resource-based-view theory (RBV), the strength of an organization lies in its internal resources (Wright et al. 2001). The RBV highlights the impact the internal organization's resources have

on companies' output (Chen et al. 2017). Thus, this paper emphasizes the role of core resources in enhancing the organization's sustainability potential. RBV theory indicates that there is a linkage between the organization's internal resources and the development of sustainable competitive advantage (Barney et al. 2011). Moreover, RBV theory focuses on non-observant factors in the development of organizational potential (Won, Chelladurai 2016). Furthermore, it has been acknowledged that especially intangible resources such as employee relationships (ER) contribute to the organization's performance (Campbell, Park 2017).

ER can be defined as a positive relationship between individuals in an organization (Asghar et al. 2016), based on values, participation in decision making and the sense of community in the organization, as well as team cohesiveness (Blyton, Turnbull 1998). ER focus on a mutual respect and power balance within organizations (Li 2018). Positive ER result from an egalitarian structure, high involvement and decision making (De Massis et al. 2018). Hence, the sense of community and participation in decision making processes are good indicators of ER.
Numerous studies confirm that intangible resources are playing important role in developing an organization's sustainability potential (Pearson et al. 2015; Khan et al. 2019, Won, Chelladurai 2016). Especially human resources, such as ER, support an organization's ability to adjust and sustain in the long term (Wright et al. 2001; de Souza Freitas et al. 2011; Černevičiūtė, Strazdas 2018). Thus, to leverage the sustainability potential, managers must improve ER and focus on strategies strengthening the human factor in organizations (Kim, Bae 2004). For instance, Nawaz and Koç (2019) claim that organizational sustainability is linked to ER. Therefore sustainable human resource management (HRM) facilities the development of intangible resources such as ER and collaboration (Clipa et al. 2019; Bulińska-Stangrecka, Bagienska 2019). Moreover, human resources are indicated as an essential component in building organizational sustainability (Stankevičiūtė, Savanevičienė 2018). However, the relationship between ER and sustainability potential has not been empirically explored in literature. There are theoretical papers introducing the convergence of ER and sustainability potential (Stankevičiūtė, Savanevičienė 2018) yet this lacks empirical validation. Additionally, some studies analyse sustainable ER and it's impact on employees' satisfaction in the long-term. However, to the best of our knowledge, there is no research verifying how improving ER and collaboration will influence an organization's sustainability potential. This paper addresses this research gap, by providing empirical evidence of the relationship between ER, workplace collaboration and an organization's sustainability potential.

Consequently, this research seeks to contribute to the existing literature by investigating the relationship between sustainability potential and ER and workplace collaboration. Additionally it discusses the consequences of this linkage on explicit knowledge sharing practices, which strengthens the capability to transfer and refine knowledge in organizations (Pop et al. 2015). It builds on previous studies which emphasize the importance of sustainable competitive advantage and intangible resources. On the basis of RBV, this study indicates the significance of human resources (such as ER and collaboration) in developing sustainability. Next, it uses Cooperation Theory (CT) as a reference point to explain the connection between ER, workplace collaboration and an organization's sustainability potential and explicit knowledge transfer. This paper aims to develop a new research model and to analyse the relationship between the discussed variables. Further, the purpose of this paper is to answer the following research question:
Do the ER and workplace collaboration have an impact on an organization's sustainability potential?
This study discloses the issue of the role of intangible resources such as core components facilitating organizational sustainability.
The remainder of this paper is organized as follows: first the literature review is presented, followed by the hypothesis development. Then the research methodology is presented. Further, the research results are exhibited and discussed. Finally the contributions and limitations are described.

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2. Literature review and Hypothesis development

2.1. Employees' relationships as a factor affecting collaboration in organizations

Under RBV theory, intangible resources strengthen organization performance (Monteiro et al. 2017; Franca, Dua 2018; Kamasak 2017). Intangible resources are defined as rare and valuable assets that lead to competitive advantage, which, if able to withstand in the long term, became a sustainable competitive advantage (Kristandl, Bontis 2007). They are usually described as a core component contributing to an organization's success, yet are not recognized by traditional financial statements (Castilla-Polo, Gallardo-Vázquez 2016). The critical importance of intangible resources refers to it's scarcity and difficulty to imitate by competitors. Furthermore, they are not available to large numbers of firms (Kristandl, Bontis 2007). For instance, Okpara, (2015) confirms on the basis of empirical analysis that indeed intangible resources such as culture, knowledge and management support a firm's sustainable competitive advantage and performance. Further, Ying, Hassan and Ahmad (2019) proved that intangible assets boost the organizational ability to acquire external, valuable resources. Indeed, Fazlagić and Skikiewicz (2019) point out that the main danger to the sustainability of an organization is a scarcity of intangible resources. Hence, the RBV theory considers intangible assets as an essential component of a firm's sustainable competitive advantage.

RBV theory assumes that competitive advantage is inconstant, therefore the main goal of organizations is oriented toward acquisition and the creation of unique strategic resources, which are hard to imitate (Barney et al. 2011). In particular, various resources will lead to competitive advantages and, consequently, improved organization performance. An effective and creative usage, development and merging of organizational resources, in alignment with an enterprise's objectives, helps firms to achieve a competitive advantage (Volberda, Karali 2015; Burvil et. al. 2018). Intangible resources (such as relationships, collaboration and knowledge) differ from tangible resources because they cannot be purchased. It is necessary for a manager to implement practices to develop intangible resources, so their strategic potential will increase. Hence, the competitive value of an organization is inevitably associated with the management of its intangible resources (Nason, Wiklund 2018).

The human, relational and informational resources are listed as a core example of intangible resources (Monteiro et al. 2017; Liu et al. 2019). Especially, human and relational resources play a pivotal role in developing the organization's sustainable competitive advantage (Wright et al. 2001).

Generally, ER are considered to be the main responsibility of HRM functions within organizations (Blyton, Turnbull 1998). ER are recognized as a factor in shaping employee satisfaction and intention to stay (Abugre 2017). The notion of ER refers to the positive relationship between two or more individuals involved in a mutual relationship within the social and authority dimensions within an organizational context (Asghar et al. 2016). Moreover, ER in the wider sense concerns the way in which employers relate to employees (Armstrong 2006). ER concerns the quality of interaction between employees and between employees and managers (Blyton, Turnbull, 1998). ER manifests itself in employee participation in decision making processes, a high quality of interactions and a sense of community within organizations (De Massis et al. 2018). These three factors can indicate high quality ER.

Research confirms that ER impacts organizational performance (Worlu et al. 2016; Samwell 2018) and innovation (Brander, Zhang 2016). Additionally good ER strengthens employees' learning capability (Kooij et al. 2011). ER aims to build a harmonious relationship in the workplace (Anggraeni 2018). Further, it helps to develop work engagement (Conway et al. 2015; Kwon et al. 2016; Sahoo, Sahoo 2018). High quality ER are associated with higher employee productivity (Tansel, Gazîoğlu 2014). The role of ER in enhancing work task completion has been acknowledged (Chen et al. 2016). Well developed ER provides a nurturing environment for creating

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organizational effectiveness. Next, the empirical findings from Denmark support the link between ER and external collaboration between firms and universities (Østergaard, Drejer 2017). However, there is no empirical evidence regarding the internal dependency between ER and collaboration in organizations. Referring to the RBV theory, this study anticipates that the improvement of ER as an element of core intangible resources will lead to the enhancement of the effectiveness of the workplace collaboration. Therefore, this study assumes that there is a linkage between ER and collaboration. Hence the hypothesis:

H1. Employee relationships are positively related to workplace collaboration.

2.2. Workplace collaboration and organizations' sustainability potential

The main challenge for current managers refers to the straightening of an organization's capability to adjust to constant changes and adapt to new market condition and requirements. Scholars highlight that organizations which are able to work out and implement corporate strategies embedded in sustainable development became strategic leaders in the contemporary economy (Benn et al. 2014, Baumgartner, Rauter 2017). Furthermore, sustainability potential may increase an organization's competitive advantage (da Silva Batista, de Francisco 2018; Cantele, Zardini 2018; Lin et al. 2018).

Sustainable organizations are characterized by balanced development, fair and transparent rules and norms guiding both managers and employee behaviour oriented towards long-term sustainable resource management (Medne, Lapina 2019). Additonally, Benn, Edwards and Williams (2014) define a sustainable organization as a corporation which incorporates sustainable principles into its strategy and operation, while implementing sustainable values in society.

In an organizational context, competitive advantage evolves through the continued management of key resources (Kristandl, Bontis 2007), and an agile adjustment to changeable and volatile market requirements (Nijssen, Paauwe 2012; Cummins 2017). Sustainability and agility are considered as complementary concepts that support current managers in pursuing business goals (Obramović et. al. 2019)**.** Strategic resources are usually embedded in unique practices which have evolved in time (Barney, 1991; Chen et al. 2010).

Business strategy and its implementation may lead to opposite outcomes. Therefore, sustainability potential helps managers to maintain valuable results. The sustainability potential in an organization comes from both the resources used (Moloy et al. 2011), and dynamic business models embedded in sustainable development (Consenz et al. 2019). The latest research confirms that versatile resources enhance flexibility in adjusting to a volatile business environment (Tehseen et. al. 2019; Nason, Wiklund 2018; Klier et. al. 2017). Effective management of an organization's sustainable development is based on a comprehension of organizational resources and their contribution (Ferreira, Fernandes 2017).

Human resource management is extensively recognized as central to sustainable development (Macke, Genari 2019; Bombiak, Marciniuk-Kluska 2018; Pellegrini et al. 2018). Sustainable human resource development is oriented toward the on-going support of human capital in organizations (van Dam et al. 2017). Hence, human resources contribute to the intangible development of the organization and the creation of a long-term competitive advantage.
Organizations' sustainability potential can be defined as the organizational capability for an agile adjustment to the changeable economic environment through the sustainable use of both tangible and intangible resources in order to develop constant competitive advantage.

Workplace collaboration plays a pivotal role in sustainable human resource management (Stankevičiūtė, Savanevičienė 2018). The critical importance of collaboration in developing sustainability potential has been

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established (Caniglia et al. 2018). Collaboration facilities productivity, especially in relation to complex work tasks which require coordination (Tjosvold, Yu 2004; Jasińska 2019). Positive relationships and workplace collaboration are regarded as intangible and long-lasting assets which increase the likelihood of achieving an competitive advantage in a given organization (Ahmad 2015).

In an organizational context, CT was first established by Deutsch (1949), and later developed simultaneously by Tjosvold (1984,1998) and by Johnson &Johnson (1989, 1999). The implications of CT reinforce managerial understanding of the essence of the relationships in a work group, problem solving methods (West et al. 2003), and the ways of mutual support between organization members oriented towards the improved effectiveness of workplace collaboration (Tjosvold, Johnson 2000). CT highlights the relationship between goals and behaviours in the workplace. The theory indicates that positively related goals strengthens employees' involvement and encourages mutual support and in consequence leads to better results and improved effectiveness (Tjosvold, Yu 2004). CT provides a framework to understand how goals affect interactions and results (Tjosvold, Johnson 2000; Chen et al. 2010). Collaboration is an enabler of task performance and can help employees' mutual and reciprocal support, interactive-based engagement, correction of errors and the synergy of ideas (Tjosvold, Yu 2004). Positive collaborative experiences may influence work engagement (Gerards et al. 2018). Collaboration increases the sense of community and integrates collective goals with individual objectives (Chen et al. 2010).

Even though organizations provide the necessary conditions for cooperation, individual and organizational goal alignment doesn't occur automatically (Zanda 2018). The managers play an essential role in developing interdependent goals both in a traditional and a virtual work environment (Afferbach 2020), shaping the positive image of an organization (Chen et al. 2010), whilst maintaining a positive relationship with stakeholders (Bosse, Coughlan 2016; Bundy et al. 2018) and developing the organization's sustainability potential.

Current human resource management is oriented toward initiating a collaboration and building team spirit in the workplace. Lorincová et al. (2019) and Macke & Genari (2019) suggest that human resource management is linked to environmental sustainability and organizational performance. Workplace collaboration is a process, which drives employees to achieve collective, organizational goals (Heavey, Murphy 2012; Bond-Barnard et al. 2018). Development of a high performing team depends on a high level of collaboration between team members (Shagholi et.al. 2010).

Hence, CT supports the notion that effective collaboration increases the employees' ability of collective effort and achieving common, organizational goals and developing intangible potential. The theory reasons that collective interactions result in sustainable development.

H2: Workplace collaboration positively influences an organization's sustainability potential

2.3. Workplace collaboration and explicit knowledge transfer

Knowledge is considered to be a core resource in the success of an organization (Grant 1996), which influences its performance (Bierl et al. 2009; Cegarra-Navarro et al. 2016). Knowledge is essential to making decisions, furthermore it supports effective processes and improvement (Cegarra-Navarro et al. 2016). Moreover, it has been shown to be a critical basis for creativity and innovation (Fereira, Fernandes 2019; Munoz-Pascual, Galende 2017). Additionally, knowledge has been recognized as essential to gaining competitive advantage (Lee et al. 2016).

Both obtaining and retaining knowledge, plays a critical role in gaining a sustainable competitive advantage (Bolisani, Bratianu, 2017; Mahdi et al. 2019). The capability to effectively use knowledge helps to maintain long-term innovative potential in organizations (Ponce et al. 2018). The critical importance of knowledge management

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in an organization's adjustment to the environment and further development has also been established (García-Cabrera et al. 2017). An effective use of knowledge helps to improve and implement new technology (Zheng et al. 2019). Such long-term sustainably developing organizations are able to cope with ongoing challenges and transformations (Mahdi et al. 2011). Organizational knowledge helps to establish grounds for sustainable competitive advantage (Teece 1998). Overall, knowledge management contributes to the organization's development both as a primary source of competitive advantage and as long-lasting intangible resource (Mahdi et al. 2011; Nonaka, Takeuchi 1995).

In an organizational context, there are two different types of knowledge (Nonaka, Takeuchi 1995; Polanyi 1962). Explicit knowledge can be relatively easily codified, transmitted and disseminated in the form of writing instructions or documentation (Smith 2001; Bencsik 2016). Tacit knowledge is embedded in employees' experiences and know-how, and is often non-verbalised and difficult to codify (Jasimuddin et al. 2005). Both types of knowledge are rooted in employees and involve their contribution to the organization's development (Donelly 2019).

Explicit knowledge is practical knowledge, which can be articulated, documented, stored and conveyed within organizations (Smith 2001; Benscik 2016). Nowadays, technology plays a pivotal role in keeping and disseminating explicit knowledge (Oye et al. 2011). The explicit knowledge resources help to solve various organizational issues, reuse significant information and connect employees in valuable knowledge-sharing networks (Smith 2001).

Knowledge transfer can be described as a process, in which one person receives and reuses obtained information (Kumar, Ganesh 2009), to solve problems and implement new procedures and processes (Wang, Noe 2010). Knowledge transfer occurs in the workplace, in the form of shared documents, reports, ideas and expertise. Knowledge can be conveyed both through formal and informal channels (Holste, Fields 2010; Chen et al. 2011). Knowledge transfer is a dynamic process which occurs within organizations (between employees) as well as outside organizations (between customers, companies, stakeholders) (Loon 2019; Muñoz – Pascual et al. 2020). Knowledge transfer refers to both kinds of knowledge: tacit and explicit (Balle et al. 2019). Employee involvement in collective tasks, interests and goals increases the likelihood of successful knowledge transfer (Singh Sandhawalia, Dalcher 2011). Furthermore, knowledge transfer is an important part of employee development by improving their creativity, effectiveness and status (Chae et al. 2019), as well as job satisfaction (Cugueró-Escofet et al. 2019).

Explicit knowledge transfer is a key challenge employees are facing in current organizations (Szulanski 2000; Gou et al. 2019). Some studies suggest that sixty per cent of employees found it difficult to obtain information from colleagues (Inefficient Knowledge Sharing Costs Large Businesses $47 Million Per Year https://www.prnewswire.com/news-releases/inefficient-knowledge-sharing-costs-large-businesses-47-million-per-year-300681971.html). Nevertheless, it has been confirmed that the effectiveness of an explicit knowledge application depends on its fluent transfer between employees (Sung, Choi 2018; Chae et al. 2019). Hence, it is important that managers facilitate explicit knowledge transfer in organizations. Managers should apply practices that motivate and encourage employees to share knowledge. (Mahdi et al. 2019; Donelly 2019). This might not only improve the organization's effectiveness but also contribute to a new knowledge creation (Nonaka, Takeuchi 1995), and consequently it may enhance the company's sustainability potential (Muñoz – Pascual et al. 2020).

According to CT, collaborative work results in more effective outcomes than working individually (Chen et al. 2010). The collaboration process decreases the pressure and dissonance between individual and collective goals (Axelord 2000). CT assumes that collective goals in an organization affect employee behaviours, including knowledge sharing attitudes (Lu et al. 2010).

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Managers should also consider the impact of behavioural norms on explicit knowledge sharing in organizations (Malik 2019; Cugueró-Escofet et al. 2019). Additionally, assistance in creating, storing and using explicit knowledge by establishing a knowledge system in an organization can encourage knowledge sharing between employees (Reychav, Weisberg 2010; Friedrich et al. 2020). However, research indicates that such systems (e.g. ERP, data base, document management system) are not necessarily motivating employees to engage in knowledge sharing (Reychav, Weisberg 2010). Hence, the need for identifying different factors facilitating knowledge transfer in organizations.

The setting of collaborative work has been recognized as a significant knowledge sharing enabler (Farhan et al. 2016). Indeed, the relational factor has been identified as a core facet in enhancing knowledge transfer (Barbolla, Corredera 2009; Ferraris et al. 2018). Hence, relationships between employees are an important element which may help to bridge the gap between technology and knowledge transfer in an organization. Therefore, relationships built on collaboration in a workplace should strengthen knowledge sharing. Workplace collaboration enhances knowledge transfer because it provides mutual understanding of the operational context (Mclnerey, Day 2007). Further, the collaboration process can contribute to the strengthening of employee relationships, engagement and increased inter-organizational trust (Bulińska-Stangrecka, Bagieńska 2018). Moreover, CT (Lu et al. 2010) highlights that collaboration builds commitment to collective goals, which promotes knowledge transfer between employees. Consequently, this study assumes that workplace collaboration influences explicit knowledge transfer.

H3: Workplace collaboration positively influences explicit knowledge transfer

3. Research design

The design of this study draws on RBV and CT. The research model in this study assumes that ER has an effect on the organization's sustainability potential. The workplace collaboration is positioned between these two variables to reflect the influence of ER on workplace collaboration, and this is illustrated in the hypothesised relationships. Additionally, the study assumes that collaboration strengthens explicit knowledge transfer as shown in Figure 1.

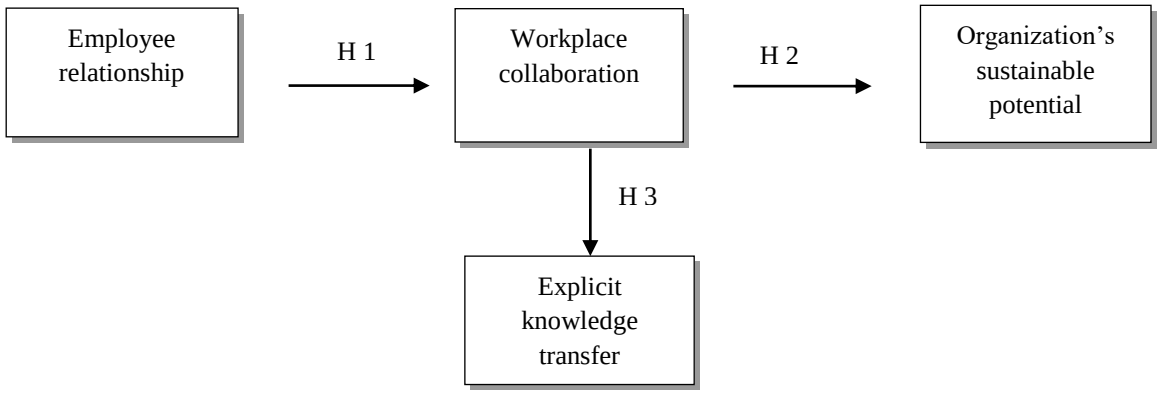

Fig. 1. Research model

3.1. Research context

The telecommunications sector is a dynamic industry, leading in digital transformation (www.The top 3 telecom trends for 2020). It has been characterized as an innovative sector (www.Innovation in the Telecoms world). State-of-the-art technologies and solutions have been developed on the basis of new knowledge creation and refinement. Digital revolution enables fast information flow and exchange of ideas (Buda et al. 2020). Therefore,

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intangible resources are crucial for telecommunications companies to achieve a competitive advantage. Hence, this study focuses on this innovative sector, where the intangible resources play a crucial role in an organization's sustainable development.

4. Research methodology

The quantitative approach was used in this study. A survey has been conducted to gather information from employees from the Telecommunication Sector in Poland. The data was collected using self-reported measures. This method can be effectively applied when a large sample is involved (Cameron, Price 2009).

All items were measured using a five-point Likert scale in which 1 means " strongly disagree" and 5 means "strongly agree". Employee relationships were measured using three statements: "I have a good relationship with my co-workers"; "I have a sense of mutual support in my organization"; "I perceive my organization as a community". The variable of workplace collaboration was measured using four statements based on Bond-Barnard et al. (2018) where a four-item team collaboration instrument was used. It involved four items: "Employees in my organization are committed to achieving team goals", "Employees in my organization work together as a team to achieve a common goal," "Employees in my organization coordinate team efforts to achieve a common goal," and "The collaboration in my team is effective." The organization's sustainability potential was measured by three statements, based on Ramos and Caeiro (2010) and includes the following items: "My organization is capable of achieving its goals"; "My organization is capable of coping with difficulties"; "My organization is able to deal with unforeseen circumstances". The variable of explicit knowledge was measured using three statements: "In my organization, employees share work instructions", "In my organization employees share work-related documentation", "In my organization employees prepare guides and instruction for others in regard to their work tasks".

4.1. Procedure

The questionnaire was distributed to respondents and included the information that their answers and identities will remain anonymous. In total, 175 answers were deemed suitable for further analysis. All data was transferred into an Excel spreadsheet.

4.2. Participants

The demographic profile of participants are as follows: gender distribution showed an acceptable balance: 65.14 per cent of the sample were men and 34.86 women. 60 per cent of the survey population had professional experience of over 10 years, whereas 22.86 per cent had between 1-5 years, and 13.71 per cent had 6-10 years of professional experience, and only 3.43 per cent had less than a year's experience. Directors made up 5.14 per cent of the sample in regard to position in an organization, while the most substantial group were specialists (67.43 per cent), 18.29 were classified as managers, 3.43 per cent as experts, 1.71 per cent as analysts, 0.57 per cent as assistants and 3.43 as others. Employees with a master's degree consisted of 67.43 per cent of the population, 17.71 had a bachelor degree, 11.43 an engineer's degree, 1.14 had high school diplomas and 2.29 didn't specify.

4.3. Data analysis

Structural equation modelling (SEM) was applied to analyse the hypothesised relationships. The analysis was conducted using a two stage approach according to Hair et al. (2010). The measurement model was developed with Statistica 13 software and R. Then confirmatory factor analysis (CFA) was used to decide whether the variables are reliable. Later, the proposed SEM model fit was evaluated based on a range of incremental fit indices (Hair 2010; Byrne 2010).

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5. Results

5.1. Correlation among variables

Correlation among employee relationships, workplace collaboration, the organization's sustainability potential and explicit knowledge transfer were scrutinized (Table 1). The analysis revealed that there were positive and significant correlations between most variables, which implies that further analysis can be conducted (Brown, Moore 2012). Furthermore, demographic variables (gender, education, position) were not statistically related to the variables within the model (employee relationships, workplace collaboration, sustainability potential and tacit knowledge transfer), therefore they were excluded from further analysis to avoid biased interpretation (Spector, Brannick 2011).

Table 1. Means, Standard Deviations, and Correlations

			Correlation Matrix												
Variable	**Mean**	**Standard Deviation**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**
1 employee relationship	4.04	1.01	—												
2 employee relationship	3.55	1.12	0.628***	—											
3 employee relationships	3.90	0.957	0.600***	0.711***	—										
4 workplace collaboration	3.88	0.984	0.683***	0.687***	0.671***	—									
5 workplace collaboration	3.82	1.02	0.703***	0.734***	0.698***	0.904***	—								
6 workplace collaboration	3.99	0.907	0.648***	0.599***	0.556***	0.689***	0.704***	—							
7 workplace collaboration	4.10	0.916	0.605***	0.545***	0.536***	0.708***	0.724***	0.775***	—						
8 ustainability potential	4.19	0.793	0.386***	0.258***	0.320***	0.384***	0.386***	0.345***	0.463***	—					
9 sustainability potential	4.18	0.766	0.370*	0.261*	0.252*	0.365*	0.330*	0.324*	0.407*	0.726*	—				
10 sustainabi-lity potential	4.15	0.781	0.401***	0.245***	0.250***	0.367***	0.359***	0.326***	0.436***	0.686***	0.761***	—			
11 explicit kno-wledge transfer	3.71	0.993	0.419***	0.414***	0.436***	0.359***	0.394***	0.381***	0.310***	0.122	0.122	0.107	—		
12 explicit kno-wledge transfer	4.05	0.850	0.347***	0.285***	0.331***	0.316***	0.336***	0.344***	0.333***	0.115	0.111	0.128	0.608***	—	
13 explicit kno - wledge transfer	3.75	0.974	0.239**	0.175*	0.245**	0.160*	0.170*	0.213**	0.139	0.064	0.054	0.102	0.496***	0.646***	—

Notes: N=175, * $p < .05$, ** $p < .01$, *** $p < .001$

Source: own elaboration.

5.2. Confirmatory factor analysis

The CFA was performed to ensure a proper fit of the research model. The results of the CFA are exhibited in table 2. All factor loadings were above 0.5, which indicated that all latent variables are adequately represented by indicators. The recommended fit indices are: overall model chi-square ($\chi 2$), degrees of freedom (DF), Root mean square error of approximation (RMSEA), goodness-of-fit index (GFI) and Adjusted goodness-of-fit index (AGFI) (Hair et al. 2010). Final measurement model indices were as follows: CMIN/DF = 1.663, GFI = 0.913 , AGFI= 0.866, RMSEA= 0.062, p = 0.001. All these represent a good fit.

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Table 3 illustrates the results of CFA and model estimation. The model validity has been assessed according to Hair et al. (2010). The average variance extracted (AVE) was used to estimate the items' convergent validity. Reliability was evaluated using composite reliability (CR) and Cronbach's alpha measurement. The estimation confirms that the measurement scales are variable and reliable.

Table 2. Results of confirmatory factor analysis

Measures	Items	Factor loadings	t-value	Standard error	Composite reliability	Average variance extracted	Cronbach's alpha
Employee relationships	3	0.797	22.377	0.036	0.848298	0.651	0.844
		0.826	25.606	0.032			
		0.797	22.735	0.035			
Workplace collaboration	4	0.933	64.723	0.014	0.94372449	0.8078665	0.923
		0.957	80.412	0.012			
		0.842	28,507	0.030			
		0.858	30.985	0.028			
Sustainable potential	3	0.808	22.740	0.036	0.88175917	0.71343467	0.887
		0.888	30.389	0.029			
		0.836	25.389	0.033			
Explicit knowledge transfer	3	0.749	16.281	0.046	0.82867691	0.61877267	0.802
		0.874	22.052	0.040			
		0.729	14.601	0.050			

Notes: Chi-square = 98.141, df = 59, chi-square/df = 1.663, p =0.001, GFI= 0.913, AGFI = 0.866 , RMSEA = 0.062.

Source: own elaboration.

5.3. Structural model estimation

Fit indices for the structural model were CMIN/DF = 1.126, RMSEA = 0.027, GFI= 0.980 and AGFI = 0.909, which indicates that the model satisfactory fits the data (Hair at al. 2010). Model fit results are exhibited (table 3).

Table 3. Final structural model fit indices

Indicator	Abbreviation	Recommended value	Authors	Results
Minimum of Discrepancy ($\chi 2$)	CIMIN	<30	Hair et al. 2010	22.53
Degrees of Freedom	df	-	-	20
	CMIN/df	≤3	Kline 2011	1.126
p value	p			0.312
Goodness of Fit Index AGFI >0.90	GFI	>0.90	Hair et al. 2010	0.980
Adjusted Goodness of Fit Index	AGFI	>0.90	Bentler 1990 Marsh, Balla & McDonald 1988	0.909
Root Mean Square Error of Approximation	RMSEA	<0.05 or 0.08	Hair et al. 2010	0.027

Source: own elaboration.

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The hypothesized relationships within the model are summarized in Table 4. It consists of the results of hypothesis testing. Taken together, the results suggest that the research model is an adequate one.

Table 4. Results of hypotheses testing

Hypotheses	Standardized coefficients	t-statistic	p	result
ER->WC	0.837	28.603	0.000	supported
WC->SP	0.489	5.895	0.000	supported
WC->EKT	0.621	8.362	0.000	supported

Notes: ER- employee relationships; WC- workplace collaboration; SP- sustainability potential; EKT –explicit knowledge transfer

Source: own elaboration.

The final structural model illustrating standardized coefficients is exhibited in Figure 2. All relationships were found to be statistically significant.

The H1 hypothesis was supported, and employee relationships were found to affect workplace collaboration (β = 0.837, p= 0.000). This highlights the importance of strong and positive employee relationships for effective collaboration.

The relationship between workplace collaboration and the organization's sustainability potential was confirmed (β = 0.489, p = 0.000). Thus it indicates the role of workplace collaboration in developing sustainability.
The H3 hypotheses, concerning the relationship between workplace collaboration and explicit knowledge transfer was supported.

The SEM model illustrates the mechanism describing how employees' relationships and workplace collaboration can support the organization's sustainability potential.

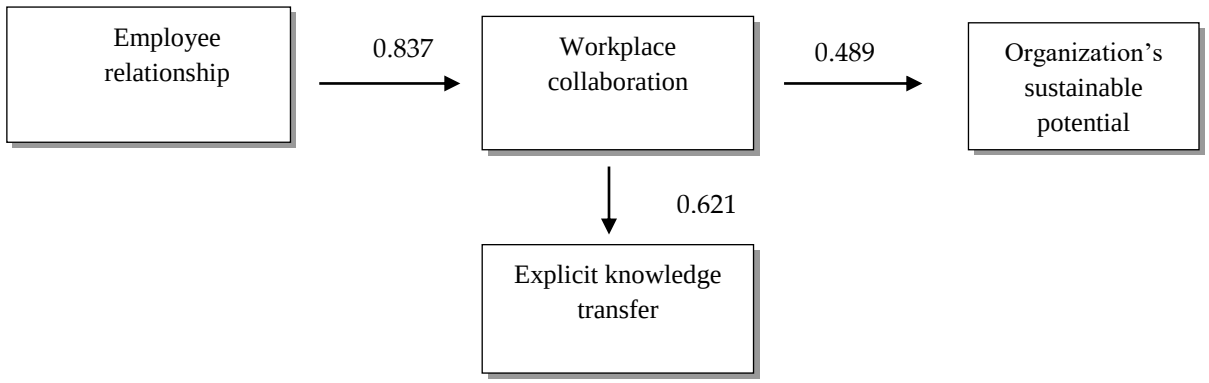

Fig. 2. Structural model

In the structural model, employee relationships has an effect on the workplace collaboration. The workplace collaboration in turn affected the organization's sustainability potential. Additionally, workplace collaboration also affected explicit knowledge transfer.

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6. Discussion

To better understand the role intangible resources play in developing an organization's sustainability potential, this study explored a research model linking employees' relationships and workplace collaboration with the organization's sustainability potential and explicit knowledge transfer. The findings demonstrate that positive employees relations are associated with workplace collaboration. Furthermore, this research shows the positive relationship between workplace collaboration and an organization's sustainability potential. This highlighted the importance of intangible resources in developing an organization's sustainability potential (Monteiro et al. 2017; Franca, Dua 2018; Kamasak 2017). Additionally, this study confirmed the positive impact of workplace collaboration on explicit knowledge transfer. As such, it provides empirical confirmation of the suggested relationship between cooperation and knowledge flow in organizations (Racko et al. 2019; Neiva, Borges 2017).

In this research, the link between employees' relationships and workplace collaboration was found to be statistically significant and a positive relationship was demonstrated. Thus, the importance of human factors in supporting effective workplace collaboration has been confirmed. This is in accordance with the RBT, which assumes intangible resources are key to building competitive advantage (Nason, Wiklund 2018).

The strong, positive relationship between workplace collaboration and an organization's sustainability potential has been confirmed in this study. This emphasises the significance of cooperation for developing sustainability (Wright et al. 2001). These findings imply that managerial practices promoting collaboration may have a considerable influence on an organization's sustainability. This validates previous research indicating that human resources boosts sustainability (Macke, Genari 2019; Langwell, Heaton, 2016). Moreover, this suggests that sustainability can be embedded in human factors such as collaboration and employee relationships. Therefore it can be concluded, that organizations with stronger, positive employee relationships and effective workplace collaboration practices are more likely to successfully develop their sustainability potential.

Finally, the results showed that explicit knowledge transfer is affected by workplace cooperation. Therefore, well maintained employee relationships and cooperation improved knowledge flow in organizations. In other words, when members willingly collaborate and can rely on each other, they will be inclined to share explicit knowledge with others in an organization.

Overall, statistical support for all hypotheses indicates that intangible resources such employee relationships and workplace collaboration can give an organisation an advantage in developing their sustainability potential.

Conclusions

The main objective of this research was to verify the new model of explaining the role of intangible resources in developing an organization's sustainability in the context of RBV theory (Barney et al. 2011). The intangible resources that affect sustainability potential were identified through literature, a research model was constructed and the impact of these factors was measured through SEM. As in previous studies, employee relationships were found to have a significant influence on workplace collaboration, but in this study, further positive consequences for organizations' sustainability potential were indicated.

Empirical evidence indicating that sustainable development of a given organization becomes more likely as the employees' relationships improves, which in turn improves workplace collaboration. Further, an effective workplace collaboration facilitates explicit knowledge transfer in organizations. These findings address the literature gap regarding the resources which can assist an organization's sustainability potential.

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It is clear from this research that there are managerial practices oriented toward the effective management of intangible resources which can support sustainability. Promotion of positive, strong employee relationships in an organization enhances its sustainability potential. Moreover, good collaborative practices can encourage better knowledge sharing and sustainable competitive advantage. Greater sustainability potential helps organizations to better deal with unknown problems and face future challenges (Broman, Robèrt 2017). Hence, improved comprehension of human resource practices can support sustainability strengthening organizations' potential to avoid prospective difficulties and prevent damages. This research also suggests that maintaining positive relationships between organization's members would enhance its sustainable development.

Overall, this research has important implications for both theory and practice. The theoretical implications refer to the empirical confirmation of the RBV theory approach toward the essential role of human resource management in developing a sustainable competitive advantage (Wright et al. 2001; Colbert 2004). This study highlights the importance of intangible resources such as employee relationships and workplace collaboration in having a better adjustment to a changeable economic environment. Further, this study applies the RBV theory and CT to illustrate the conceptual and practical implications of intangible resources for developing sustainability. Additionally, this study proposes a research model linking employees' relationships, workplace collaboration with an organization's sustainability potential and explicit knowledge transfer. This model proposes a framework from which managers and researchers can better understand the importance of human resources in developing sustainability.

The practical contributions of this study are that by promoting positive relationships among co-workers, the likelihood of the company's success would improve. Managers could also consider the impact of workplace collaboration on the organization's sustainability potential and its relationship with explicit knowledge transfer. Furthermore, there is a particularly strong relationship between workplace collaboration and sustainability potential. This indicates how effective management of the cooperation processes strengthens the company's sustainable competitive advantage. The results of this study also provides an insight into the implication of human resource management for an organization's sustainability. This includes implementation of managerial practices strengthening the positive relationship between employees, as well as improving the organization of cooperation in teams. From a managerial perspective, the empirical verification of human resource practices concerning employee relationships and workplace collaboration, as the sources of the organization's sustainability potential provides a valuable clue for managers. This study emphasizes the role of employees' relationships and collaboration in developing sustainability.

It would be advantageous for future research to include different sectors. Also, qualitative research would provide a more in-depth comprehension of the role of intangible resources in developing sustainability. Further research should focus on using qualitative methods to explore the significance of employees' relationships and workplace collaboration. Additionally, the analysis of organizations' sustainable potential needs further consideration from multiple perspectives and across various contexts. For instance, what are other intangible antecedents of organization sustainability? Do other human resources practices drive organizational sustainability? Future research can explore additional antecedents of organizational sustainability. This complex assessment of HR practices would allow managers to implement relevant, sustainability-oriented HR strategies in organizations. Furthermore, another path for research can examine how the use of technology can impact the link between employee relationships, workplace collaboration and sustainable potential. Additionally, further, longitudinal analysis of this mechanism can provide broader data regarding this link in various contexts.

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THE VALUE OF TRAINING AND LOYALTY. A COMPARATIVE ANALYSIS*

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Abstract. In the expansion phase of a business cycle, loyalty is very important for the fluent functioning of companies. One of the tools that increases it is training, but not all training has a positive influence. Training can strengthen loyalty and thereby build human capital. There is very little research on the relationship between the quality of training and the level of employee loyalty. The main aim of this paper is to analyse the impact of the value of training on the loyalty of employees and to compare results taken from Poland and Russia. The following tests were used to study these relationships: exploratory factor analysis (EFA), the Kolmogorov-Smirnov test, the Mann-Whitney *U* test, the Kruskal-Wallis test, Cronbach's alpha, the Kaiser-Mayer-Olkin test and Bartlett`s test, as well as regression. An empirical survey was conducted both in Poland and Russia on a sample of more than 2200 bank employees. After analyzing the research, one can state that from an employee's perspective, the value of training initiatives influence affective commitment and loyalty in general (especially in Poland). Paying closer attention to this aspect of business could bring specific benefits to an organisation by increasing employee involvement in the structure. Employees indicated that the value of training initiatives influence affective commitment more strongly than factors such as the country in which they work and their position. However, training initiatives are less important with regards to calculative loyalty. The percentage of skills learned during training have a low correlation with loyalty, affective commitment and calculative loyalty. It should also be remembered that employee loyalty testing should be included in the solutions used in managing human capital in an organization.

Keywords: lifelong learning; employee retention tool; management; training, human capital; e-learning, banks

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1. Introduction

Increasing employee loyalty is particularly important during the expansion phase of a business cycle. It is during the expansion phase that employees are able to quickly change their workplace or even abandon it. In times of increasing competitiveness and dynamically-changing conditions of the functioning of modern organisations, it is becoming more and more important to recruit and retain employees (Jędrzejczak-Gas & Wyrwa, 2005). New forms of employment and work organisation are conducive to situations in which employees take up jobs in several organisations at the same time or are associated with an employer for short periods of project implementation. This allows organisations to quantifiably and qualitatively adjust human resources to the needs of an organisation. However, it should be noted that this raises challenges to the retention of specialists in the organisation whose competences are important for the functioning of the organisation.

The banking sector was selected for analysis. It is developing quickly, and as shown by experience from recent decades, it tends to adapt dynamically to changes in economic situations. During the economic crisis that affected the global economy at the beginning of the 21st century, banks introduced massive restructuring programs, the most important elements of which were layoffs (Baszyński, 2008; Baszyński, 2016; Kaźmierczyk et al., 2020; Pająk et al., 2016). At the same time, banks have introduced a number of modern technological tools. They were used both as part of business processes and as part of human resources management (Kotliński, 2018). This certainly was not conducive to creating loyalty between banks and their employees. Currently, the situation has gone into reverse in many countries and banks often experience staff shortages (especially in specialist positions). It can be assumed that today it is the employee who dictates the employment relationship. At the same time, it is worth noting that there is a shortage of specialists (talents) in the labour market, which forces organisations to take additional coordinated actions aimed at retaining valuable employees (Robak, 2017; Danielak, 2017). This is due to demographic changes taking place particularly strongly in Central and Eastern European countries (Voronov, Ruza, 2018). In this context, the attention of researchers has been focused on issues relating to the loyalty (retention) of employees to the organisation. Acquiring and retaining employees in banks and organising activities to support employee involvement in their work are currently huge challenges that managers are faced with.

The analysis of employee loyalty towards their employers has shown that a handful of problems appear to be key obstacles. Being loyal or strengthening the loyalty of one's employee does not always pay off. It can be assumed that today '(…) while being a loyal employee involves risk, it has a potential to contribute significantly to the employeebe assumed that today in challenge for employees is to identify employers who are worthy of being loyal to' (Elegido 2013, p. 495). It would seem evident that issues related to the retention of employees and building their loyalty have become very important.

Poland and Russia were not chosen for analysis by chance. In both countries, there is a notable talent crisis. An intense struggle for qualified, ambitious and reliable employees means that the methods and tools of motivating and stimulating the potential and engagement of employees, are also subject to dynamic changes. A modern approach to employee involvement is crucial in order to maintain the high efficiency and effectiveness of an organisation. With the observation of rapid economic growth and unemployment levels reaching historical minimums, an increase in wages is required and employees may change their employers without warning or simply not come to work without notice. The question arises whether this is a common phenomenon in the banking sector. The Russian economy is still struggling with the earlier economic meltdown and the effects of the economic crisis, although the increase in the price of oil in 2018 lead to a surplus in Russia's budget (Aris, 2018; Andrianova & Tarasova, 2017). Over the past few years we have been able to observe a constantly growing number of banks that have lost their licenses in Russia: 2014 – 86 banks, 2015 – 93 banks, 2016 – 97 banks, 2017

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– 40 banks, 2018 – 66 banks (The situation in the banking sector in December and the forecast for 2017, 2017; Banking licenses, 2018; Banking licenses, 2017).

These actions have been taken to strengthen the banking sector by consolidating and eliminating the weakest banks. Yet, this has also had effects on employee loyalty. At the same time, it is necessary to remember the specificity of the Russian labour market, one aspect of it manifests itself via the practice of resigning from redundancies by reducing the number of working hours (Davydenko et al., 2018; Kapelyushnikov, 2001ab). Thus, the economic liquidation of depression in Russia has often not manifested itself, so far, in aggressive redundancies, but rather in a reduction in the number of working hours. Employee loyalty is a multidimensional concept, manifesting itself in different attitudes and behaviours. One of its behavioural aspects is an unforced readiness to continue to work (Świątek-Barylska 2013, p. 19). Among the determinants of employee loyalty, factors related to the work environment which affects the satisfaction of employees, are of important value. Researchers of employee loyalty issues pay special attention to the important role of training in this matter (Costen & Salazar, 2011). Especially in the time of education reforms and changes in the quality of education (Andrzejczak, 2015; Czyżewski & Polcyn, 2016; Jaźwiński, 2017; Sławecki & Wach-Kąkolewicz, 2012).

Therefore, the question arises as to how much an employer can influence the loyalty of employees and what attracts them and makes them stay in the company. A wide range of various types of training is used in the banking sector (Kaźmierczyk, 2011). Previous research indicates that not all training contributes to an increase in loyalty. For example, on-line training or e-learning can even limit the loyalty of employees, who often identify them as coercive, which makes little positive contribution to their work. This is a key aspect of the question of the value of training. One can logically suspect that the training that is most valued by employees will be the most conducive to increasing loyalty.

The main aim of this paper is to analyse the impact of training on employee loyalty and compare the results taken from a case study carried out in Poland and Russia. This article discusses the issue of employee training as an element to improve the quality of human capital and its impact on loyalty to the employer. The authors of the research believe that training is a significant determinant of the level of loyalty manifested in various forms of behaviour towards organisations and that this corresponds to specific types of organisational engagement.

The following hypotheses are put forward in this paper:
H1: *The more valuable a training initiative is regarded by an employee, the higher the loyalty of that employee.*
H2: *The higher the percentage of skills learned during a training program that are perceived by an employee as being useful in their workplace, the higher the loyalty of that employee.*
H3: *The most-educated employees who took part in training will exhibit higher loyalty levels only when the training is perceived as being extremely useful.*

The literature on employee development and human resource management was reviewed (ProQuest, EBSCO, The ACM Digital Library, BazEkon, Emerald). On the basis of an analysis of Polish and foreign literature, a gap was found regarding the impact of employee training on their loyalty to the employer. Therefore, the considerations taken into account are focused on searching for an answer to the question: does employee training have an impact on their loyalty? An additional original survey of 1920 bank employees in Poland and 359 bank employees in Russia was conducted. The applied research methods and tools, as well as the adopted procedure, enabled a comprehensive completion of research activities, and a subsequent analysis and evaluation of the phenomena examined and the diagnosis of dependencies between them. Following the introduction, this paper includes the formulation of the theses. Later, the method adopted and research sample are described. Finally, the research results and conclusions are presented.

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2. Loyalty – hypotheses to be tested

H1: *The more valuable a training initiative is regarded by an employee, the higher the loyalty of that employee.*

Training programs constitute a noticeable indication to an employee that an employer cares about his/her development. Without getting involved in a discussion on whether the initial level of loyalty is an influencing factor of an employer's decision about qualifying an employee for training, an employee can perceive a training program as a vote of confidence from his/her employer (Spence, 1973). If an employee feels he/she is treated as an asset to a company, training could act as a reward or a sign of trust in an employee act as a reward or a his/her skills in the future (Liff & Wahlström, 2017; Sasaki et al., 2010). As observed by Grønholdt and Martensen (2006), employees consider training initiatives to be a very pertinent element within their job environment. As a result, their affection and gratitude level should increase, contributing to a strengthening of the employee-employer bond. This chain of reasoning is supported by research suggesting that training increases employee loyalty (cf. Harris, 2002; Voss et al., 2004; Narteh & Odoom, 2015; Jaźwiński, 2017; Wieczorek-Szymańska, 2017), while simultaneously creating a feeling of belonging to an organisation (cf. Waris, 2005).

It was hypothetically assumed that loyalty is a complex issue, covering not only issues related to the employee remaining in the current workplace, but also to other aspects of employee behaviour and attitudes. Management plays a special role in shaping employee loyalty. The attitudes and behaviours of middle-level managers, who deal with employees on a daily basis, have become key to enabling loyalty. This group of managers may be seen as a source of current information for employees, they can guide them through the process of change and have the ability to observe them. Formal solutions applied in the organisation (also in the sphere of HR) and the actions of superiors directly affect employees – their involvement and identification with the organization.

If an employer invests in employee training, it is usually a sign that the employer does not want to fire that employee; quite the contrary, they see the employee as a valuable asset to the company that is worth investing in. As a result, such activity increases the job security level of an employee. The effect it has will differ depending on what type of training it is (whether it is job specific or not and how useful it is). According to Katsimi (2008, p. 69), firm-specific training increases the alternative cost of shirking: 'This wage-reducing effect increases the value of human capital investment leading to a higher level of firm-specific training'. It can lead to different implications, including a 'portability of a portion of the skills acquired through on-the-job training [that] suggests that we should be observing lower starting wages for workers who are undergoing training, as noted by Parent (1999, p. 299).

Perception of the quality of a training initiative should affect the level of loyalty. If an employee considers the level of preparedness and competence of a trainer as adequate, he/she will value the whole experience more. As a result, an employee's responsive reaction towards the organisation will be higher as well. On the other side, almost all positive affection and the potential impact on the level of loyalty of a training initiative may be devalued if an employee does not consider it to be useful or applicable. According to Morris and Sherman (1981), self-referent processes could be used as a mechanism of linking an individual to an organisation. Similarly, Mathieu and Zajac (1990, p. 178) claim that 'individuals will become committed to an organization to the extent that it provides for growth and achievement needs'.

H2: *The higher the percentage of skills learned during a training program that are perceived by an employee as being useful in their workplace, the higher the loyalty of that employee.*

Analogously, the perception and the applicability level of the usefulness of the skills acquired during a training program should impact the level of loyalty. During the entire discussion on loyalty and building human capital, the question is: what skills does an employee acquire through training? As Katsimi (2008, p. 67) asserted,

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'investment in firm-specific training creates a surplus in employment relationships. Parent (1999) found that turnover was lower for workers who have acquired firm-specific skills. As a result, firm-specific training may increase employee loyalty, potentially because this type of training does not necessarily increase their status on the labour market. A possible alternative employer will not differentiate significantly between an employee with or without specific training, for the skills acquired through such training would not be transferable to a new workplace. As a result, a trained employee will not experience higher rewards for leaving his/her current employer than he/she could before completing the training. However, it should be questioned whether the fact that an employee who uses a significant amount of skills learned during a program, makes that program automatically firm-specific. Even if the employee uses a lot of the newly-acquired skills, it does not necessarily imply that the skills are 100% firm-specific and that the employee cannot use them somewhere else (e.g. interpersonal skills).

H3: *The most-educated employees who took part in training will exhibit higher loyalty levels only when the training is perceived as being extremely useful.*

The impact of training initiatives on loyalty among different employee groups differentiated by education level is a complex issue. While for less-educated workers the mechanism of gratitude will apply and thus boost their loyalty, for better-educated employees, the perceived usefulness of training has a higher impact on their loyalty. This is because these employees already exhibit a high value of human capital, they do not necessarily need training to differentiate themselves and gain advantage on the labour market (Sipa, 2018). Quite the contrary, if they are forced to participate in a training session they do not consider very useful, it is likely that they will experience negative feelings of disappointment, a lack of motivation, boredom or time wastage. They may then transfer these emotions into their workplace and relations with other employees and employers. It is a particularly important aspect in the banking sector where almost every employee takes part in training. Only when the training is considered extremely valuable, or that the acquired skills are extremely useful, will the better-educated employees see the potential benefits of the training that could contribute to a strengthening of the bond with their employer. Moreover, better-educated workers have higher expectations (Mathieu & Zajac, 1990, p. 177; Oluranti & Abayomi, 2010). It may also be that better-educated employees have a greater number of job options and are less likely to become entrenched in any one position or company.

3. Methodology

In order to measure loyalty levels in banks, a questionnaire was used which covered various aspects of loyalty (items on a 0–4 scale). Following Allen and Meyer's (1990) classic study, it was assumed that the concept of loyalty can be divided into calculative loyalty and affective commitment. An exploratory factor analysis (EFA) was performed to confirm this assumption and to confirm the quality of the calculated loyalty indices for Poland and Russia together and for both countries separately (principal component analysis [PCA] and oblimin). The total variance explained was 68.06% for both countries together, 66.74% for Russia and 67.68% for Poland respectively. All the data used in the exploratory factor analysis yielded two components with high correlations. This was confirmed by a scree plot, which also pointed to two components (both in Poland and Russia). Table 1 presents the matrix of components for Poland and Russia. The reliability of the scale of loyalty measured by Cronbach's alpha was respectively for both countries together/for Russia/for Poland: 0.707/0.712/0.686, for affective commitment it was: 0.826/0.808/0.820, and for calculative loyalty: 0.677/0.656/0.681. The research agenda was designed to check for differences in loyalty and its affective and calculative commitments according to a subjective assessment of training value and the degree of its usefulness in practice.

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Table 1. The Component Matrix of the General Index of Loyalty and its Subindices (exploratory factor analysis) for Poland and Russia

Statements	PL + RU		PL		RU	
	Affective commitment	Calculative loyalty	Affective commitment	Calculative loyalty	Affective commitment	Calculative loyalty
In general, I am satisfied with my work in the bank	0.885		0.880		0.885	
I am ready to recommend employment in my bank to relatives or friends	0.873		0.874		0.835	
I am proud of my work and I admit it openly	0.828		0.820		0.845	
Work is just work. A person should always seek better conditions of employment for himself (a reversed scale applied)		0.793		0.789		0.770
At present, the employer should not expect the employee to be loyal solely to him (a reversed scale applied)		0.778		0.793		0.764
In times of crisis, the employee reserves the right to seek a new, safer job (a reversed scale applied)		0.773		0.766		0.788

Note. Kaiser-Mayer-Olkin and Bartlett`s test: p = 0.000 (for both countries together, for Poland, for Russia). Due to the unsatisfying results of the factor analysis, the authors omitted the following item statements: I refrain from criticising the bank when I am dissatisfied with its activities (item loading = 0.270); the employee should be guided by a career and manage it skillfully (a reversed scale applied) (item loading = 0.367). Both decreased the value of calculated indices and did not impact significantly the quality of the indices received as a result of factor analysis.
Source: Author's own computations based on the survey data.

The research results presented are part of a broader study. Thus, the description of the research method and data is applicable also to the results of research on other aspects of HRM and other papers by the authors. You can find more detailed data in our previous papers (Davydenko et al., 2018; Kaźmierczyk, 2019; Kaźmierczyk & Chinalska, 2018; Kaźmierczyk et al., 2020; Kaźmierczyk & Żelichowska, 2017).

4. Data

The data from the survey, which was conducted in Poland between January 2016 and April 2016 and in Russia (the Tyumen region) between February 2017 and April 2017, were used to test the research theses. The main survey was preceded by a two-stage pilot survey in Poland (180 students and 100 banking employees). Then, the survey was translated into Russian by a group of 12 philologists, psychologists, bankers and HRM specialists. In order to confirm the quality of the transaltion, a reverse translation was applied: from the Russian language into the Polish one. The two-stage pilot study in Russia was conducted on a group of 50 students and then a group of 50 bankers. Data sample was 1920 in Poland and 359 in Russia. Data was selected and analysed according to: gender, education degree, occupied position, organizational unit, type of bank (Commercial/Cooperative), the equity (national, foreign), workplace (Front office/ Back office).

5. Loyalty: empirical research

H1: *The more valuable a training initiative is regarded by an employee, the higher the loyalty of that employee.*

The indices do not follow normal distribution (Kolmogorov-Smirnov test's results are summarized below): loyalty in both countries together (mean=1.70, SD=0.67, test statistics=0.072, p (two-tailed)=0.000); calculative loyalty in both countries together (mean=0.85, SD=0.80, test statistics=0.166, p (two-tailed)=0.000), affective

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commitment in both countries together (mean=2.55, SD=0.92, test statistics=0.140, p (two-tailed)=0.000); total loyalty in Russia (mean=2.10, SD=0.69, test statistics=0.053, p (two-tailed)=0.016); calculative loyalty in Russia (mean=1.15, SD=0.85, test statistics=0.154, p (two-tailed)=0.000); affective commitment in Russia (mean=3.01, SD=0.86, test statistics=0.148, p (two-tailed)=0.000); total loyalty in Poland (mean=1.63, SD=0.64, test statistics=0.081, p (two-tailed)=0.000); calculative loyalty in Poland (mean=0.80, SD=0.77, test statistics=0.170, p (two-tailed)=0.000); affective commitment in Poland (mean=2.47, SD=0.91, test statistics=0.142, p (two-tailed)=0.000). The Kruskal-Wallis test was used to examine the relationship between the assessment of the usefulness of training and loyalty. The totals of loyalty, calculative loyalty and affective commitment were analysed separately. It was proven that there are statistically significant differences in the level of total loyalty in various groups of employees differently assessing the usefulness of the training. This applies to the majority of assessments made by bank employees in Poland (Appendix, Table 1). The higher the rating of the trainings conducted, the higher the total loyalty was noted. The lowest-rated training was accompanied by loyalty at 1.38 in Poland and 1.96 in Russia, while the employees who rated the training the highest were characterised by a loyalty level of (respectively) 1.83 and 2.25. It was similar in the case of affective commitment, which significantly increased along with an increase in the evaluation of training performed by employees (in Poland from 2.08 to 2.78, and in Russia from 2.82 to 3.15). The subjective assessment of training carried out by bank employees was of less importance for the level of calculative loyalty. As it would appear from previous analyses, calculative loyalty can be shaped by the employer to a small extent, and what it can really influence is affective commitment. In the case of banks from Russia, a correlation of positive training assessments with the level of loyalty, calculative loyalty and affective commitment was observed less frequently (Appendix, Table 2). In Russia, the greatest differences were in the assessment of training, with three scores – between the worst and best ratings on a 1–4 scale, or differences with two scores on a 1–4 scale.

It turns out that the evaluation of training carried out by employees is of real significance for their level of loyalty, which is an active factor in the employment and training process. They should not only be a passive recipient of training, especially that which they consider to be poor quality or unnecessary in their work. An argument can be made that employees need greater choice in the type of training they are going through.

Many experiments (Hock, 2003; Jeannerod, 2003; Hohol, 2015) have shown that people like to have an influence on things that surround them, even if they seem trivial. It seems that in this context a good solution is a cafeteria plan (a type of remuneration and benefit plan. According to it, employees chose between different types of benefits.), which also includes participation in training, or at least a cafeteria system of training. It is known that employees will assess training more positively if they chose it themselves rather than it being imposed upon them by the employer. As a last resort, the simplest solution is an in-depth assessment of training carried out by employees and the changes resulting from the training. Employees should be aware that their assessment realistically translates into changes that take place in the training process. In this approach, the reception of activities focused on the development and implementation of an employee' training needs may well result in the employee having a more positive attitude towards the organisation and could manifest itself in them taking an increased interest, focusing on achieving their goals, and finally increasing their involvement in the tasks being implemented.

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Table 2. Loyalty, Calculative Loyalty and Affective Commitment Depending on the Assessment of Training

Assessment of the value of training	Loyalty	Calculative loyalty	Affective commitment
Poland			
Almost nothing has changed in my work after training	1.38	0.68	2.08
After training, I see the need for changes but I cannot implement them in practice	1.56	0.81	2.31
I made some changes but gradually I return to old habits	1.62	0.72	2.51
Much has changed in my work under the influence of training	1.83	0.88	2.78
Russia			
Almost nothing has changed in my work after training	1.96	1.09	2.82
After training, I see the need for changes but I cannot implement them in practice	1.90	0.84	2.96
I made some changes but gradually I return to old habits	2.05	1.09	3.00
Much has changed in my work under the influence of training	2.25	1.31	3.15

Source: Author's own computations based on the survey data.

H2: *The higher the percentage of skills learned during a training program that are perceived by an employee as being useful in their workplace, the higher the loyalty of that employee.*

In Poland a (weak) positive correlation between the use of knowledge and qualifications acquired during training and the level of loyalty was obtained, which proves that according to the hypothesis, the higher the percentage of skills learned during training, the higher the level of loyalty (Loyalty: Rho=0.16, p=0.000; Calculative loyalty: Rho=0.072, p=0.007; Affective commitment: Rho=0.17, p=0.000). The strongest relationship was noted in the case of affective commitment, while the relationship between the percentage of skills learned during training and calculative loyalty and loyalty in general in Russia was statistically insignificant (Loyalty: Rho=0.12, p=0.055; Calculative loyalty: Rho=0.04, p=0.545; Affective commitment: Rho=0.13, p=0.025).

The percentage of skills learned during a training program was significant for the level of loyalty, calculative loyalty and affective commitment. This means that greater efficiency of training and their greater suitability at work should be considered. Obviously, the costs of training are a limitation, but one may suspect that training that is more useful when the work is valued by employees due to its perceived level of uniqueness. On the one hand, this may result from the fact that the work of a particular employee is also perceived by that employee as being unique, or on the other hand, such unique training may indicate that the training is specific to a given workplace and less useful "outside of the bank", which may also stimulate loyalty. The Russian results require additional commentary. In Russia, a high initial level of loyalty is observable (compared to Poland); hence, it can be suspected that training is not able to significantly affect the level of loyalty. In Poland, actions and results depend, to a greater extent, on the employees' efforts. In Russia, the final effect depends, to a large part, on social stratification and connections (Tikhonova, 2015). The Russian notion of "krisha" (wings; a security company or organization that protects an entrepreneur from extortion) reflects this well. Polish society is much more meritocratic than that in Russia, which means that Polish employees, more often than in Russia, believe that they are able to influence their professional career, and thus can change their employer and, on the other hand, training is a tool of development for them.

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H3: *The most-educated employees who took part in training will exhibit higher loyalty levels only when the training is perceived as being extremely useful.*

In order to assess how training affects the loyalty of the most educated workers, the level of loyalty was checked depending on the percentage of knowledge and skills acquired during training. Both in Poland and Russia, employees with university degrees in economics, who perceived that the percentage of the knowledge and skills acquired in the training was high (> 4Q), were characterised by a higher level of loyalty and affective commitment. The percentage of knowledge and skills acquired in the training had no effect on calculative loyalty. Table 3 and 4 (Appendix) also show results for people with different degrees of education. In the case of university degrees other than in economics, differences in loyalty, affective commitment and calculative loyalty were not visible.

Regression was used to confirm the obtained results (Tables 3-5). The following regression models for three explanatory variables were built: loyalty, calculative loyalty and affective commitment. The following were used as explanatory variables: assessment of the value of training, percentage of skills learned during a training program and metrics: country, age, size of locality, position, education, work experience in banking, sex, place of work (front or back office).

Table 3. Regression – Loyalty in Poland and Russia

Model	Corrected R square	F	p	Constant	Country	Position	Assessment of the value of training	Education
1	.127	41.953	.000	1.832 (.000)	-.388 (.000)	.133 (.000)	.081 (.000)	-.034 (.044)
2	.125	54.473	.000	1.681 (.000)	-.376 (.000)	.126 (.000)	.080 (.000)	
3	.099	62.346	.000	1.917 (.000)	-.397 (.000)	.142 (.000)		
4	.062	74.503	.000	1.968 (.000)	-.397 (.000)			

Source: Author's own computations based on the survey data.

Table 4. Regression – Affective commitment in Poland and Russia

Model	Corrected R square	F	p	Constant	Assessment of the value of training	Country	Position
1	.131	58.046	.000	2.450 (.000)	.138 (.000)	-.445 (.000)	.185 (.000)
2	.099	63.202	.000	2.472 (.000)	.153 (.000)	-.441 (.000)	
3	.059	72.324	.000	2.065 (.000)	.164 (.000)		

Source: Author's own computations based on the survey data.

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Table 5. Regression – Calculative loyalty in Poland and Russia

Model	Corrected R square	F	p	Constant	Country	Age	Sex	Position
1	.048	15.228	.000	.791 (.000)	-.332 (.000)	.007 (.000)	-.136 (.000)	.061 (.000)
2	.044	18.523	.000	.761 (.000)	-.339 (.000)	.009 (.000)	-.125 (.003)	
3	.037	23.273	.000	.709 (.000)	-.340 (.000)	.009 (.000)		
4	.023	27.784	.000	.989 (.000)	-.293 (.000)			

Source: Author's own computations based on the survey data.

Four significant regression models for loyalty, three models for affective commitment and four models for calculative loyalty were created. Country and position had the most significant influence on loyalty. Loyalty was higher in Russia (1.96) than in Poland (1.59), and among managerial staff (senior management: 1.99, middle-level management: 1.83, lower-level management: 1.72) than among non-managerial employees (1.60). A positive assessment of the value of training also increased loyalty. On the other hand, an increase in the level of education was conducive to lowering loyalty. Similar results were obtained in the case of affective loyalty. In this case, the assessment of the value of training was the most important. This confirms that the employer can influence the emotive aspect of loyalty by creating a positive quality of training perceived by employees. Such an assessment did not matter in the case of economic loyalty, where country, age, sex and position were important. Size of locality, work experience in banking and place of work (front or back office) seemingly did not affect loyalty, affective commitment and calculative loyalty.

6. Conclusions

The loyalty of employees of modern organisations is based on organisational commitment and identification with the company. Permanent participation in the organisation is still an element of employee loyalty. From the results, it appears that the value of training initiatives, as perceived by employees, influence the employees' affective commitment and loyalty in general. Paying attention to this factor can bring specific benefits to an organisation by increasing employee involvement in the organisation. This is particularly important nowadays, when both the importance of human capital in a contemporary knowledge-based economy and the ability of an organisation to function effectively in changing conditions are so great. The value of training initiatives, as perceived by employees, influences affective commitment more than does country and position. It was less important for calculative loyalty. The percentage of skills learned during a training weakly correlated with loyalty, affective commitment and calculative loyalty, and regression did not confirm its influence. It was also noticed that in the case of the better-educated employees with a university degree (major in economics), who rated the highest percentage of skills acquired with training, loyalty and affective commitment were higher than those employees who rated the percentage of skills acquired with training as low. This suggests that especially in the case of employees with a university degree (major in economics) it is worth ensuring that employees appreciate the effectiveness of training. This can be achieved by a real increase in the quality of training or through internal public relations, or both. The specificity of the Russian labour market should also be taken into account. It manifests itself in a lesser meritocratic environment and is dependent on contacts. It is also indicates that a lack of transparency in economic relations (in employment relations) is not conducive to increasing efficiency. It should also be remembered that employee loyalty testing should be included in the solutions used in managing human capital in an organization.

On the other hand, the high level of loyalty in Russia makes it difficult to raise it by training. Such a high level of loyalty may result from a hitherto lack of systemic restructuring, which is in contrast to Poland, which in the first years of the 21st century went through a phase of redundancies and restructuring, which negatively affected the loyalty and trust of employees in the banking sector. There are very few research studies on the relationship between the quality of training and the level of employee loyalty. The results presented in this study regarding the issues of training and employee loyalty only outline this complex issue. Research activity in this area would have to be widely developed to take into account the various benefits that may result from having loyal employees. The presented research results have practical implications. People managing organisations should be aware that employees assess whether the organisation cares for their development. If it does, they will stay with organisation for longer, if they do not feel such attachment, they will typically look for other employment opportunities. An important element is the rule of reciprocity, according to which employees reciprocate everything they have received from the organisation. If they receive support and have their needs taken care of, they will repay it with their involvement, but otherwise they will not show loyalty to the organisation and will look for another place of work. In addition, management should increase employees' awareness in the training process. Shaping an employee's attitude towards an organisaton is a key element in personnel strategy, which can help to establish a competitive advantage on the labour market. In the current situation of the labour market, referred to as the 'employee market', organisations try to outdo each other in solutions aimed at retaining employees.

The research process is not free from the traditional limitations concerning the research project, the sample and the operationalization of variables. Including a subjective scale of measurement in quantitative research may be perceived as a limitation of the research process. To reduce the potential gap between subjective and actual measurement, the research was carried out using the triangulation of data sources as well as the triangulation of research methods and techniques at several stages of the research process. It is also worth emphasizing that the measurement of complex theoretical constructs through perception is a predominant treatment in social science research. This study is marked by an incomplete enumeration induction. However, in order to maximize the cognitive range of operationalization of variables, the triangulation of research methods was applied. The operationalization of variables using the integrated results of desk-based exploratory research, compiled alongside the results of the exploratory fieldwork findings, was help ensure the right level of accuracy of operationalization.

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Appendix

Table 1. The Kruskal-Wallis Test, Loyalty and Assessment of the Usefulness of Training (Poland)

Pairs of answers*	Test statistic	Standard default	SD	p	Corrected p
Loyalty (N = 1791, Test statistic = 126.244, df = 3, p (two-tailed) = 0.000, Eta squared (η^2) = 0.069, d_{Cohen} = 0.544) The effect is moderate.					
1/2	-132.860	37.549	-3.538	**0.000**	**0.002**
1/3	-191.560	36.787	-5.207	**0.000**	**0.000**
1/4	-359.742	33.156	-10.850	**0.000**	**0.000**
2/3	-58.700	37.342	-1.572	0.116	0.696
2/4	-226.881	33.770	-6.718	**0.000**	**0.000**
3/4	-168.181	32.921	-5.109	**0.000**	**0.000**
Affective commitment (N = 1791, Test statistic = 162.941, df = 3, p (two-tailed) = 0.000, Eta squared (η^2) = 0.09, d_{Cohen} = 0.627) The effect is moderate.					
1/2	-102. 373	37.365	-2.740	**0.006**	**0.037**
1/3	-226.266	36.606	-6.181	**0.000**	**0.000**
1/4	-392.829	32.993	-11.906	**0.000**	**0.000**
2/3	-123.893	37.159	-3.334	**0.001**	**0.005**
2/4	-290.455	33.605	-8.643	**0.000**	**0.000**
3/4	-166.563	32.759	-5.084	**0.000**	**0.000**
Calculative loyalty (N = 1790, Test statistic = 22.356, df = 3, p (two-tailed) = 0.000, Eta squared (η^2) = 0.011, d_{Cohen} = 0.209) The effect is weak.					
1/2	-113.244	37.106	-3.052	**0.002**	**0.014**

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1/3	-40.709	36.353	-1.120	0.263	1.000
1/4	-140.009	32.770	-4.272	**0.000**	**0.000**
2/3	72.537	36.878	1.967	**0.049**	0.295
2/4	-26.765	33.351	-0.803	0.422	1.000
3/4	-99.300	32.512	-3.054	**0.002**	**0.014**

Note. *Answers:
1 = Almost nothing has changed in my work after training.
2 = After training, I see the need for changes but I cannot implement them in practice.
3 = I made some changes but gradually I return to old habits.
4 = Much has changed in my work under the influence of training.
Source: Author's own computations based on the survey data.

Table 2. Kruskal-Wallis Test, Loyalty and Assessment of the Usefulness of Training (Russia)

Pairs of answers*	Test statistic	Standard default	SD	p	Corrected p
Loyalty (N = 314, Test statistic = 12.317, df = 3, p (two-tailed) = 0.006, Eta squared (η^2) = 0.03, d_{Cohen} = 0.352) The effect is weak.					
1/2	5.335	17.920	0.298	0.766	1.000
1/3	-16.017	14.949	-1.071	0.284	1.000
1/4	-40.489	14.543	-2.784	**0.005**	**0.032**
2/3	-21.352	16.331	-1.307	0.191	1.000
2/4	-45.823	15.960	-2.871	**0.004**	**0.025**
3/4	-24.472	12.532	-1.953	**0.051**	0.305
Affective commitment (N = 314, Test statistic = 7.861, df = 3, p (two-tailed) = 0.049, Eta squared (η^2) = 0.016, d_{Cohen} = 0.252) The effect is weak.					
1/2	-20.428	17.757	-1.150	0.250	1.000
1/3	-27.857	14.812	-1.881	0.060	0.360
1/4	-39.846	14.410	-2.765	**0.006**	**0.034**
2/3	-7.429	16.182	-0.459	0.646	1.000
2/4	-19.418	15.815	-1.228	0.220	1.000
3/4	-11.989	12.418	-0.965	0.334	1.000
Calculative loyalty (N = 314, Test statistic = 9.959, df = 3, p (two-tailed) = 0.019, Eta squared (η^2) = 0.022, d_{Cohen} = 0.303) The effect is weak.					
1/2	30.010	17.819	1.684	0.092	0.553
1/3	2.497	14.865	0.168	0.867	1.000
1/4	-18.945	14.461	-1.310	0.190	1.000
2/3	-27.513	16.239	-1.694	0.090	0.541
2/4	-48.955	15.870	-3.085	**0.002**	**0.012**
3/4	-21.441	12.468	-1.721	0.085	0.512

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Note. *Answers:
1 = Almost nothing has changed in my work after training.
2 = After training, I see the need for changes but I cannot implement them in practice.
3 = I made some changes but gradually I return to old habits.
4 = Much has changed in my work under the influence of training.
Source: Author's own computations based on the survey data.

Table 3. Loyalty, Calculative Loyalty and Affective Commitment Depending on the Assessment of the Percentage of Skills Learned During a Training Program (Poland)

	1Q <=25	2Q 25-50	3Q 50-70	1-3Q	4Q = > 70	U Mann-Whitney Statistics	W Wilcoxon Statistics	Z	p (two-tailed)
Loyalty									
University (major in economics)	1.51	1.62	1.71	**1.61**	**1.77**	**34471.00**	**180541.00**	**-2.57**	**0.010**
University (other)	1.44	1.56	1.72	1.56	1.62	11216.50	55469.50	-0.60	0.547
High school (major in economics)	1.60	1.56	1.63	**1.59**	**1.95**	**1755.00**	**11625.00**	**-2.82**	**0.005**
High school (other)	1.44	1.61	1.74	**1.60**	**1.85**	**1361.00**	**6411.00**	**-1.96**	**0.050**
Total	1.49	1.59	1.70	**1.59**	**1.78**	**142489.00**	**753554.00**	**-4.39**	**0.000**
Calculative loyalty									
University (major in economics)	0.79	0.70	0.83	0.76	0.85	37852.00	183922.00	-1.00	0.318
University (other)	0.64	0.78	0.85	0.75	0.81	11695.00	14855.00	-0.04	0.966
High school (major in economics)	0.65	0.85	0.87	0.80	1.03	2217.00	12087.00	-1.13	0.259
High school (other)	0.65	0.85	0.78	0.78	0.88	1650.00	6700.00	-0.510	0.610
Total	0.71	0.75	0.83	0.76	0.87	160644.50	771709.50	-1.53	0.127
Affective commitment									
University (major in economics)	2.40	2.54	2.60	**2.46**	**2.69**	**33767.50**	**179837.50**	**-2.92**	**0.004**
University (other)	2.24	2.35	2.59	2.38	2.43	11124.50	55377.50	-0.714	0.475
High school (major in economics)	2.55	2.27	2.40	**2.39**	**2.88**	**1701.00**	**11571.00**	**-3.03**	**0.002**
High school (other)	2.23	2.37	2.69	2.42	2.79	1376.00	6426.00	-1.89	0.058
Total	2.28	2.44	2.57	**2.42**	**2.68**	**140138.50**	**751203.50**	**-4.79**	**0.000**

Source: Author's own computations based on the survey data.

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Table 4. Loyalty, Calculative Loyalty and Affective Commitment Depending on the Assessment of the Percentage of Skills Learned During a Training Program (Russia)

	1Q <=25	2Q 25-50	3Q 50-70	1-3Q	4Q = > 70	U Mann-Whitney Statistics	W Wilcoxon Statistics	Z	p (two-tailed)
Loyalty									
University (major in economics)	1.96	1.95	2.12	**2.02**	**2.35**	**1652.00**	**11382.00**	**-2.50**	**0.012**
University (other)	2.16	2.39	1.94	2.14	2.18	522,50	732.50	-0.09	0.926
High school (major in economics)	2.00	.	2.33	2.17	1.50	0.00	1.00	-1.23	0.667
High school (other)	.	.	.	.	.	.	.	.	.
Together	2.05	2.03	2.06	**2.05**	**2.27**	**5476.00**	**29786.00**	**-2.03**	**0.043**
Calculative loyalty									
University (major in economics)	1.14	1.12	1.16	1.14	1.28	2067.50	11797.50	-0.89	0.376
University (other)	1.10	1.52	0.83	1.11	1.29	457.00	1888.00	-0.91	0.362
High school (major in economics)	0.67	.	1.67	1.17	0.33	0.00	1.00	-1.225	0.221
High school (other)	.	.	.	.	.	.	.	.	.
Together	1.14	1.15	1.07	1.12	1.31	5704.00	30014.00	-1.63	0.104
Affective commitment									
University (major in economics)	2.28	2.79	3.04	**2.89**	**3.38**	**1499.00**	**11229.00**	**-3.13**	**0.002**
University (other)	3.23	3.26	3.05	3.17	3.07	518.00	728.00	-0.151	0.880
High school (major in economics)	3.33	.	3.00	3.17	2.67	0.00	1.00	-1.225	0.221
High school (other)	.	.	.	.	.	.	.	.	.
Together	2.97	2.91	3.01	2.97	3.21	5537.50	29847.50	-1.94	0.053

Source: Author's own computations based on the survey data.

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INVESTIGATING THE RELATION OF GDP PER CAPITA AND CORRUPTION INDEX

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Abstract. The paper is devoted to modelling the corruption perception index in panel data framework. As corruption index is bounded from below and above, traditional econometric multiple regression will produce a bad quality model. In order to correct that, we propose a mathematical framework for modelling bounded variables implementing a logistic function. It is shown that corruption is best explained by GDP per capita and all other major macroeconomic indicators cannot add any statistically significant improvement to the models' accuracy. Thus, we assume, that society wealthiness facilitates the reduction of corruption acts. Indeed, if some individual lives in a society that does not experiences almost any shortage of resources of whatever kind, the less interested this person is in getting wealthier by applying some corruption schemes. These methods are rather popular in less wealthy countries, where temptation to engage into corruption is higher, since it can drastically increase individual's utility function. Therefore, in this research we assert, that the growth of wealth in a society makes corruption recede and not the other way around (reducing corruption helps increase GDP per capita). However, the most counterintuitive finding of this research is the fact, that GDP per capita, adjusted by purchasing power parity, produces the model of a worse quality then just using plain GDP per capita. This fact can be tentatively explained by the flaws in the methodology of calculating these adjustments, since the basket of goods varies drastically across the countries.

Keywords: corruption; GDP per capita; purchasing power parity; macroeconomic indicators; modelling bounded variables; logistic curve; probability distribution

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JEL Classifications: D73, N10, C10

1. Introduction

Corruption is a broadly discussed and studied concept in economic and sociological scientific literature. Nevertheless, so far researchers didn't come to a unified opinion neither concerning its origin, nor about its effect on sustainable economic development, nor about how to combat this phenomenon in case its effect is rather

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negative. Early papers on corruption issue date back to Leff (1964) and Huntington (1968) and declare, that corruption positively affects the functioning of economic system since it reduces some bureaucratic delays and transaction costs. On the other hand, such authors as Kaufman and Wei (1999), Aidt (2009), Mauro (1995, 1997), Shleifer and Vishny (1993), Blackburn et al (2009), Barreto (1996), Tanzi and Davoodi (1997), etc. state, that corruption imposes a negative effect on economy.

In this paper we investigate in a panel data framework the relation between GDP per capita and corruption perception index, issued by Transparency International e.V., which defines corruption as "the misuse of public power for private benefit". Higher values of corruption index correspond to less corrupted countries, whereas lower values denote more corrupted ones. The central hypothesis that we utter is that corruption index variation is best explained by GDP per capita and inclusion of other most common macroeconomic indicators does not help increase the quality of the model.

In order to explain this statistically strong link, we assume, that the wealthier some society is, the easier it becomes for bureaucrats not to use their public power to obtain private benefits. Indeed, if one lives in a society that does not experiences almost any shortage of resources of whatever kind, the less interested this person is in getting wealthier by applying some corruption schemes. These methods are rather popular in less wealthy countries, where temptation to engage into corruption is higher, since it can drastically increase individual's utility function. In this paper we refer to utility as to a basic microeconomic concept of utility theory. If we consider a bureaucrat, deciding whether to engage into a corruption act, he or she would almost certainly consider a potential gain from this act and a potential punishment, which will occur with some probability. Thus, the bureaucrat will assess his or her utility of some corruption act given certain values of gain, punishment and its probability of occurrence. If this utility appears to be high enough, then, obviously, the decision is in favor of engaging into corruption. That is why in order to fight corruption one should consider either toughening the punishment, or decreasing the utility from financial gain, what can be only achieved by increasing the overall wealth of the society.

Therefore, in this research we assert, that the growth of wealth in a society makes corruption recede and not the other way around (reducing corruption helps increase GDP per capita), as stated in Mustapha (2014).

The paper has the following structure. Section 2 presents a quick literature review on the topic of corruption and its impact on economy. Section 3 presents a mathematical approach, that is proposed by the authors for modelling bounded indicators. In section 4 we present the results of our statistical modelling of corruption perception index in panel data framework. Section 5 is devoted to discussing the paper findings and pointing the directions for future research. Section 6 sums up the key points of the paper. Section 7 emphasizes scientific contribution of this paper.

2. Literature review

In the paper by Leff (1964) it is stated that corruption helps spur up economic growth, as corrupt bureaucrats can make the government promote economic activities, what facilitates investments growth. Kaufman and Wei (1999) investigate the relation between bribe payment, management time wasted on bureaucrats and cost of capital. The main finding of that paper is that companies that pay more bribes are also likely to spend more (not less) time on negotiating with bureaucrats what leads to higher (not lower) cost of capital. Mauro (1995, 1997) states that high level of corruption causes a decrease in economic growth by decreasing investment attractiveness. Rahman et al. (2000) capitalize on the previous research and, using Bangladesh data set, study the impact of corruption on economic growth and investment flows. Their findings propose that in order to combat corruption, governments

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should drastically alter the incentives system and strengthen domestic institutions (Lopatin, 2019b; Meynkhard, 2019a; Meynkhard, 2019b; Meynkhard, 2020).

Aidt (2009) wrote that while corruption in a very narrow sense can be seen as a lubricator that may speed things up and help entrepreneurs getting on with wealth creation in specific instances, in a broader sense, corruption must be considered as an obstacle to development", as the author finds a strong negative correlation between corruption and economic development.

Mauro (2004) tries to understand the reason of why corruption persists in spite of its negative impact on the economic growth. The author's models are based upon multiple equilibria. In the final analysis the paper outlines, that when corruption is widely spread individuals have little stimuli to combat this phenomenon even though everybody would be better of without it. The paper by Blackburn et al. (2009) investigates the fact that in some countries corruption imposes stronger negative effect than in the others. Authors use general dynamic equilibrium framework to show that countries with organized corruption networks have higher chances for lower bribes level and faster economic growth.

The paper by Rock and Bonnett (2004) analyze four different data sets in order to prove the connection between corruption and economic growth. Authors conclude that the corruption effect on economic growth depends on the level of current economic state: corruption tends to slow down economic growth for developing countries of smaller size, whereas it spurs up economic growth for East Asian newly industrialized economies.

Li and Wu (2010) studied statistical data of 65 countries and say that trust in a corruption network facilitates economic growth and mitigates its negative effect on the economy. Finally, Mustapha (2014) runs several statistical tests in a panel data framework to display, that GDP per capita is negatively affected by corruption index.

The link between GDP per capita and corruption revolves around the need for a fair distribution of GDP between present and future generations through sustainable use of resources (Lisin, 2020c; Denisova et al, 2019). Each generation should take care of the following: as share of GDP from the previous generation arrive, it should retain a fair amount of capital for generations, while financing its own activities to an appropriate extent (Lopatin, 2019a; Lopatin, 2020; Lisin, 2020a; Lisin, 2020b).

3. Materials and methods

Let $\{y_t, X_t : t = 1, \dots, n\}$ be a set of considered variables, where y_t – corruption perception index, $X_t = (x_{0t}, x_{1t}, x_{2t}, \dots, x_{kt})$ – a set of explanatory variables. Since we consider a case, where tolerance range of a target variable is bounded from above and below, we propose to use a multivariate logistic regression to obtain a point forecast of considered indicator. The formula of the logistic curve is given below:

$$y_t = \frac{1}{1 + e^{-z(t)}}, \tag{1}$$

where $y_t \in [0,1]$ represents a scaled corruption perception index, $z(t) \in (-\infty; +\infty)$.

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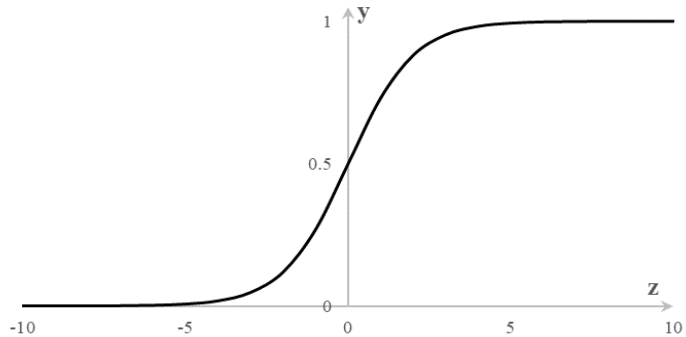

Fig. 1. Logistic curve
Source: author

It is worth noticing that $z(t)$ can be either linear or non-linear function of explanatory variables X_t. Parameters of such model are estimated by using OLS for which we previously conduct an inverse logarithmic transformation of the target variable, as shown below:

$$z(t) = -\ln\left(\frac{1}{y_t} - 1\right). \tag{2}$$

Thus, linear model can be presented as follows:

$$z(t) = X_t B + e_t, \tag{3}$$

where $B = (b_0, b_1, \dots, b_k)'$ is a column-vector of estimators for true model's parameters β, which is independent of any realization of vector X_t, e_t – "white" noise, which is assumed to be subject to normal distribution.

Parameters vector for such class of models is then estimated as below:

$$B = \left(X^T X\right)^{-1} X^T Z, \tag{4}$$

where $X = \begin{pmatrix} X_n \\ X_{(n-1)} \\ \vdots \\ X_1 \end{pmatrix}, Z = \begin{pmatrix} z_n \\ z_{n-1} \\ \vdots \\ z_1 \end{pmatrix}$.

We also suppose that all OLS prerequisites hold, i.e.

$$E\left(e_t \middle| X_t\right) = 0, \tag{5}$$

$$E\left(e_t^2 \middle| X_t\right) = \sigma^2, \tag{6}$$

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$$\operatorname{cov}(e_i; e_j) = 0, \forall i \neq j. \tag{7}$$

In case $z(t)$ is a non-linear function of X_t, the model will look as follows:

$$z(t) = h(X_t, B) + e_t, \tag{8}$$

where h is a continuously differentiable function.

If prerequisites (5-7) hold, then the vector of parameter estimators for (8-9) is computed by numerical minimization of the following target function:

$$S(B) = \frac{1}{2}\sum_{t=1}^{n}(z(t) - h(X_t, B))^2 \to \min \tag{9}$$

To analyze the probability distribution of model's errors we derive the probability density function for y_t. For this we start with the following calculations:

$$y_t = \frac{1}{1+e^{-(\hat{z}(t)+\varepsilon)}} = \frac{1}{1+e^{-\hat{z}(t)}e^{-\varepsilon}} = \frac{1}{1+\alpha e^{-\varepsilon}} \tag{10}$$

where $\hat{z}(t) = X_t B$, $\alpha = e^{-\hat{z}(t)}$ and $\alpha \in (0;+\infty)$.

Thus, the probability distribution of random variable y_t is a function of parameters α and σ. In the first step we derive the cumulative distribution function as shown below:

$$cdf_Y(y) = P(Y < y) = P\left(\frac{1}{1+\alpha e^{-x}} < y\right) = P\left(x < -\ln\left(\frac{1-y}{ay}\right)\right) = \frac{1}{\sqrt{2\pi}\sigma}\int_{-\infty}^{-\ln\left(\frac{1-y}{ay}\right)} e^{\frac{-x^2}{2\sigma^2}}dx. \tag{11}$$

Here σ denotes standard deviation of "white" noise ε. In order to derive the probability density function, we differentiate the obtained function with respect to y.

$$pdf(y) = cdf_Y(y)' = \left(\frac{1}{\sqrt{2\pi}\sigma}\int_{-\infty}^{-\ln\left(\frac{1-y}{ay}\right)} e^{\frac{-x^2}{2\sigma^2}}dx\right)'_y = \frac{1}{\sqrt{2\pi}\sigma}e^{\frac{-\ln^2\left(\frac{1-y}{ay}\right)}{2\sigma^2}}\left(-\ln\left(\frac{1-y}{ay}\right)\right)'_y. \tag{12}$$

From the previous equation it is easy to obtain the analytical form of the probability density function for y, what is shown below:

$$pdf(y) = \frac{1}{\sqrt{2\pi}\sigma y(1-y)}e^{\frac{-\ln^2\left(\frac{1-y}{ay}\right)}{2\sigma^2}}. \tag{13}$$

Probability density function (10-13) can take up different shapes depending on parameters (see fig. 2). In case parameters $\alpha = 1, \sigma = 0.5$, then distribution is close to normal, in case when $\alpha = 0.3, \sigma = 0.7$ and

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$\alpha = 3,\ \sigma = 1.3$ distribution is clearly skewed, and if $\alpha = 1, \sigma = 3$ it has a parabolic shape. It is worth noticing, that in the latter case, the model is uninformative because the confidence intervals will cover almost the entire tolerance range of the target variable. Therefore, while constructing the model, researchers should pay attention to the standard deviation of model's residuals, since if its value is greater than 2, the model can be considered as uninformative.

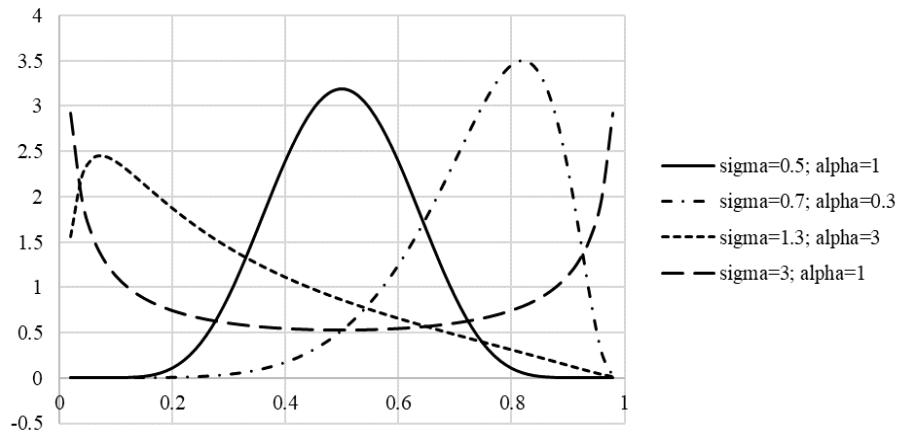

Fig. 2. Probability density of *y* given different parameters' values
Source: author

In order to compute the interval forecast, we calculate explicitly the expected mean square forecast error (MSFE). It is well-known, that MSFE consists of two components: the variance of "white" noise and the variance of the regression line. This can be presented as follows:

$$MSFE_{t+1} = Var\left(\hat{z}_{t+1} - z_{t+1}\right) = \sigma^2 + Var\left(\hat{z}_{t+1} - E\left(\hat{z}_{t+1}\right)\right). \tag{14}$$

Hence, we do a quick recap of the derivation for the regression line variance.

$$\begin{aligned}
Var\left(\hat{z}_{t+1} - E\left(\hat{z}_{t+1}\right)\right) &= E\left(\hat{z}_{t+1} - E\left(\hat{z}_{t+1}\right)\right)^2 \\
&= E\left(X_{t+1}(B-\beta)(B-\beta)^T X_{t+1}^T\right) \\
&= E\left(X_{t+1}\left(X^T X\right)^{-1} X^T \varepsilon\varepsilon^T X\left(X^T X\right)^{-1} X_{t+1}^T\right) \\
&= X_{t+1}\left(X_i^T X_i\right)^{-1} X_i^T E\left(\varepsilon\varepsilon^T\right) X\left(X^T X\right)^{-1} X_{t+1}^T \\
&= \sigma^2 X_{t+1}\left(X^T X\right)^{-1} X^T X\left(X^T X\right)^{-1} X_{t+1}^T \\
&= \sigma^2 X_{t+1}\left(X^T X\right)^{-1} X_{t+1}^T.
\end{aligned}$$

4. Results

In this section we investigate the relation of corruption perception index and GDP per capita for 45 biggest economies. Considered data set covers a time frame from 2012 to 2018 and the following countries: Argentina, Australia, Austria, Bangladesh, Belgium, Brazil, Canada, Chile, China, Colombia, Denmark, Egypt, Finland, France, Germany, Hong Kong, India, Indonesia, Ireland, Israel, Italy, Japan, Malaysia, Mexico, Netherlands,

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Nigeria, Norway, Pakistan, Philippines, Poland, Romania, Russia, Saudi Arabia, Singapore, South Africa, South Korea, Spain, Sweden, Thailand, Turkey, United Arab Emirates, United Kingdom, United States, Vietnam.

Since corruption perception index ranges from 0 to 100, in order to model it we resort to the method, described in the previous section. The final model in this case will look as follows:

$$corruption_{ti} = \frac{100}{1+e^{-\left(b_0+b_1GDP_{ti}+b_2GDP_{ti}^2+e_{ti}\right)}}. \tag{15}$$

In order to apply OLS method, we apply the inverse logarithmic transformation on corruption index to get z-score, which can be modelled by traditional regression tools.

$$-\ln\left(\frac{100}{corruption_{ti}}-1\right) = z-score = b_0 + b_1GDP_{ti} + b_2GDP_{ti}^2 + e_{ti}. \tag{16}$$

Table 1 displays the summary of regression parameters estimation for model (16). As it can be clearly seen, considered z-score is very well modelled by constructed model. Durbin-Watson statistics is equal to 1.79, what testifies that selected analytical equation is rather correct. Intercept, first and second coefficients are highly significant as well as overall model's quality, what can be seen by extremely high value of F-statistics. Coefficient of determination as well as adjusted R-squared display values close to 1, what is interpreted as a model of a very good fit.

Table 1. Regression summary for corruption perception index and GDP per capita

Regression Statistics	
Multiple R	0.923845
R Square	0.85349
Adjusted R Square	0.852551
Standard Error	0.375962
Observations	315

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	2	256.9057	128.4529	908.7742	7.5E-131
Residual	312	44.10038	0.141347		
Total	314	301.0061			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.576067	0.029486	19.53704	4.45E-56	0.518051	0.634083	0.518051	0.634083
GDP per capita	0.980353	0.023849	41.10676	5.7E-128	0.933428	1.027278	0.933428	1.027278
GDP per capita squared	-0.18142	0.020511	-8.84486	6.92E-17	-0.22177	-0.14106	-0.22177	-0.14106

Source: authors' calculations

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Thus, from table 1 we can conclude, that the variation of corruption perception index across analyzed countries at different time periods is well explained by the variation of GDP per capita. Table 2, on the other hand presents the regression summary for model (16), but instead of GDP per capita we used GDP per capita, adjusted by purchasing power parity. If we compare numbers form tables 1 and 2, we can conclude, that GDP per capita PPP, though producing a good quality model, still significantly underperforms in explaining the variation of corruption perception index. Standard error in the latter case is by almost 38% greater, than for model, based on plain GDP per capita.

Table 2. Regression summary for corruption perception index and GDP per capita PPP

Regression Statistics	
Multiple R	0.854034
R Square	0.729374
Adjusted R Square	0.727639
Standard Error	0.510969
Observations	315

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	2	219.5461	109.773	420.4417	2.82E-89
Residual	312	81.46002	0.26109		
Total	314	301.0061			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.562875	0.0377	14.93033	2.08E-38	0.488697	0.637054	0.488697	0.637054
GDP per capita PPP	0.875029	0.030253	28.92363	2.67E-90	0.815504	0.934555	0.815504	0.934555
GDP per capita squared PPP	-0.16822	0.02434	-6.91138	2.71E-11	-0.21612	-0.12033	-0.21612	-0.12033

Source: authors' calculations

This finding is counterintuitive, as it would be more logical, to orient on GDP per capita PPP rather than on plain GDP per capita, since purchasing power parity adjustment is supposed to help better understand the true living standard in a country. Indeed, when making a decision whether to engage into some corruption act an individual should consider his current living standard and compare it with his living standard after accepting a bribe, of course, corrected by the probability of being exposed to justice and corresponding penalties. In this case GDP per capita PPP should more accurately define the average living standard of citizens, working as a reference point for bureaucrats. However, our statistical analysis shows, that probably there is a flaw in methodology of calculating purchasing power parity adjustments. This flaw, in our opinion, is based on the fact, that purchasing power parity adjustment is calculated on some unified basket of consumer goods, which may not adequately assess the average living standard, since the effective structure of this basket varies drastically across the countries due to their geographical, climatic, political, cultural, economic, historical, gastronomical and other differences. Thus, we conclude, that plain GDP per capita is a more adequate predictor for corruption perception index as it, apparently, is a better proxy of a living standard across different countries.

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Moreover, we tried to include into model (15-16) different macroeconomic indicators, such as: consumer price index, current account, Gini income inequality index, government debt to GDP ratio, unemployment rate, GDP, population and government budget surplus. However, all these indicators failed to significantly improve the quality of the model, since all regression coefficients, associated with these factors happened to be statistically insignificant, compared to GDP per capita. This statement does not assert, that there are no other factors, determining the level of corruption other then GDP per capita or it is impossible to find a better fitted model, using already considered factors. Of course, since there is a high degree of multicollinearity among explanatory variables, it is probably possible to apply some sort of regularization in order to improve the quality of the model, but this procedure is beyond the scope of this paper.

Figure 3 presents the scatter plot of z-score for corruption index and standardized GDP per capita, computed as below:

$$GDP_{ti} = \frac{GDP_{ti} - \underset{i}{E}(GDP_{ti})}{\underset{i}{SD}(GDP_{ti})}. \tag{17}$$

Figure 4 displays the scatter plot for corruption perception index and standardized GDP per capita. Both figures also display regression lines and 95% confidence levels, computed by proposed in section 3 method of modelling bounded indicators.

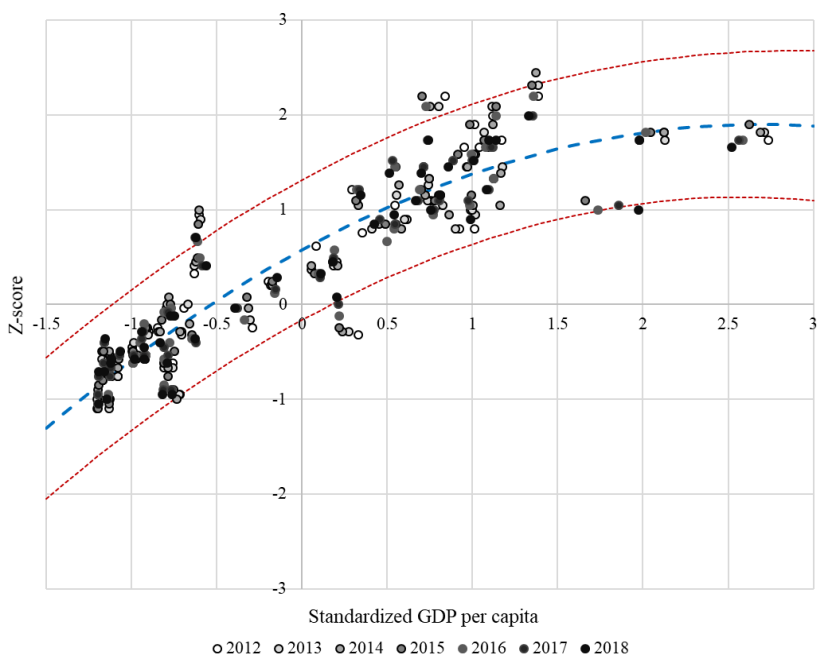

Fig. 3. Scatter plot for z-score and GDP per capita
Source: authors' calculations based on statistical data from Transparency International e.V. (https://www.transparency.org/) and World Bank (https://data.worldbank.org/indicator/)

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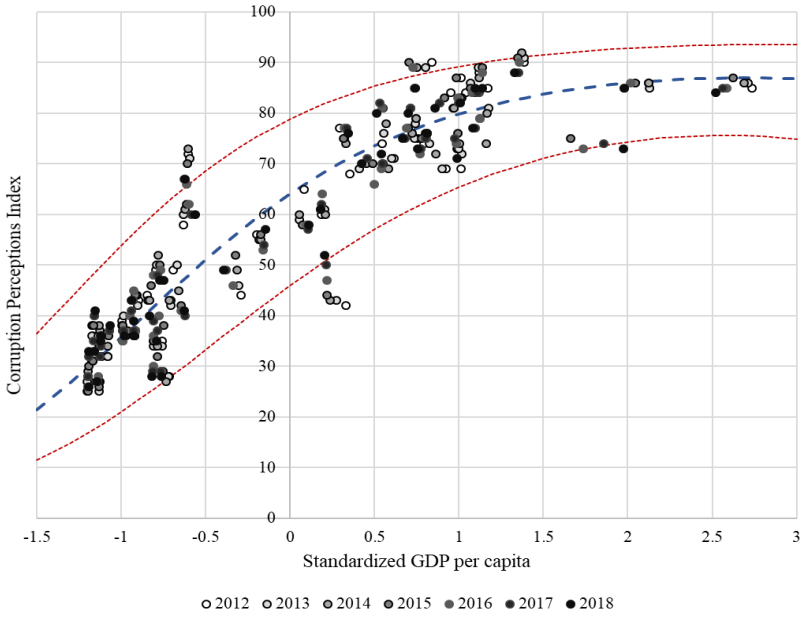

Fig. 4. Scatter plot for corruption perception index and GDP per capita
Source: authors' calculations based on statistical data from Transparency International e.V. (https://www.transparency.org/) and World Bank (https://data.worldbank.org/indicator/)

From figure 4 we can see that the relation between corruption index and GDP per capita is clearly non-linear, what requires some changes in traditional linear approach. Proposed model approximates data quite well and around 95% of all data points are lying within the confidence band. Exactly the same conclusions can be made, when modelling corruption index for each particular time period. R-squared remains stably around 0.83-0.87 and all coefficients are significant. Therefore, we can state, that constructed model is adequate and can be used for drawing economic conclusions, based on its statistics and features.

5. Discussion

Corruption by most scientists is believed to have a negative impact on economic growth and sustainable society development. Indeed, it undermines concepts of justice and equality, since rich individuals can escape punishment for crimes they actually committed or get an advantage in business environment. Corruption facilitates an outgoing cash flow, as bureaucrats try to launder the illegal income through some offshore accounts. These facts obviously hinder country's investment attractiveness, ease of doing business and free market concept. Lack of investments flow seriously damages growth potential compared to the level a country could reach, had there been a lower level of corruption (Chiabaut and Barcet, 2019; Nguyen et al., 2019; Bešinović and Goverde, 2019; Enayatollahi et al., 2019; Mohri and Akbarzadeh, 2019; Sun and Apland, 2019; Jevinger and Persson, 2019; Czioska et al., 2019).

However, combating corruption in order to spur up economic development can appear to be suboptimal, as it may require more resources, than a country will actually gain from a reduced corruption level. In this paper we show that corruption is in a very close relation with the average living standard in a country, which in our case is represented by GDP per capita. Indeed, for a bureaucrat it is much easier to resist the temptation to engage into some act of corruption if his utility from the bribe is not high, what can happen either if the punishment is severe enough, or bureaucrat's value for money is not that high. The latter can only happen if bureaucrat's living standard is pretty high, compared to the average in the world, what is supported by decreasing marginal utility

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theory. That explains, why poor countries tend to have higher level of corruption and rich ones, on contrary, low. (Heyken Soares et al, 2019; Habib and Hasnine, 2019; Malucelli and Tresoldi, 2019; Downward et al., 2019; Candelieri et al., 2019).

That means, that probably economic growth helps reduce corruption as well as low corruption level increases economic growth. We suppose that it is more important to concentrate on some economic reforms, that would facilitate economic growth, rather than combat corruption. First of all, these reforms are supposed to be made by bureaucrats, which are usually the most corrupted society group (Veynberg and Titov, 2017; Veynberg and Popov, 2016; Veynberg et al., 2015; Mikhaylov, 2015).

Secondly, one of the social constructs in the new knowledge economy is the technology of leading indicators that is widely used today, which allows managers in corporations and public administration to anticipate economic events in planning before the appearance of relevant statistics and to set real tasks in resolving conflicts of interest in a working order.

That is why, reforms or laws, aimed at combating corruption will not meet a joyful approval from policymakers. But reforms, aimed at economic development will unlikely meet resistance in the government. On contrary, corrupted policymakers greet faster pace of economic growth as his or her "services" become more expensive. This, obviously, happens because if the corporate sector becomes richer it can afford to give more expensive bribes (Szlosarek et al., 2019; Covic and Voss, 2019; Dorantes-Argandar et al., 2019; Iliopoulou et al., 2019).

Thus, we emphasize the point that corruption is a social phenomenon, that is self-annihilating as economy develops at a higher pace, than the average growth rate across the world. That is why, it is important to try to focus on economic development, what will eventually reduce the corruption level in a country (Huang et al., 2019; Hadiuzzaman et al., 2019; Jasti et al., 2019).

6. Conclusion

In this research we propose a mathematical approach to modelling bounded economic indicators, that is based on logistic curve and ordinary least squares and developed within a parametric framework. With the help of this approach we investigate and model the relation between the corruption perception index and GDP per capita. It is shown that corruption perception level is best modelled by GDP per capita and not by GDP per capita, adjusted by purchasing power parity. This counterintuitive result we explain by the flaw in the methodology of computing these adjustments, since the basket of goods varies drastically across countries. Moreover, other major macroeconomic indicators, such as: consumer price index, current account, Gini income inequality index, government debt to GDP ratio, unemployment rate, GDP, population and government budget surplus could not significantly improve the quality of the model, based on GDP per capita.

We suppose that in order to reduce corruption, a government should focus more on ensuring a faster sustainable economic development, rather than on directly constraining corruption activities. Such an approach is believed to be more effective, since reforms and laws, which are aimed at economic development, will not meet such a resistance as, for instance, introducing flexible tax rate, or aggravate penalties for acts of corruption.

7. Contribution to the Body of knowledge

This paper is devoted to working out a mathematical approach to modelling bounded economic indicators and investigating the relation between corruption and GDP per capita. This research makes at least three important contributions to the body of knowledge. The first contribution is the method modelling bounded from below and above economic indicators. The second contribution is constructed econometric model for corruption perception

index depending on GDP per capita, which explains the variation of dependent variable better, than any other major macroeconomic indicator. The third one is the conclusion, that increasing overall wealth of the society helps combating corruption and not the other way around, as it was previously believed.

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INVESTIGATING THE ROLE OF ENVIRONMENTAL CONCERN AND THE UNIFIED THEORY OF ACCEPTANCE AND USE OF TECHNOLOGY ON WORKING FROM HOME TECHNOLOGIES ADOPTION DURING COVID-19

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Abstract. Working From Home (WFH) technologies has been used and discussed for a long time. The many positive benefits of WFH technologies, including its potential to create a more sustainable work activity, attracted many studies to gain a better understanding of this subject. This study is interested to understand the different factors, including environmental, influencing WFH technologies acceptance in this current shifting situation stimulated by the Covid-19 pandemic. An extended Unified Theory of Acceptance and Use of Technology (UTAUT) model, employing Environmental Concern, was used. The model was assessed by using the structural equation model. The total of 172 respondents participated in this research. The total of 5 hypotheses was tested. The present study's model is able to predict 57.4% of WFH Technology acceptance. Finally, discussion and recommendations to businesses that are currently taking WFH measures during the Covid-19 pandemic were presented.

Keywords: Covid-19; environmental concerns; technology; UTAUT; working from home

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1. Introduction

From a scholarly perspective, entrepreneurship is concerned with understanding the way an entity discovers, creates, and exploits opportunities to create goods and services. However, the question of what consequences this process generates is also an essential part of the whole concept of entrepreneurship (Shane & Venkataraman, 2000), and to answer this question, there is a whole concept that addresses it: sustainable entrepreneurship. Defined as the way to conduct entrepreneurial activities without neglecting environmental consequences (Cohen & Winn, 2007), the concept of sustainable entrepreneurship tackles the various problem of unsustainable entrepreneurship and actions that can be taken to address it (e.g., environmental degradation and sustainable entrepreneurship innovation). The present study is interested in the innovation aspect of sustainable entrepreneurship, and in particular the use of Information System (IS) to achieve sustainable entrepreneurship.

It is well understood that IS can be a primary source of competitive and sustainable advantage alongside other obvious advantages for an enterprise (Brynjolfsson & Hitt, 2000; Feeny & Ives, 1990). By automating, informs, and transforming organizations, IS can be used to achieve sustainability (Standing, Jackson, Chen, Boudreau, & Watson, 2008), this statement by Standing et al. holds true especially today. Right now, due to the Covid-19 outbreak, many governments are forced to impose a lockdown or social distancing policies in their countries (Secon, Frias, & McFall-Johnsen, 2020). These policies are rightly done to minimize the Covid-19 spread. However, it has immobilized many essential human activities; the once 'normal' daily activities such as going to school, commuting to the workplace, and even walking in the park are currently a threat to the people who are at higher risk for severe illness from contacting Covid-19 (Zhang, Jiang, Yuan, & Tao, 2020).

Fortunately, IS enables millions of affected workers to be still able to work from home (WFH). While working for home or telecommuting is not the newest contribution from the IS community, it is currently the most important for this time of emergency. Without working from home initiatives that enable economic activity to continue (Belzunegui-Eraso & Erro-Garcés, 2020), a major economic catastrophe could happen, further amplifying the already severe effect of the Covid-19 outbreak.

The idea of working from home was brought to the discussion as early as 1984. (Salomon & Salomon, 1984) explains that "..reduction of congestion, energy conservation, and a reduction of transportation-related environmental pollution." were some of the major benefits. However, working from home truly flourished together with the technological advancement surrounding it. The increasingly accessible home computing and the shift to an information economy shape the current working from home predominance (Allen, Golden, & Shockley, 2015). Today, this idea is re-evaluated, a new question surfaced as the global community of workers and entrepreneurs have a glimpse into how working from home can be a very efficient and sustainable mode of working: can working from home becomes the new normal? (Amekudzi-Kennedy, Labi, Woodall, Chester, & Singh, 2020). While there is no clear answer right now, one thing is clear about working from home: it promotes sustainability, both economicaly and ecologicaly (Anthony Jr, Majid, & Romli, 2018; Walls & Safirova, 2004; Ye, 2012).

The present study is interested in improving the current understanding of working from home, especially in the technologies it utilized since ICT use is central to working from home activities. We wanted to investigate the acceptance of WFH technologies in the current pandemic crisis using the Unified Theory of Acceptance and Use of Technology and the Environmental Concern factor. Rather than some of the previous research that investigates WFH done by workers who are actually a telecommuter, we studied the new wave of the workforce who has to use WFH technologies in order to keep being productive during the current crisis. Thus, there is a potential for major improvements and, in return, helping enterprises achieve effectiveness and sustainability.

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2. Literature Review

2.1. Working From Home (WFH)

Working from home is simply defined as doing organizational works outside the working area provided by an employer (Reshma, Aithal, & Acharya, 2015), other terms that encompass the same meaning include remote working, teleworking, virtual work, or telecommuting (Raffaele & Connell, 2016). A person who works from home can be in isolation or collaboration (by communicating with other team members) (Zenun, Loureiro, & Araujo, 2007). Working from home popularity and prevalence has been increasing in the last few decades. In the US alone, since 2005, there is a 115% growth of working from home. The statistics provided by the Global Workplace Analytics also show that workers who work from home have a $4,000 higher annual income. The ratio of workers by gender is also reported as almost equal (Global Workplace Analytics, 2017). Investigation about this topic has been done in a vast manner, addressing many aspects of working from home, such as the effectivity of working from home, the psychological aspect of a person who works from home, the environmental sustainability and working from home relationship, and the technologies used for working from home (Bloom, Liang, Roberts, & Ying, 2015; Gajendran & Harrison, 2007; Leung & Zhang, 2017; Zhu & Mason, 2014).

2.2. WFH During Covid-19

Many actions were taken to ensure that the Covid-19 pandemic does not spread further and causes many unwanted consequences. One action taken by governments around the world is the recommendations to do working from home for enterprises (Belzunegui-Eraso & Erro-Garcés, 2020). Different than the traditional working from home explained in the previous sub-chapter, the present study will look at working from home in the context of the current pandemic crisis. The sudden spike of people who works from home, together with how companies have to invest massively in working from home facilities, could have a long-lasting effect for the future of working from home practices (Brynjolfsson et al., 2020). Some even speculated that working from home could be the 'new normal' (Mulcahy, 2020; Verbeemen & D'Amico, 2020). A research article also shows that in their survey, the majority of the respondents foresee that working from home would be more common in the future even after the Covid-19 crisis is over (Baert, Lippens, Moens, Sterkens, & Weytjens, 2020). These speculations and surveys could be proven to be accurate. The world could see working from home as the new alternative, and thus, a better understanding of this phenomenon could be imperative.

2.3. WFH Technologies and WFH Technologies Acceptance

Undoubtedly, the primary facilitator for working from home initiatives is technology. WFH technologies enable the essential aspects of WFH: communication, collaboration, and organization (Allen et al., 2015; Lopez-Leon, Forero, & Ruiz-Díaz, 2020). Thus, WFH technologies can be defined as technologies that facilitate the process of working from home, and particularly, in this case, WFH technologies that are commonly used in the Covid-19 stimulated WFHs. The advancement of WFH technologies further pushes forward the opportunity for working from home, and the never-ending growth of these technologies would mean that in the future, working from home will be easier, more accessible, and more effective (Allen et al., 2015).

In understanding practical technology, it is very common and also needed to understand the human-technology interaction that bridges the users and the technology itself. Without a sufficient understanding of technology acceptance, a technology implementation could fail and causing economic and productivity losses (Chuttur, 2009), which is a much more important currency in the current crisis. Investigating technology acceptance of a system could also create more effective utilization of that system by a clearer understanding of the unpredictable part of technology implementation: the human behavior (Persada, Miraja, & Nadlifatin, 2019). Considering that the numbers of research addressing the technology acceptance of WFH are still limited, especially in the current

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Covid-19 crisis, this study will try to understand the factors affecting workers' acceptance of WFH technologies during Covid-19-related WFH measures.

2.4. Hypotheses Development

This study will use an extended version of one of the most used and remarked technology acceptance framework, which is the Unified Theory of Acceptance and Use of Technology (UTAUT). This sub-chapter will describe the theoretical ground for the model; we then adopt it as the present study conceptual framework.

UTAUT is a theoretical framework that can explain technology acceptance behaviors. Built with the foundation of many psychological theories related to human motivation, UTAUT is claimed to be able to explain 70% of the variance in users' intention to use a technology (Hoque & Sorwar, 2017). UTAUT is also known for its simplicity (Tarhini, El-Masri, Ali, & Serrano, 2016). There are only four main factors in UTAUT that predict the intention and use of technology. The four factors include Performance Expectancy (PE), Effort Expectancy (EE), Facilitating Conditions (FC), and Social Influence (SI); UTAUT's theoretical framework is presented on Figure 1. (Venkatesh, Morris, Davis, & Davis, 2003).

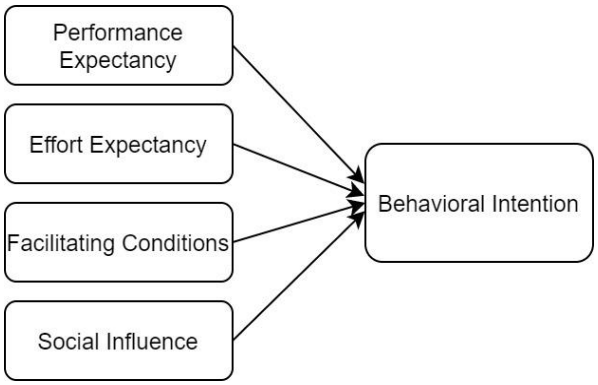

Fig. 1. Theoretical Framework (Venkatesh et al., 2003)

The first factor of UTAUT, Performance Expectancy (PE), is defined as the belief of an individual that uses technology on whether or not the technology will provide advantages for them (Venkatesh et al., 2003). The relationship between PE and Behavioral Intention (BI) which represents technology acceptance has been shown to be positive in many cases of technology use, including work-related technologies and environments (AlAwadhi & Morris, 2008; Zhou, Lu, & Wang, 2010). Consequently, we hypothesized that there is also a significant positive relationship between the Performance Expectancy of WFH technologies and the Behavioral Intention to use WFH technologies during Covid-19-related working from home measures. Thus, we proposed our first hypothesis:
H1: There is a significant positive effect of Performance Expectancy of WFH Technologies on Behavioral Intention to Use WFH Technologies During Covid-19-related WFH Measures

The second factor of UTAUT is the Effort Expectancy (EE), it measures a user's perception of how easy it is the interaction between them and a system (Venkatesh et al., 2003). Past research pieces have proven that there is a significant positive influence of the ease of use of the system (EE) and the intention to use that system (BI), these findings were also proved to be true for technology use in an organizational setting (Mills, 2016; Vatanasakdakul, Aoun, & Li, 2010). Thus we hypothesized that there is a significant positive influence of Effort Expectancy (EE) on Behavioral Intention (BI):

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H2: There is a significant positive effect of Effort Expectancy of WFH Technologies on Behavioral Intention to Use WFH Technologies During Covid-19-related WFH Measures

The next factor is Facilitating Conditions (FC). FC is defned as a user's perception of the availability of technical infrastructure and technical supports for the system (Venkatesh et al., 2003). It is also found that FC positively affects Behavioral Intention (BI) of technology use in organizational settings (Chauhan & Jaiswal, 2016; Fillion, Braham, & Ekionea, 2012; Ifinedo, 2012). The sudden shift for the majority of enterprises toward WFH because of Covid-19 also tests the enterprises' ability to provide these technical supports of their WFH measures, making this factor relevant to predict user's intention to use WFH technologies. Thus we proposed our next hypothesis:
H3: There is a significant positive effect of Facilitating Conditions of WFH Technologies on Behavioral Intention to Use WFH Technologies During Covid-19-related WFH Measures

The last factor from UTAUT is Social Influence (SI). It is the belief of an individual that other people who are important to them feels that the system should be used (Venkatesh et al., 2003). The influence of other people perceived as important by an individual (SI) is identified to be affecting Behavioral Intention (BI) significantly in Venkatesh et al. findings. Other research studying the implementation of technology in organizational settings in different field and level of technical complexity have also found this to be true (Alrawashdeh, Muhairat, & Alqatawnah, 2012; Dwivedi, Rana, Jeyaraj, Clement, & Williams, 2019; Kijsanayotin, Pannarunothai, & Speedie, 2009). Thus, our fourth hypothesis is:
H4: There is a significant positive effect of Social Influence of WFH Technologies' Use on Behavioral Intention to Use WFH Technologies During Covid-19-related WFH Measures

Lastly, to extend the already established UTAUT framework, we incorporate another factor that could affect Behavioral Intention (BI) to use WFH technologies: Environmental Concern (EC). EC is defined as the awareness of consequences or affects held by an individual on environmental problems (Fujii, 2006; Schultz et al., 2005). In previous pieces of literature, it is evident that EC can affect behaviors that are environmentally friendly. Furthermore, environmentally friendly behavior has been explored in a broader scope by many other studies, revealing that EC can also affect behavioral intention of a person to do a particular action (Fujii, 2006; Pagiaslis & Krontalis, 2014). It is also apparent that EC could also affect behavioral intention to use a technology that can create positive effect on the environment (environmentally friendly) (Hsu, Lin, Chen, Chang, & Hsieh, 2017). Hence, the intention to accept WFH technologies can also be affected by this variable due to how WFH technologies promote sustainability by reducing gas emission, reducing office space needed, minimizing congestion, and removing the need of more energy on office spaces (Fuhr & Pociask, 2011). Thus, we proposed our last hypothesis:
H5: There is a significant positive effect of Environmental Concern on the Behavioral Intention to Use WFH Technologies During Covid-19-related WFH Measures

Accordingly, the proposed research framework is presented in Figure 2.

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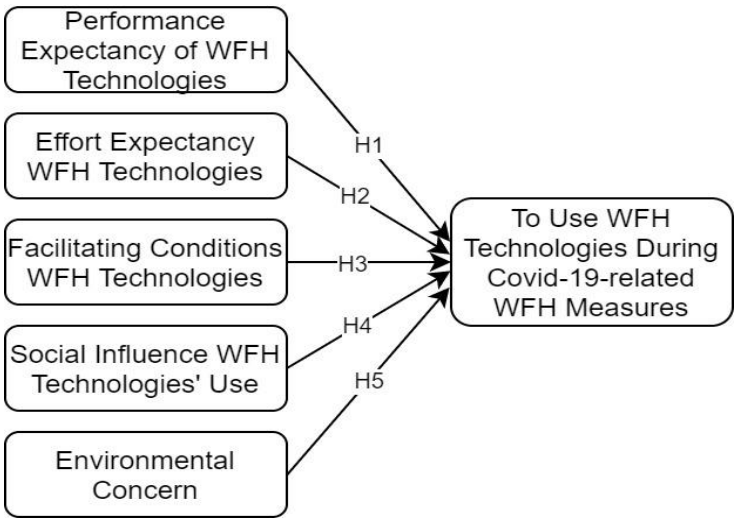

Fig. 2. Conceptual Framework

3. Methods

The present study uses Structural Equation Modeling (SEM) to validate our variable indicators, analyze the relationship, and see the overall fitness of the model. A Confirmatory Factor Analysis (CFA) approach was used due to how our theoretical framework has already proven to be a solid foundation for the analysis purpose of this study. An online questionnaire was developed consisted of 6 variables projected by 19 items using a five-point Likert scale. We also asked our respondent demographical questions to illustrate better the sample used in this study. The list of the questionnaire is provided in Table 1. The sampling method used was the purposive sampling method, with people who are doing WFH because of Covid-19 pandemic as the criteria. The instrument was distributed from April 25th to May 10th 2020 in different parts of Indonesia. Indonesia is selected because Covid-19 stimulated WFH is quite predominant, thus able to represent workers interacting with WFH technologies around the world. We first tested the reliability and the validity of our instrument and assessed the fitness of our model before testing the proposed hypotheses.

Table 1. List of questionnaire

Variable	Question	Variable	Question
PE1	I think that WFH technologies are useful for my job.	FC1	I have access to the necessary resources to use WFH technologies.
PE2	Using WFH technologies makes me able to complete tasks quicker.	FC2	I have the knowledge necessary to use WFH technologies.
PE3	Using WFH technologies increases my productivity	FC3	WFH technologies is well-suited with other work technologies I use.
EE1	WFH technologies is understandable and clear for me.	SI1	People who affects my actions perceived that I should use WFH technologies.
EE2	Becoming skillful at using WFH technologies is easy for me	SI2	In my use WFH technologies, the senior management of in my workplace has been supportive.
EE3	I find WFH technologies easy to use.	SI3	WFH technologies use in my workplace is supported by my organizaiton in general.
EE4	WFH technologies is easy to operate for me.	BI1	I intend to use WFH technologies in the next month.
EC1	The environment is severely abused by humans	BI2	I am predicting that I would use WFH technologies in the next month.
EC2	The balance of nature is easily upset by humans	BI3	I am planning to use WFH technologies in the next month.

Source: Adopted from (Coelho, Pereira, Cruz, Simões, & Barata, 2017; Hsu et al., 2017; Venkatesh et al., 2003)

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4. Results

4.1. Descriptive Statistics

Before presenting the results of statistical analysis, we first provide the demographical distribution of our sample. With a total of 172 respondents, Table 2 provide a summary of the distribution. From Table 2, it can be seen that the sample used in the present study is diverse and thus able to represent the population of workers around the world. Gender distribution can be considered as relatively equal (46.2% Female, 52% Male, and 1.8% Prefer not to answer). The sample of our study also came from different educational level and different job sectors. We also asked two descriptive questions and revealed that: 1. The majority of the place our respondents worked at (53.8%) is experienced in the utilization of WFH technologies; and 2. The frequency of WFH technologies usage varies between our respondents, with 40.9% using WFH technologies every workday, 33.3% often, and 25.7% rarely.

Table 2. Sample Distribution and Descriptive Statistics

Criteria	Characteristics								
Gender	Male.			Female			Prefer not to answer		
	46.2%			52%			1.8%		
Education	Secondary		Diploma		Graduate or Higher		Others		
	22.2%		59.1%		15.2%		3.5%		
Job Position	Supervisor, Office worker, Administrative	Public sector employee	Middle management position of public sector	Intellectual profession, Executive, Freelancers	Management, Administration, or Intermediate Professionals	Others			
	19.3%	28.7%	17.5%	8.8%	8.2%	17.5%			
Job Sector	Various Industries	Financial	Consumer goods industry	Basic and chemical industry	Infrastructure, utilities, and transportation	Trade, services and investment	Mining	Agriculture	Property, real estate, and building construction
	3.5%	19.9%	1.2%	2.3%	12.9%	51.5%	0.6%	4.1%	4.1%
Is your workplace experienced with WFH Technologies utilization?	Yes			No			Maybe		
	53.8%			26.3%			19.9%%		
How frequent you use WFH Technologies?	Rarely			Often			Every workdays		
	25.7%			33.3%			40.9%		

Source: Own preparation

4.2. Data Analysis

The result of our analysis of the data using the proposed conceptual framework is presented in this sub-chapter. In order to fulfil the necessary requirement of SEM, few measurements were conducted. These measurements ensure that the data used for this study is valid and reliable and whether or not the model fits the data. To measure reliability or the internal consistency of the variables, we used Cronbach α and Composite Reliability (CR) with the minimum required values of 0.6 and 0.7 respectively (Churchill Jr, 1979; Jani, Sari, Pribadi, Nadlifatin, &

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Persada, 2015; Lin, Nadlifatin, Amna, Persada, & Razif, 2017; Mufidah et al., 2018; Nunnally, 1978). To measure the validity of the scale, we used the Factor Loadings and the Average Variance Extracted (AVE) with minimum value required of 0.5 for both scales (Chin, Jiang, Mufidah, Persada, & Noer, 2018; Hair, Anderson, Babin, & Black, 2010; Miraja, Persada, Prasetyo, Belgiawan, & Redi, 2019; Nadlifatin, Lin, Rachmaniati, Persada, & Razif, 2016; Nadlifatin et al., 2020; Persada et al., 2020). The measurements revealed that the data for this study surpasses the required values for every scales. Hence, the data of this study is considered reliable and valid. The summary of these measurements is presented in Table 3.

Table 3. Reliability and Validity

Variable	Item	Cronbach α	CR	Factor Loading	AVE	Variable	Item	Cronbach α	CR	Factor Loading	AVE
Performance Expectancy	PE1	0.90	0.90	0.78	0.7	Facilitating Conditions	FC1	0.81	0.81	0.78	0.6
	PE2			0.90			FC2			0.79	
	PE3			0.90			FC3			0.74	
Effort Expectancy	EE1	0.94	0.94	0.86	0.8	Social Influence	SI1	0.67	0.70	0.51	0.5
	EE2			0.94			SI2			0.59	
	EE3			0.92			SI3			0.87	
	EE4			0.88		Behavioral Intentions	BI1	0.94	0.92	0.84	0.8
Environmental Concern	EC1	0.74	0.75	0.71	0.6		BI2			0.90	
	EC2			0.83			BI3			0.92	

Source: Own preparation

Lastly, to evaluate the fitness of the model, we use the CFI and GFI scale with acceptable value of 0.7 for both scales (Lv & Lv, 2020). It is revealed that the present study model has GFI of 0.729 and CFI of 0.824. Accordingly, we can continue to analyze the hypotheses. Hypothesis analysis was conducted using a bootstrap of 1000 samples with maximum likelihood (ML) approach with a bias-corrected confidence interval of 90 (error tolerance of 10%), this was conducted because there is a multivariate non-normality in the data (Byrne, 2013).

The analysis of the proposed hypotheses is illustrated in Figure 3. It is apparent that only one hypothesis was rejected, meaning four hypotheses were revealed to have positive and significant relationships; PE, FC, SI, and EC all proven to have a significant positive relationship towards BI. The BI variable has a squared multiple correlations of 57.4%, suggesting that the model can explain the majority of workers' intention to use WFH Technologies.

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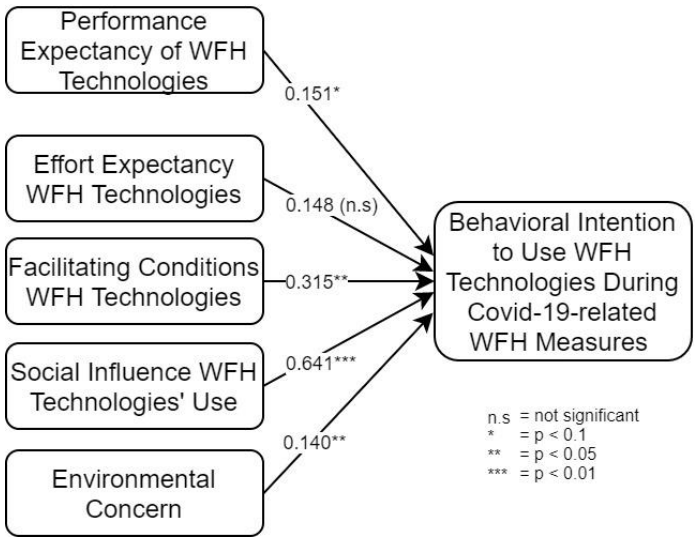

Fig. 3. Analysis Result

4.3. Discussion

After analyzing the hypotheses, we then able to discuss the meaning of the results of this study. Figure 3 shows that in contrast to the second hypothesis, EE does not have a significant positive relationship with BI. This means that employees who are using WFH technologies do not necessarily need the ease of use of using WFH technologies in order for them to have an intention to use it. A very significant relationship, however, is exhibited by the relationship between SI → BI which have a p-value less than 0.01 (0.001) and an effect size of 0.641. This shows that the intention of employees to use WFH technologies is hugely affected by how they perceive their social surroundings opinions regarding the use of the technologies. Facilitating Conditions also show a significant relationship with an effect size of 0.315, suggesting that availability of infrastructure, facility, and technical support is vital for employees before intending to use WFH technologies. Performance Expectancy, though having the lowest effect compared to other accepted UTAUT hypotheses (0.151), still proves to affect BI significantly. Lastly, Environmental Concern, which is an extension to the UTAUT model, is revealed to have a significant effect on BI. This implies that other than the standard variable (such as UTAUT's variables) used to predict technology acceptance, Environmental Concern also played a role in this matter. This is an exciting finding because other than enterprises that need to have a sustainable operation in their business, employees also share the same spirits; with EC → BI proved to be significant, it means that employees' concern about environmental problems and issues affects their intention to use WFH technologies, which can contribute to the sustainability of enterprises. These finding can also be applied in a practical setting. For example, businesses could focus on the variables that significantly affect their employees' intention to use WFH technologies so that their WFH initiative can be more productive. Thus, this study was able to contribute both practically (using the previous example) and theoretically by showing an extension variable (EC) for the UTAUT framework and further validating the use of the UTAUT framework for technology acceptance (Hsu et al., 2017; Saleh, Haris, & Bint Ahmad, 2014).

5. Conclusions and Limitations

The present study analyzes the data of 172 respondents in Indonesia who are currently engaged in Covid-19-related WFH initiatives. We built our conceptual framework using the UTAUT model with an addition of Environmental Concerns as a predictor for employees' intention to use WFH technologies. The result of this

study revealed that four out of the five hypotheses were accepted: Performance Expectancy, Facilitating Conditions, Social Influence, and Environmental Concerns. Accordingly, we described the relationship of the result for each hypotheses and gave an example of potential practical implication. We also described the theoretical contribution of this study. However, there are some limitations, the sample size could be increased, and more diverse and international samples could be used in order to have a greater understanding regarding this subject. Future research could also investigate other variables that could influence the workers' intention to use WFH technologies.

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FINANCIAL PERFORMANCE, DISPARITY, AND TREND OF PETROCHEMICALS SECTOR OF SAUDI ARABIA

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Abstract. Historical financial performance analysis of the business organization is the parameter of success and failure of operational activities and financial soundness while analysis of a particular industry explains the contribution towards the nation of the economy. In Saudi Arabia, petrochemicals industry is playing a vital role and contributes significantly to the Gross Domestic Product (GDP) of the nation. Some Saudi petrochemicals companies perform well while others performance unexpected or below the standard. There is financial disparity seen in the petrochemicals industry of Saudi Arabia and no study available in Saudi petrochemicals industries context to disclose financial performance, disparity and its trend. So, it is very necessary to analyze the financial reports of the petrochemicals companies to get the historical financial performance disparity and explain its trend. Some leading petrochemicals companies of Saudi Arabia selected for the financial performance study and operational performance, and financial soundness ratios applied to get the financial performance for specific duration. Statistical tools applied to know the significance of variance and trend of financial performances. The study discloses that the Gross profitability of all petrochemicals companies significantly different while the gross profitability also governs the other measures of financial performance. The trend financial performances of petrochemicals companies reveal a decline in operational performance or Gross profitability that governs the decline of other measures of financial performances.

Keywords: Ratio analysis; Variance analysis; Profitability; Financial soundness; Paying-ability; Return on equity; Return on investment

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JEL Classification: P27, C43, L25, L65, M41

1. Introduction

Financial performance of an organization is the measurement of success of operational activities and financial soundness and historical analysis of a particular industry reveal the growth and contribution to the economy of the nation. The petrochemical industry of Saudi Arabia plays a significant role in the development of the economy and an ingredient of the gross domestic product (GDP). In Saudi Arabia, petrochemicals companies export their petrochemicals products worldwide that is the key source of their revenue. The optimum performance expected from the companies engaged in manufacturing and marketing similar products. Normally, in any industry, some

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companies perform well while others' performance is the below expectation. The performance of petrochemicals companies can be measured on the basis of absolute and relative analysis. The absolute analysis reflects the level of size of business activities while relative analysis explains the efficiency of business activities or how efficiently a business organization is managing its activities. The financial performance can be bifurcated into two categories: operational performance and financial soundness. If other factors remain constant, the relative performances of all companies of a sector must be same. The negative variations in relative performances of the companies of a particular sector reveal the inefficiency and company is marked as poor performer in the industry. The performance of poor business organizations needs to be reviewed so that it can also contribute equally to the development of the nation. In the Saudi Petrochemicals industry, the performance of some petrochemicals companies is not so satisfactory that the resulting unexpected growth and development. It is evident that after the global economic recession (2008 & 2009), there was a major decline in the financial performance of most petrochemicals companies. So, there is a need to get the average financial performance of the companies and its trend and most importantly analyze the disparity in growth rate and its probable causes.

2. Literature Review

Mensi, W. (2019) found that among the fifteen sectors petrochemicals sector is the most affected sector by the price movements while other sectors like bank, telecommunication, media and publishing, hotel and tourism, and agriculture sectors are unaffected. Al-Shuaibi, K., Zain, M., & Kassim, N. (2016) explained that competitiveness is playing a vital role in quality and innovation and finally it improves the financial performance of the business organization in Saudi Arabia. Shahmirzadi, H. E. (2017) revealed that an appropriate strategy to develop the product and products' marketing increases the turnover of the petrochemicals products. Sultan, Z. A., & Haque, M. I. (2018) explained the importance of oil exports and found that the economic growth of Saudi Arabia is positively and directly related to oil exports. They further recommended the regulation of oil exports and the diversification of the Saudi economy. Albassam, B. A. (2015) also suggested the diversification for sustainable economic growth and development of Saudi Arabia because the petrochemicals sector is not contributing expectedly. He indicated that excessive reliance on natural resources is not good and in the long run may be affected by the lower prices. Al-Malkawi, H. A. N., & Javaid, S. (2018) observed that, in Saudi Arabia, there is a strong positive relationship between corporate social responsibility (CSR- Zakat) and corporate financial performance (CFP). He suggested that Zakat is enhancing the profitability and value of the business organization. The results reveal that there is a strong positive relationship between CSR (Zakat) and CFP. Buallay, A., Hamdan, A., & Zureigat, Q. (2017) explained in their studies that there is no significant impact of corporate governance on the operational and financial performance of the Saudi companies. It refers that the corporate governance does not affect the financial performance while there is a positive relationship found between the size of the ownership, the board of directors on firms' performance. ALI, A. H. H., & Abu Theeb, E. H. N. (2018) found that the increased cost of sales was the factor of responsible for the negativity of the petrochemical sector during the global economic recession. Alidrisi, H., Aydin, M. E., Bafail, A. O., Abdulal, R., & Karuvatt, S. A. (2019) explained the vitality of financial performance and suggested that monitoring the efficiency and financial performance is necessary for the expected performance of the firms' which contribute an important role in the Saudi economy, ultimately. Akhtar, M. H., & Asif, M. (2017) found operational inefficiencies and underutilization of the resources are the main reasons responsible for the low performance in the petrochemical industry. They indicated that the enhancement of level of operational efficiencies, and optimum utilization of resources facilitate the expected performance of the petrochemicals industry of Saudi Arabia. Lele, U. (2016) explored that there a strong correlation between global oil prices with revenue growth, net margin and return on equity of listed companies of Saudi Arabia. As per Lele, oil prices (external or uncontrollable factor) govern the profitability of the petrochemicals companies in Saudi Arabia. Samargandi, N., Fidrmuc, J., & Ghosh, S. (2014) found in their studies that the impact of financial development in Saudi Arabia either negative or negligible. The financial development does not affect the financial performance of petrochemicals companies or the financial development of the economy does not governs the financial performance of petrochemicals companies while some other

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internal and external factors responsible of firms' performance. Khan, M. Z. R. M. N., & Khokhar, I. (2014) basically considered the operational performance and revealed that in the petrochemicals sector in Saudi Arabia the profitability of the companies is governed by the velocity of operational activities i.e. turnover of the creditors, debtors, inventory, total assets, and debt-equity ratio. Al-Ajlouni, A., & Shawer, M. (2013) found that there is no significant relationship between capital structure (Debt-equity ratio) and return on investment (ROI) and return on equity (ROE) while there is the weak relationship with the net profit margin (NPM). It facilitates that capital structure does not govern the profitability while other factors are responsible for financial performance of the business organization.

3. Research methodology

The research is based upon the secondary data obtained from the websites of petrochemicals companies of Saudi Arabia from 2004 to 2016 but two years (2008 and 2009) data is not to be considered as it was the abnormal (Global Economic Recession- GER) period. To know the average financial performance ratios are to be calculated from the financial statements of the petrochemicals companies. Financial performance of the petrochemicals companies are measured based on the profitability and paying ability criterion. To assess the profitability Gross profit ratios are calculated that is the reflection of operational performance. Return on Investment (ROI) and return on equity (ROE) ratios calculated to know the profitability on capital investment and shareholders' point of view. The current ratio and Debt-equity ratio are calculated to know the short term and long term paying ability of the companies. Following formula applied to measure the financial performance (Ali & Haque, 2014):

I. Gross Profit Ratio $= \frac{Gross\ profit * 100}{Net\ sales}$, II. ROI $= \frac{PBT/Z * 100}{Total\ Assets}$

III. ROE $= \frac{PAT/Z * 100}{Shareholders' equity}$, IV. Current Ratio $= \frac{Current\ Assets}{Current\ Liabilities}$

V. Debt-equity Ratio $= \frac{Long-term\ debts}{Shareholders' equity}$

Where, PBT/Z= Profit before tax/zakat, PAT/Z= Profit after tax/zakat,

The averages of all ratios of petrochemicals companies are to be calculated to get the average financial performance of the petrochemicals industry. To get the significance in the disparity of financial performance of petrochemicals companies AVOVA (Analysis of Variance) of averages of financial ratios is calculated. The graphical presentation of all profitability (Gross profit, ROI, and roe) and financial soundness ratios (Current ratio and Debt-equity ratio) prepared which are based on the yearly ratios of the petrochemicals companies for the period 2004 to 2016 (excluding 2008 and 2009). Following formula applied to calculate averages trend indices (ATI_{FBI}) of index numbers of financial ratios:

$$ATI_{FBI} = \frac{\sum FBI}{N},$$

Where, ATIFBI= Average of trend indices (based on fixed base index numbers), ∑FBI= Sum of Fixed Base Index numbers of financial ratios for study period, N= Number of years considered for the study period.

The trend indices (ATI_{FBI}) will explain the disparity in financial performances of petrochemicals companies and helps in facilitating the suggestions for poor-performing petrochemicals organizations. In calculating trend indices (ATI_{FBI}), the year 2004 is considered as base year except wherever ratio is negative or abnormal (More deviating) as per the average of the particular ratio.

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4. Analysis and Interpretation

The financial analysis of the petrochemicals companies, get the significance variances in financial performances, and disparity trend are the objectives of study. The financial ratios of the petrochemicals are the base of the study. So, the study can be divided into three categories. First, to know the average financial performance of the petrochemicals companies financial ratios are calculated from the period 2004 to 2016 (excluding 2008 and 2009). Secondly, Analysis of Variance (ANOVA) calculated to know the significance of the variances among the financial performances of the petrochemicals companies. Third, index numbers and their averages calculated and used in developing the chart to get the trend and weaker aspects of the financial performance of petrochemicals companies.

4.1 Average Financial performances of the petrochemicals companies

The financial performance of the petrochemicals companies measured by established financial ratios. Gross profit ratio, Return on investment, and Return on equity measure profitability for the efficiency of operational activities, utilization of funds or resources, shareholders' point of view (Ali & Haque, 2014). The average performances of the Saudi Petrochemicals companies are as follows.

Table 1. Averages of financial ratios of the petrochemicals companies (2004 to 2016)

Petro. Comp.	Average Financial Ratios											
	Gross Profit	Rank	ROI	Rank	ROE	Rank	Current Ratio	Rank	Debt Equity Ratio	Rank	Av. Rank	Overall Position
SAFCO	62.90	1	28.08	1	32.76	1	4.39	1	0.22	1	1	1
SABIC	33.62	3	9.47	2	20.14	2	2.78	3	0.69	2	2.4	2
NAMA	-6.51	6	-5.75	6	-26.08	6	1.83	6	1.07	4	5.6	6
TASNEE	28.08	4	3.29	5	10.29	5	2.02	5	1.37	6	5	5
Sipchem	44.54	2	4.66	4	10.55	4	2.68	4	1.11	5	3.8	4
SIIG	21.10	5	7.89	3	13.41	3	3.31	2	1.04	3	3.2	3
Average	30.62		7.94		10.18		2.84		0.92			

Source: Averages of Ratios calculated from the financial statements of the petrochemicals companies for the period 2004 to 2016.

From the above table of the average financial ratios, it can be concluded that the results of overall operational activities are satisfactory (30.62%). But, the individual operational performance of some companies not reflects the efficiency as it is negative in the case of NAMA while it is lower in SIIG petrochemicals company. The operational performance of the SAFCO and Sipchem is satisfactory and above the average of the petrochemicals industry. The return on investment of the petrochemicals industry is 7.94% on its employed funds. It is lower due to the underutilization of resources by NAMA (-5.75%), TASNEE (3.29%), and Sipchem (4.66%) petrochemicals companies. SAFCO (28.08 %,) SABIC (9.47%), and SIIG (7.89%) utilize their resources efficiently. The company owners' point of view SAFCO (32.76%) and SABIC (20.14 %) perform well while SIIG (13.41%), Sipchem (10.55%), and TASNEE (10.29%) petrochemicals companies perform average. The return on equity of the NAMA is only negative (-26.08) as its return on investment was also negative (-5.75%). The short term paying ability of SAFCO, SIIG, SABIC, Sipchem, and TASNEE was satisfactory as all the companies are satisfying the criterion of 2.1 of the Current ratio except NAMA. The Current ratio of NAMA is below the standard (1.83 times) reflects weak short term paying ability. The long term paying ability of the companies reflected by the Debt-Equity ratio as it supports operational performer petrochemicals companies. All companies working on equity except SAFCO (0.22 times), and SABIC (0.69 times). TASNEE (1.37 times),

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Sipchem (1.11 times), NAMA (1.07 times) , and SIIG (1.04 times) enjoying the external funds and working on equity. Working on equity is favorable for owners' point view but negative for long term paying ability. The long term paying ability of the SAFCO and SABIC is better than the rest companies working on equity. As per the ranks of financial ratios of all companies SAFCO, SABIC, and SIIF perform well while NAMA, Sipchem and TASNEE companies' financial performances are needed improvements. All the petrochemicals companies' profitability and paying abilities are varying from their averages as it is reflected in the above table. So, there is a need to assess the significance of variations in financial performances.

4.2 Variations in financial performances of petrochemicals companies

From the above analysis of average financial performances of petrochemicals companies, it is obvious that that there are variations in financial performances of petrochemicals companies for the period 2004 to 2016. As per the size of the corporation, the absolute amounts of the petrochemicals companies will vary but the relative performances of the companies must be the same if there is no disparity in the operational performance, and financial soundness or short or long term paying ability. Some companies are performing well while other performances are not satisfactory. So, to assess the significance of variations of financial performances among the corporations ANOVA (Analysis of Variances: Single-factor) is applied.

Table 2. Variations in Financial Ratios Performances

SUMMARY: ANOVA- Single Factor						
Ratios	No. of Companies	Sum of Ratios	Average of Ratios	Variance of Ratios		
Gross profit Ratio	6	183.7361	30.62269	544.0104		
Ret. On Invest.	6	47.65494	7.942491	125.5257		
Return on Equity	6	61.07562	10.17927	386.9124		
Current Ratio	6	17.01016	2.835026	0.867142		
Debt- Equity Ratio	6	5.503608	0.917268	0.164281		
Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	3372.881	4	843.2203	3.986933	0.0123	2.75871
Within Groups	5287.399	25	211.496			

Source: Averages of Ratios of petrochemicals companies are used as variables (from the Appendix 6) in ANOVA.

From the above analysis of variance, it can be concluded that there are variances in the Gross profit ratio (544.0104), Return on Equity (386.9124), and Return on investment (125.5257) among the petrochemicals companies of Saudi Arabia. It reveals that there is high operational performance disparity among the petrochemicals companies. The Gross profit ratios of the companies are the base for utilization of resources and govern the policies short-time and long-time paying ability of the business organizations up to some extent. So, a high variance in the gross profit ratio will lead the disparity in all dimensions of the financial performance while specifically operational performance or profitability of the companies. The calculated value of F- Ratio (3.98693) is more than the critical value (2.7587) as it is evident for the significance of variances. So, there is a need to find out the trend of disparity of financial performance among the petrochemicals industry of Saudi Arabia.

4.3 The trend of disparity of financial performance among petrochemicals companies of Saudi Arabia

From the above ANOVA analysis, it is very clear that the financial performances of the petrochemicals companies are not similar and significant disparity seen in all the financial ratios specifically in profitability

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ratios. This implies analyzing all the financial ratios by developing trends using the fixed base method of index numbers. The index numbers will measure the disparity of a ratio for a given period from 2004 to 2016 (excluding 2008 and 2009).

4.3.1 Disparity Trend of Gross Profit Ratio

There is a high disparity or variance seen in the Gross Profit ratios (544.0104) of the petrochemicals companies of Saudi Arabia for the period 2004 to 2016 (As shown in the ANOVA analysis). It is well known that the Gross Profit ratio reflects the profitability and governs the overall financial performance of the business organizations (Ali & Haque, 2014). The average gross profitability of SAFCO (62.90%), (SABIC 33.62%), Sipchem (44.54%) reveal satisfactory and above the average of the petrochemicals industry (30.62%) while the TASNEE (28.08%), SIIG (21.10%) perform below the average for the period 2004 to 2016 and need to improve their operational abilities. The average operational performance of the NAMA is unexpectedly negative (-6.51%) for the period of 2004 to 2016 (Appendix 1). So, there is a need to enhance the level of activities by the TASNEE and SIIG to enjoy the profitability at a larger scale of production because indirect expenses will remain constant and increase the margin for profit. Second, there is a need to minimize the manufacturing expenses by adopting the advanced technology of production to save money and time. NAMA has to revise its whole business pattern as the gross profitability is negative. On one hand, NAMA must control its expenses and other hands try to enhance the turnover keeping the margin for the gross profit. SAFCO Petrochemicals Company not only maintained its only profitability but also increased significantly up to 127% in a time span of 2004 to 2016 while it has seen extremely negative in NAMA(-54%). The Operational performance trend of SAFCO (127%), SABIC (86%), and TASNEE (82%) is above the average (74%) of the petrochemicals industry while TASNEE and SABIC could not maintain its profitability as before because of it below 100%. The operational performance of the NAMA(-54%),Sipchem (62%) and SIIG(58%) is much less than the average of the industry(47%). Overall, gross profitability of petrochemicals companies got decreased by 26% (as the average is 74%) in duration of years 2004 to 2016 (Appendix 1). Surprisingly, only the trend of operational performance of the NAMA is negative and it was in all comparatively lowest in the industry (Appendix 1). The average profitability of petrochemicals industry of Saudi Arabia was consistently stable before the Global economic recession (2008 &2009) and started to decline after that. Not only the global economic recession but the prices and demand for petrochemicals products affect the profitability of the petrochemicals organizations that is unavoidable.

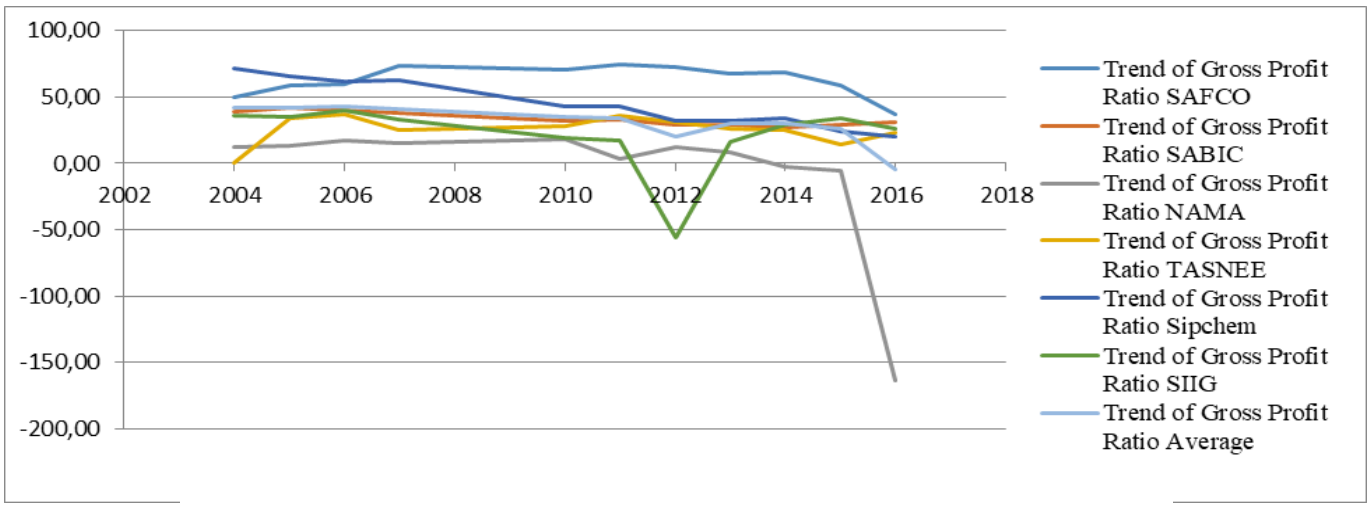

Figure 1. Trend of Gross profit ratios of petrochemicals companies in Saudi Arabia from 2004 to 2016
Source: The Gross profit ratios of petrochemicals companies (2004 to 2016) used to draw the chart (Appendix 1)

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The above line chart is alarming and reveals that the past performance based on the average operational performance of the petrochemicals industry will move down whereas SAFCO, Sipchem will not be able to maintain their past performance. SABIC, SIIG and TASNEE will try to attempt maintain their level of profitability in future. The future profitability of NAMA is unpromising.

4.3.2 Disparity in Trend of Return on Investment (ROI)

There is also disparity seen in the trend of return in investment (125.5257) in the petrochemicals sector of Saudi Arabia for the period 2004 to 2016 (As shown in the ANOVA analysis). It is established that the return on investment reflects the utilization of resources of the business organization (Ali & Haque, 2014). The average return on investment SAFCO (28.08%), SABIC(9.47%), and SIIG (7.89%) are above or near the average of the petrochemicals industry(7.94%) while TASNEE (3.29%), SIIG (4.66%) perform below the average for the period 2004 to 2016 and need to improve their abilities of utilization resources. The average utilization of resources performance of the NAMA is unexpectedly negative (-5.75%) for the period of 2004 to 2016 (Appendix 2). So, there is a need to enhance the level of activities and utilization of resources by the TASNEE and SIIG to enjoy the benefits at a larger scale of production. Second, there is a need to enhance the level of turnover or activities by manufacturing new or innovative products to enhance the demand for the products in the global market. NAMA has to revise its whole business pattern as the gross return on investment is negative. NAMA must control its expenses and other hands try to enhance the demand of products in the market and turnover keeping the margin for the gross profit. The average return on investment of petrochemicals industry of Saudi Arabia was increasing trend before the Global economic recession but started to decline after that. Only SAFCO Company's return on investment was above the average and the rest of the companies could not maintain its level and get decreased every year (Appendix 2).

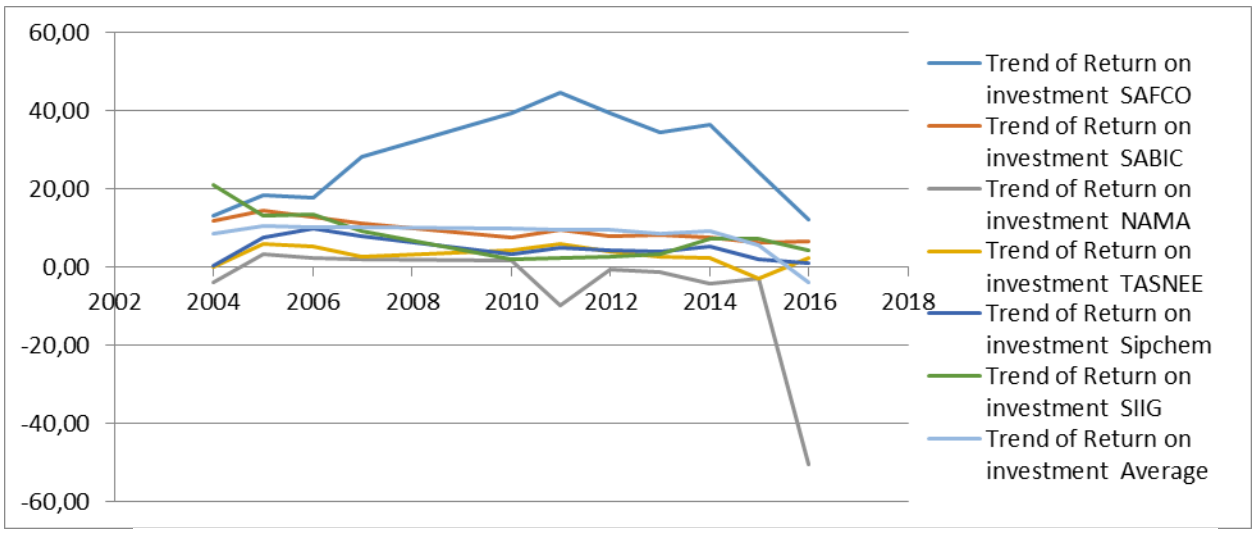

Figure 2. Trend of Return on Investment ratios of petrochemicals companies in Saudi Arabia from 2004 to 2016
Source: The Return on Investment ratios of petrochemicals companies (2004 to 2016) used to draw the chart (Appendix 2)

From the above graphical representation, it can be explained that only the performance of the SAFCO is above the average but the trend is declining. The return on the investment trend of NAMA reveals a highly negative progression from 2005. SABIC, Sipchem, and TASNEE performance were very low and started to decline every year. So, the overall return on investment trend of petrochemicals industry of Saudi Arabia is decreasing year by year.

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4.3.3 Disparity in Trend of Return on Equity (ROE)

There is also disparity seen in the Return on Equity (386.9124) in the petrochemicals industry of Saudi Arabia for the period 2004 to 2016 (As shown in ANOVA table). It is established that if the business organization's profitability (Gross profit Ratio) and utilization of resources (Return on investment) are satisfactory it will affect the return on equity, ultimately. The average return on equity of SAFCO (32.76%), SABIC (20.14%), TASNEE (10.29%), Sipchem (10.55%), and SIIG (13.41%) were above the industry average (10.18%) while only the NAMA's return was extremely negative (-26.08%) that disturbs the overall average return on equity of the industry (Appendix 3). Keeping in mind, it reflects that the cost of capital or cost of contractual capital of petrochemicals industry is lower than the return on total resources. So, there is a need to enhance the turnover by all the petrochemicals companies and working on equity is beneficial for all petrochemicals companies. The overall average trend of the return on equity of petrochemicals companies is declining and only SAFCO's return on equity is positive due to its sound profitability.

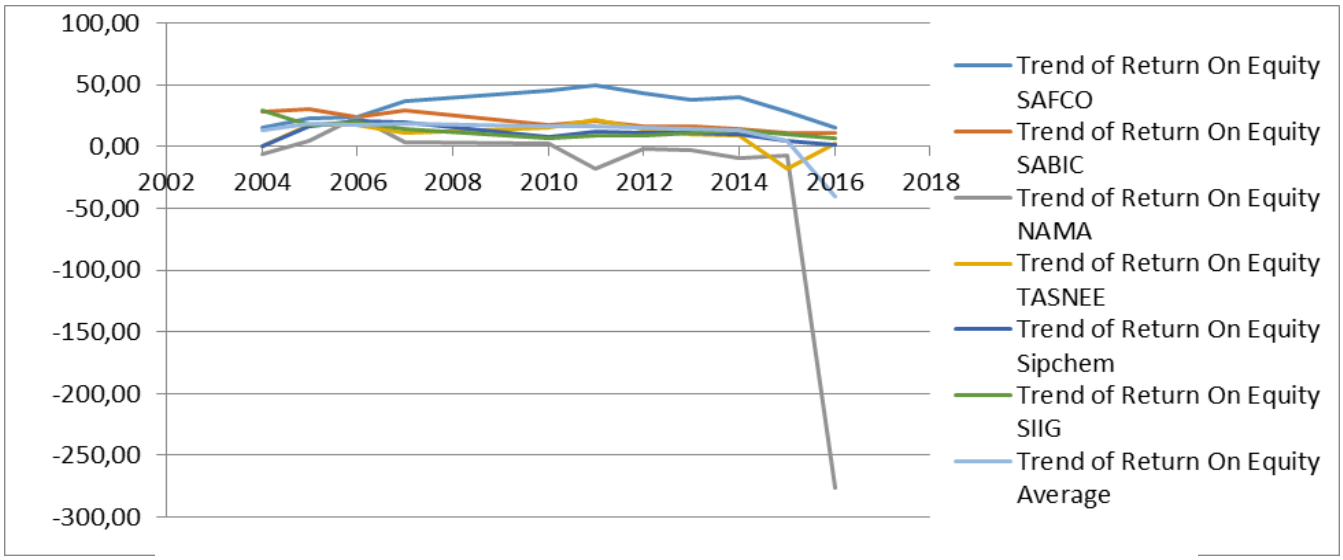

Figure 3. Trend of Return on Equity ratios of petrochemicals companies in Saudi Arabia from 2004 to 2016
Source: The Return on Equity ratios of petrochemicals companies (2004 to 2016) used to draw the chart (Appendix 3)

From the above trend analysis, we can conclude that there is a polar difference in the SAFCO and NAMA companies for return on equities' point of view. The general trend of SABIC, TASNEE, Sipchem, and SIIG reveals a decline in the long run. Overall, the average trend of all petrochemicals companies reflects decrement in the long run.

4.3.4 Disparity in Trend of Current Ratio

There is a very low disparity (0.867142) seen in the current ratio of petrochemicals industry of Saudi Arabia for the period 2004 to 2016 (As shown in the ANOVA analysis). It is established that the current ratio measures the short time paying ability of the business organization (Ali & Haque, 2014). There should be a balanced current ratio advised for the business organizations. The standard of the Current ratio is 2 but vary for the industry to industry as per need and requirement. The current ratio of SAFCO (4.39 times), SABIC (2.78 times), and SIIG (3.31 times) are above or the near industry average (2.84 times) while the average of all companies is above the standard (2 times) except NAMA(1.83 times) (Appendix 4). So, All the companies maintain their liquidity to pay short term liabilities efficiently except NAMA. From 2013 and onwards, the average current ratio of all

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companies started to decline and indicates the utilization of liquidity in business transactions but it's not below standard. So, only the paying ability of NAMA is a little bit weak but not the issue of consideration.

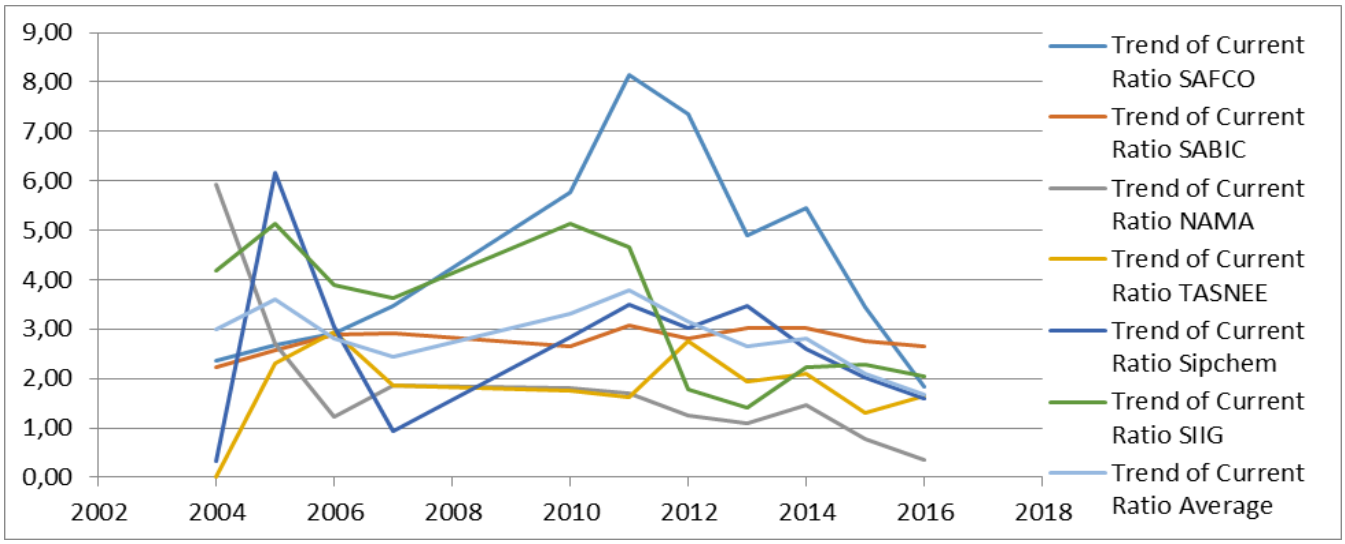

Figure 4. Trend of Current ratios of petrochemicals companies in Saudi Arabia from 2004 to 2016
Source: The Current ratios of petrochemicals companies (2004 to 2016) used to draw the chart (Appendix 4)

From the above line chart it can be explained that, in the long run, the short term paying abilities of all companies are above the standard (2 times) excluding NAMA. It is heavily decremented in the current ratio of the SAFCO and NAMA. The average trend of all petrochemicals companies reflects a declining trend of short term paying ability (current ratio).

4.3.5 Disparity in Trend of Debt-Equity Ratio

The Debt- Equity ratio reflects the capital structure or composition of funds of a business organization. The low debt-equity ratio reflects high ownership by the shareholders and strong paying ability of the business organization in the long run and high reflects that companies are working on equity utilizing external funds with low ownership and weak long term paying ability (Ali & Haque, 2014). The standard long term paying ability ratio or Debt Equity ratio should be 0.5 or below that reflects a strong financial situation in the long run but this will vary company to company or as per need and requirement. There is low disparity seen in the Debt-Equity ratio (variance=0.164281, As shown in ANOVA table) of petrochemicals companies of Saudi Arabia. The Debt-equity ratio of SAFCO (0.22 times), and SABIC (0.69 times) are below or near to the standard while rest companies ratio is above the standard (0.5) and the average of the industry (0.92) (Appendix 5). This reflects that only SAFCO Company is strongly able to pay its long term debts while the long term paying ability of SABIC is satisfactory. Rest companies are working on equity heavily utilizing the external funds for business but long term paying abilities are not satisfactory. There is a need to issue new stocks to enhance ownership ratio and strengthen long term paying ability.

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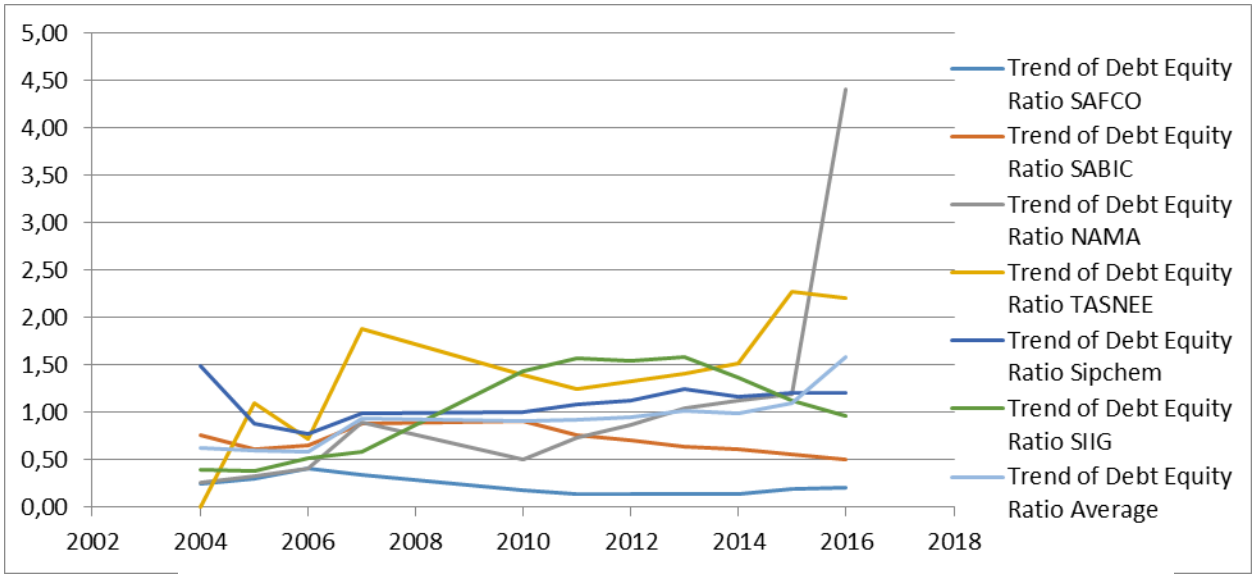
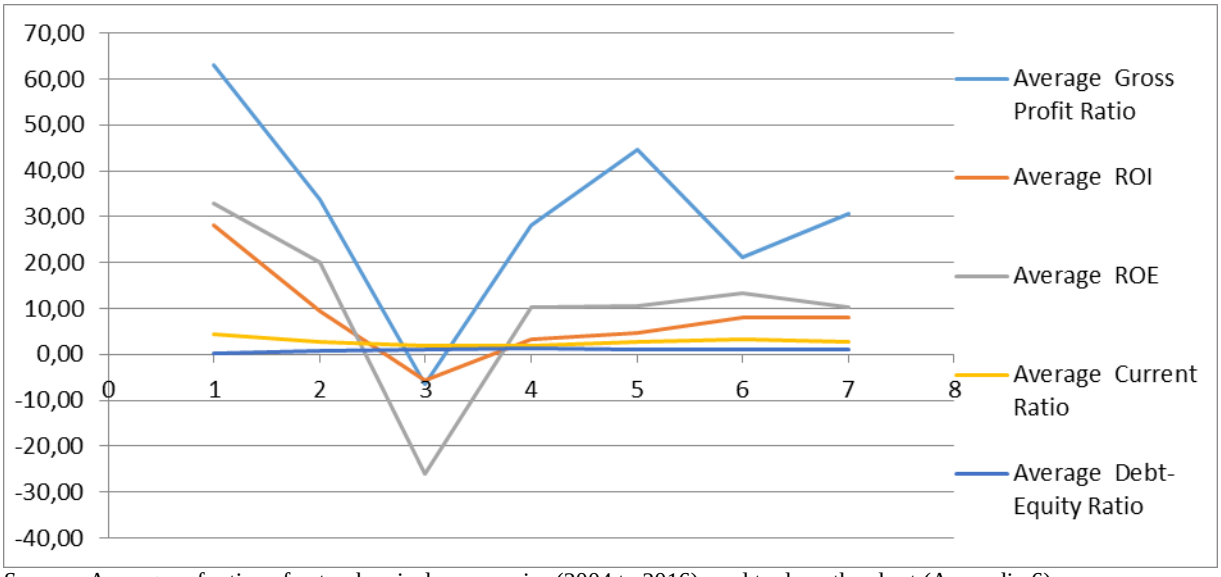


Figure 5. Trend of Debt-Equity ratios of petrochemicals companies in Saudi Arabia from 2004 to 2016
Source: The Debt-Equity ratios of petrochemicals companies (2004 to 2016) used to draw the chart (Appendix 5)

From the above trend presentation, it can be said that there is an inclining trend of external funds in NAMA, Sipchem, and TASNEE need to control while SAFCO can utilize external funds to expand its business activities while SABIC and SIIG need to maintain it.

4.3.6 Disparity in Trend of averages of financial ratios

The averages of financial ratios reveal the financial performance of the industry and disclose the strongest and weakest part of the financial performance of the industry. The individual performances of the petrochemicals companies in Saudi Arabia are significantly different but the average of ratios will indicate the weak and satisfactory areas of the financial performance of the companies.



Source: Averages of ratios of petrochemicals companies (2004 to 2016) used to draw the chart (Appendix 6).

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From the above table, it can be concluded very easily that there is fluctuating downward growth in all profitability measures. There is a similarity in the movement pattern of all profitability ratios (Gross profit ratio, ROI, and ROE) and average paying ability ratio (Current ratio, and Debt-Equity ratio). The movement trend of paying ability ratios is constant and long term, short term paying ability of the petrochemicals companies will move straight (Appendix 6).

5. Discussion

The present study reveals that the gross profitability of some petrochemicals companies in Saudi Arabia is satisfactory, average and negative. Gross profitability is the ground for holistic financial performance evaluations. SAFCO, Sipchem, and SABIC performances are satisfactory while the performance of NAMA is negative. Possibly, the operational performance of NAMA is negative due to lower turnover or low gross margin or both. The gross profitability also governs return on investment (ROI) and Return on equity (ROE). But, SABIC and SIIG companies' ROI and ROE are better than TASNEE and Sipchem companies as compared to gross profitability. The short-term paying ability of all companies is either excellent or satisfactory. The rank difference of gross profitability and current ratio, and debt-equity reveals that Sipchem is utilizing its liquidity in business activities while SIIG prefers to maintain its liquidity instead of investing or extending the business activities, while SAFCO and SABIC companies only able to pay their long-term liabilities. Overall, there are variations in the financial performances of all petrochemicals companies of Saudi Arabia as that is based upon gross profitability up to a larger extent. There are significant variations in gross profitability and other ratios (ROI & ROE) of profitability while short and long term paying ability of all petrochemicals companies is similar. The disparity in the trend of gross profitability is considerable and maximum as SAFCO's average profitability is 62.90% while NAMA's in a negative (-6.51) for the period 2004 to 2016. The trend of disparity reflects the profitability of all petrochemicals companies declining year by year excluding SABIC. The ROI and ROE of petrochemicals companies in Saudi Arabia are extremely different. There is a polar performance by SAFCO and NAMA companies for return on investment (ROI) and return on equity's (ROE) point of view, and trend reflects downfall in the long term. Notably, there is a downward fluctuating trend in return on investment in SAFCO companies which is the most profitable generating company of petrochemicals industry of Saudi Arabia, and indicates underutilization of resources and overall downfall in the petrochemicals industry. Short term paying abilities of all companies are above the standard (2 times) and satisfactory except NAMA (1.83 times). Overall, there is fluctuating downward growth of short term paying ability in all companies except SABIC and it reveals that companies started to prefer the utilization of liquid resources' in business activities. Possibly, the utilization of liquid resources in business activities to reimburse the losses of profitability by the petrochemicals companies of Saudi Arabia. Long term abilities point of view, there is a disparity in the debt-equity ratio but insignificant. Only SAFCO and SABIC companies are strongly able to pay their long term or external debts while rest companies are working on equity and trend reflect the upward growth in the utilization of external funds in the capital composition of petrochemicals companies. The companies, whose profitability is satisfactory, rely on only owners' equity while others use external funds to raise their return on investment and equity by expanding business activities.

Conclusion

The above all conclude that the profitability of petrochemicals industry of Saudi Arabia is not similar in all the companies and their growth trend is also different. As established that in any industry the gross profitability reveals the results of business activities and governs the return on investment (ROI) and return on equity (ROE), if fully utilization of resources and this applies the same in the Saudi petrochemicals industry exceptionally excluding some events. It indicates the companies; whose gross profitability is better their other measures of profitability (ROI & ROE) would be better. The profitability trends of all companies are declining for keeping maintain the gaps in profitability ratios among the companies. The short term paying ability of all companies is

satisfactory and mostly above the standard in all the companies while trend reflects the slight downfall in the long-term. In petrochemicals companies of Saudi Arabia, current ratios are also governed by the profitability of the business up to an extent. In low profitability companies, possibly, liquidity is to be used in business activities to fulfill the lack of profitability by increasing the level of activities or to enhance the absolute amount of so as to enhance the ROI and ROE in petrochemicals companies in Saudi Arabia. The long term paying abilities of petrochemicals companies of Saudi Arabia is different and only a few (SAFCO & SABIC) companies are able to pay their long terms debs easily from their own funds. Most of the companies are working on equity in order to enhance their profitability and profits. The trend reflects that SAFCO and SABIC is moving towards utilizing their own equity while other companies turning towards the external funds. Overall, there is a disparity in the financial performance of the petrochemicals companies of Saudi Arabia and the trend reflects the average downfall trend in the financial performance of the petrochemicals industry of Saudi Arabia. Gross profitability governs directly the other measures of profitability or returns, and paying ability, indirectly. The study considers only secondary data and relative study while measurement of relative studies varies according to the absolute amounts of the financial reports while the relative measurement of the companies affected by some other non-financial factors also. There is scope for further research to conduct a study which considers absolute amounts and relative measurements, both, of petrochemicals companies.

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Appendices

Appendix 1.

Years	Gross Profit Ratios and its trend of petrochemicals companies of Saudi Arabia													
	SAFCO	FBI	SABIC	FBI	NAMA	FBI	TASNEE	FBI	Sipchem	FBI	SIIG	FBI	Av.	FBI
2004	49.39	100	39.30	100	12.03	100	N.A.		71.45	100	36.38	100	41.71	100
2005	58.92	119	42.28	108	13.04	108	34.45	100	65.56	92	35.51	98	41.63	100
2006	59.54	121	40.44	103	17.47	145	37.02	107	61.60	86	40.32	111	42.73	102
2007	73.72	149	37.99	97	15.16	126	25.54	74	62.36	87	32.71	90	41.25	99
2010	70.99	144	31.94	81	17.84	148	28.38	82	43.23	61	19.72	54	35.35	85
2011	74.54	151	32.72	83	3.79	31	35.58	103	42.92	60	17.38	48	34.49	83
2012	72.45	147	28.74	73	11.95	99	31.12	90	32.32	45	-55.82	-153	20.13	48
2013	67.89	137	29.28	74	8.28	69	26.58	77	32.42	45	16.38	45	30.14	72
2014	68.95	140	27.24	69	-2.46	-20	24.68	72	33.86	47	29.26	80	30.25	73
2015	58.78	119	29.06	74	-5.43	-45	14.61	42	23.70	33	33.98	93	25.78	62
2016	36.75	74	30.80	78	-163.24	-1357	22.85	66	20.50	29	26.33	72	-4.33	-10
Av.	62.90	127	33.62	86	-6.51	-54	28.08	82	44.54	62	21.10	58	30.62	74

Source: Calculated form financial data available on the website www.argaam.com, www.tadawul.com ,and website of concerned petrochemicals companies.

Appendix 2.

Years	Return on Investment Ratios and its trend of petrochemicals companies of Saudi Arabia													
	SAFCO	FBI	SABIC	FBI	NAMA	FBI	TASNEE	FBI	Sipchem	FBI	SIIG	FBI	Av.	FBI
2004	13.17	100	11.74	100	-3.81	N.A.	N.A.		0.26		21.21		8.51	100
2005	18.40	140	14.54	124	3.48	100	6.08	100	7.52	100	13.29	100	10.55	124
2006	17.66	134	12.81	109	2.41	69	5.42	89	9.87	131	13.68	103	10.31	121
2007	28.29	215	11.36	97	2.12	61	2.70	44	7.92	105	9.25	70	10.27	121
2010	39.34	299	7.60	65	1.81	52	4.29	71	3.51	47	2.17	16	9.79	115
2011	44.81	340	9.57	82	-9.93	-285	6.13	101	4.99	66	2.48	19	9.68	114
2012	39.60	301	8.06	69	-0.44	-13	3.91	64	4.43	59	2.58	19	9.69	114
2013	34.60	263	8.13	69	-1.41	-40	2.54	42	4.05	54	3.22	24	8.52	100
2014	36.46	277	7.48	64	-4.07	-117	2.34	39	5.46	73	7.32	55	9.17	108
2015	24.37	185	6.36	54	-2.86	-82	-2.89	-48	2.17	29	7.24	55	5.73	67
2016	12.19	93	6.58	56	-50.51	-1451	2.38	39	1.13	15	4.37	33	-3.98	-47
Av.	28.08	213	9.47	81	-5.75	-171	3.29	54	4.66	68	7.89	49	7.94	94

Source: Calculated form financial data available on the website www.argaam.com, www.tadawul.com ,and website of concerned petrochemicals companies.

Appendix 3.

Years	Return on Equity Ratios and its trend of petrochemicals companies of Saudi Arabia													
	SAFCO	FBI	SABIC	FBI	NAMA	FBI	TASNEE	FBI	Sipchem	FBI	SIIG	FBI	Av.	FBI
2004	15.54	100	27.93	100	-5.79		N.A.		0.83		28.92	100	13.48	100
2005	22.98	148	30.73	110	4.33	100	17.48	100	17.00	100	17.82	62	18.39	136
2006	24.29	156	24.29	87	24.29	561	17.92	103	20.52	121	20.15	70	17.47	130
2007	36.73	236	29.64	106	3.70	85	11.13	62	19.82	117	13.99	48	19.17	142
2010	45.34	292	17.82	64	2.12	49	15.90	143	7.68	45	7.12	25	16.00	119
2011	50.06	322	21.19	76	-17.84	-412	22.15	139	12.54	74	8.83	31	16.15	120
2012	43.65	281	16.77	60	-1.70	-39	14.62	66	10.69	63	8.87	31	15.48	115
2013	38.22	246	16.18	58	-3.19	-74	9.81	67	10.71	63	11.28	39	13.83	103
2014	40.37	260	14.47	52	-9.16	-212	9.21	94	10.16	60	13.70	47	13.12	97
2015	28.05	180	11.59	42	-6.80	-157	-17.86	-194	4.96	29	10.26	35	5.03	37
2016	15.12	97	10.94	39	-276.86	-6394	2.59	-14	1.20	7	6.58	23	-40.07	-297
Av.	32.76	211	20.14	72	-26.08	-649	10.29	57	10.55	68	13.41	46	10.18	73

Source: Calculated form financial data available on the website www.argaam.com, www.tadawul.com ,and website of concerned petrochemicals companies.

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Appendix 4.

	Current Ratios and its trend of petrochemicals companies of Saudi Arabia													
Years	SAFCO	FBI	SABIC	FBI	NAMA	FBI	TASNEE	FBI	Sipchem	FBI	SIIG	FBI	Av.	FBI
2004	2.35	100	2.23	100	5.93	N.A.	N.A.		0.33		4.19	100	3.01	100
2005	2.68	114	2.56	115	2.72	100	2.32	100	6.16		5.14	123	3.60	119
2006	2.91	124	2.88	129	1.22	45	2.95	127	3.03	100	3.88	93	2.81	93
2007	3.47	148	2.92	131	1.85	68	1.85	80	0.92	30	3.64	87	2.44	81
2010	5.77	246	2.64	119	1.81	66	1.75	76	2.83	93	5.14	123	3.32	110
2011	8.15	347	3.07	138	1.71	63	1.62	70	3.49	115	4.65	111	3.78	126
2012	7.34	312	2.82	126	1.26	46	2.75	119	3.02	100	1.78	43	3.16	105
2013	4.90	208	3.03	136	1.09	40	1.93	83	3.47	115	1.41	34	2.64	88
2014	5.45	232	3.01	135	1.45	53	2.10	90	2.60	86	2.22	53	2.81	93
2015	3.43	146	2.75	123	0.79	29	1.31	56	2.01	66	2.28	54	2.09	70
2016	1.84	78	2.64	118	0.34	13	1.65	71	1.58	52	2.05	49	1.68	56
Av.	4.39	187	2.78	125	1.83	52	2.02	87	2.68	84	3.31	79	2.84	95

Source: Calculated form financial data available on the website www.argaam.com, www.tadawul.com , and website of concerned petrochemicals companies.

Appendix 5.

	Debt-Equity Ratios and its trend of petrochemicals companies of Saudi Arabia													
Years	SAFCO	FBI	SABIC	FBI	NAMA	FBI	TASNEE	FBI	Sipchem	FBI	SIIG	FBI	Av.	FBI
2004	0.24	100	0.77	100	0.26	100			1.49	100	0.40	100	0.63	100
2005	0.30	124	0.61	79	0.33	128	1.10	100	0.88	59	0.38	94	0.60	95
2006	0.41	170	0.66	85	0.41	158	0.72	66	0.78	52	0.52	129	0.58	92
2007	0.34	143	0.89	115	0.90	346	1.88	171	0.99	67	0.59	147	0.93	148
2010	0.17	73	0.90	117	0.50	193	1.40	127	1.00	67	1.44	359	0.90	143
2011	0.14	58	0.76	99	0.73	281	1.25	113	1.09	73	1.57	392	0.92	146
2012	0.13	55	0.71	92	0.87	335	1.33	121	1.13	76	1.55	387	0.95	151
2013	0.14	60	0.64	83	1.04	400	1.41	129	1.25	84	1.58	396	1.01	161
2014	0.14	56	0.62	80	1.12	432	1.52	139	1.16	78	1.36	341	0.99	157
2015	0.19	78	0.56	73	1.20	460	2.27	206	1.21	81	1.12	281	1.09	173
2016	0.20	83	0.51	66	4.41	1696	2.21	201	1.20	81	0.97	242	1.58	251
Av.	0.22	109	0.69	90	1.07	412	1.51	137	1.11	74	1.04	261	0.92	147

Source: Calculated form financial data available on the website www.argaam.com, www.tadawul.com and website of concerned petrochemicals companies.

Appendix 6.

	Averages of Ratios of petrochemicals companies of Saudi Arabia(2004 to 2016)				
Petrochemical Companies	Gross Profit	ROI	ROE	Current Ratio	Debt-Equity Ratio
SAFCO	62.90	28.08	32.76	4.39	0.22
SABIC	33.62	9.47	20.14	2.78	0.69
NAMA	-6.51	-5.75	-26.08	1.83	1.07
TASNEE	28.08	3.29	10.29	2.02	1.37
Sipchem	44.54	4.66	10.55	2.68	1.11
SIIG	21.10	7.89	13.41	3.31	1.04
Av.	30.62	7.94	10.18	2.84	0.92

Source: Calculated form financial data available on the website www.argaam.com, www.tadawul.com , and website of concerned petrochemicals companies.

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MECHANISM FOR SUSTAINABLE DEVELOPMENT OF ECONOMIC POTENTIAL OF FOOD INDUSTRY

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Abstract. The purpose of this paper is to identify major deterrents hindering sustainable development of the food industry in the Republic of Kazakhstan and to chart steps to overcome the challenges involved. Methodologically, the study relies on retrospective analysis to evaluate development trends in the food industry, as well as an expert survey of Kazakh food industry professionals. The findings indicate that Kazakhstan has considerable potential, yet it is not yet utilised efficiently. With the rising demand for processed food products, small and medium businesses in the food industry often cite raw material shortages as a major obstacle for running production at full capacity. Moreover, experts also refer to other factors hindering the development of the food industry, such as financial deficits, high proportion of outdated and worn equipment, outdated production processes, etc. According to the experts, the priorities in addressing the challenges of sustainable development include refinement of government support measures in the food industry and establishment of modern infrastructure to ensure proper storage and delivery of products to consumers, For example, establishment of agroparks and networks of rural transformation centres, as well as digitalisation of the industrial production of food products.

Keywords: sustainable food system; sustainable development; food production; food industry; manufacturing; economic potential

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JEL Classification: Q1, Q11, Q12

1. Introduction

The food industry has been increasingly viewed as a potential source of development for rural economies, as it creates synergy between consumers, industry and agriculture. A well-developed food industry with a higher degree of processing helps to reduce loss, improves value added, facilitates agricultural crop diversification and better yields for farmers, supports employment and improves export revenues. The sector can be also instrumental in addressing the issues of food security, food inflation and adequate supply of healthy nutritious food.

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Global industry always follows global consumer needs. Changing lifestyles, growing incomes and preferences shifting more toward packed and ready-made food products prop up the role of the food industry. It accommodates huge growth potential for the Republic of Kazakhstan, which has a large production base of food products. Kazakhstan ranks sixth globally by the size of pasture resources (Worldstat, 2020). Over the last decade, cultivated areas under feeding crops rose by 39% to reach 3.3 million ha in 2019 (FAOSTAT 2020; Serikbaeva et al. 2019).
Kazakhstan is now in the top ten among wheat exporters in the world; grains have remained an unchanged constituent of exports over the period of independence and the only type of agricultural exports, whereas, in general, the country has been a net importer of agroindustrial products (Anderson et al. 2018). Agriculture in Kazakhstan has shown steady and robust growth for years. According to the Statistics Committee of the Republic of Kazakhstan, the data for 2014-2018 show that the output of crop farming grew 2.2 times, while the total output of animal farming grew 1.9 times (Statistics Committee of the Republic of Kazakhstan 2020a). Compared to 2014, the population of cattle rose by 1.11 million heads in 2018, while the poultry population increased by 9.3 million heads. Compared to 2014, the gross yield in 2018 rose by 3,111.5 thousand tonnes for grains and beans, 1,146.0 thousand tonnes for oil crops, and 396.5 thousand tonnes for potato. Food product consumption has registered an increase in recent years. Between 2014 and 2018, the monthly per capita consumption of bread and cereal products rose to 11.5 kg from 10.5 kg, meat and meat products – to 6.5 kg from 5.9 kg, and milk and dairy products – to 21.8 kg from 18.8 kg (Statistics Committee of the Republic of Kazakhstan 2018a). The growing demand and stimuli offered by the Government of the Republic of Kazakhstan have produced positive effects on the food industry (Mustafayeva et al. 2019). Food production rose by 38.4% to 1,527.7 billion tenges in 2018 compared to 1,103.5 billion tenges in 2014 (Statistics Committee of the Republic of Kazakhstan 2020b). The food industry of Kazakhstan is indicated as a potential industry of growth in the currently implemented State Programme of Industrial-Innovative Development of the Republic of Kazakhstan for 2015-2019 (Decree of the President of the Republic of Kazakhstan dated August 1, 2014, No. 874 "On approval of the State Programme of Industrial-Innovative Development of the Republic of Kazakhstan for 2015-2019 and on Introduction of Amendment to the Decree of the President of the Republic of Kazakhstan dated March 19, 2010 No. 957 “On the List of State Programmes”). The sector shows potential to significantly contribute to employment and income growth.

That said, despite the considerable production base, the level of processing remains low. The volumes of processing in animal farming produce in Kazakhstan do not exceed 35% vs. 40% in Russia, 50% in Belarus and more than 90% in developed EU countries. A serious challenge for food industry development is the shortage of raw materials in meat and dairy production, grain and oil crop production. In 2018, Kazakhstan's flour milling factories only operated at 36% of their capacity and oil mills – at 35% (AgroInfo News Agency 2019). Factors hindering the development of Kazakhstan's food industry and measures to unlock its economic potential make a relevant subject for research.

The hypothesis of this study is that a proper approach might help the food industry in Kazakhstan to utilise the potential of agriculture, promote the country's industrialisation, change the structure of inner value added and diversify exports beyond raw materials.

2. Literature Review

The food industry is a complex network of farmers and various types of enterprises providing a major share of the food supply consumed by the global population (Pomozova et al. 2019). The sector is part of the agroindustrial complex and comprises a complex of industries engaged in the processing of agricultural, forestry and fishery produce to make food products, ingredients and components, feeds and additives, beverages and mineral waters, spirits, beer and wine, tobacco products (Sapozhnikova et al. 2017). The main objective is to ensure the stable supply of main types of food products (Zocca et al. 2018). Food industry sustainability is a principal strategic

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challenge for all stakeholders engaged in the food supply chain from agriculture, food and ingredient production, packaging and distribution to consumers (Grasseni et al. 2014). The food industry bears environmental responsibilities for maintaining biodiversity, preserving water resources and cutting waste and emissions (Ermolova et al. 2019). Moreover, the global food industry comes under intensifying pressure in terms of raw material supplies, sources of ingredients and maintaining production for rising populations amid the steady drive for optimisation and supply chain control (Yunusa et al. 2018).

To meet current daily requirements of the global population, the daily nutrition supply should provide at least 360 million tonnes of carbohydrates, 364 million tonnes of proteins and 195 million tonnes of fats (Global Info Research 2020).

A growing body of analytical studies questions the long-term sustainability of current trends in food production and consumption (Agovino et al. 2018; Aitkazina 2013). Unstable prices, restrained accessibility and interdependence of global commodity markets alongside the growing vulnerability of food production systems to climate change and the loss of agrobiodiversity will make food even more inaccessible for the poor (Aschemann-Witzel and Peschel 2019).

Many researchers approach food industry development in the context of a sustainable food system (SFS) (Charis 2018). Views are diverse as to what a "sustainable" food system is and what falls into the domain of "sustainability" (Moumen et al., 2019; Tvaronavičienė and Ślusarczyk, 2019; El Iysaouy et al., 2019; Coderoni and Perito 2020; Chehabeddine and Tvaronavičienė 2020). According to the definition of the Food and Agriculture Organisation (FAO), a SFS is a food system that delivers food security and nutrition for all in such a way that the economic, social and environmental bases to generate food security and nutrition for future generations are not compromised (Food and Agriculture Organization of the United Nations 2018). A SFS has multiple aspects to it, such as food supply safety, health issues, affordability, quality, food industry strength in terms of jobs and growth (Baldwin 2015). To be sustainable, a food system should simultaneously generate positive value in three dimensions: economic, social, environmental (Li et al. 2019). On the economic dimension, a food system is considered sustainable if the activities conducted by each food system actor or support service provider are commercially or fiscally viable (Hodbod and Ikin 2015). The activities should generate benefits, or economic value-added, for all categories of stakeholders: wages for workers, taxes for governments, profits for enterprises and food supply improvements for consumers (Trubilin et al. 2020). On the social dimension, a food system is considered sustainable when there is equity in the distribution of the economic value added, taking into account vulnerable groups categorized by gender, age, race and so on (Schipanski et al. 2016; Oteros-Rozas 2019). Of fundamental importance, food system activities need to contribute to the advancement of important socio-cultural outcomes, such as nutrition and health, traditions, labour conditions, etc. (Porter 2015). On the environmental dimension, sustainability is determined by ensuring that the impacts of food system activities on the surrounding natural environment are neutral or positive, taking into consideration biodiversity, water, soil, animal and plant health, the carbon footprint, the water footprint, food loss and waste and toxicity (Dong et al. 2020; Dudin, et al. 2020). The structure of the food system is dynamic and driven by complex and varied trends such as urbanisation, population growth, climate change and forces such as technological change and innovation, policy change and so on (Vallejo-Rojas et al. 2016; Aitkazina 2019).

The overall performance of the food system, measured in terms of sustainability, is the result of the intertwined conduct of all actors in the system. Firms, farms and consumers, for instance, all can have the power to influence food system performance and initiate change. SFS, as engines of growth, create value-added that has five components (Béné et al. 2019):

- salaries to workers;
- return on assets (profits) to entrepreneurs and asset owners;
- tax revenues to the government;

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- benefits to consumers;
- impact on the socio-cultural and natural environment.

Taking a holistic view of the food system will have practical implications for development strategies and plans for the food industry.

3. Methods

The study was based on data gathered from reliable and authoritative sources, such as the official web portals of Business Navigator (Business Navigator 2020), the Union of Food Products Producers of Kazakhstan (UFPPK), the National Chamber of Entrepreneurs of the Republic of Kazakhstan "Atameken" (National Chamber of Entrepreneurship of the Republic Kazakhstan “Atameken” 2020), Food industry (Food industry 2020), etc.

The methodology of this research combined qualitative and quantitative analysis. Retrospective performance analysis of food industry development provided quantitative data, while in-depth interviews with key people at individual enterprises produced qualitative input. The survey was meant to indicate major challenges hindering the development of the food industry in the Republic ofKazakhstan by way of analysis of expert input concerning the industry. The expert survey was conducted by phone using computer equipment. The expert sample included top and middle managers from the food industry. The sample included randomly selected companies from the Commercial Register of the Republic of Kazakhstan. Respondents from 167 companies took part in the survey, including three big, five mid-size and 159 small companies from the food industry of Kazakhstan.

4. Results

The food industry is a major constituent of the agroindustrial complex and a leading industry in Kazakhstan, contributing 6.9% of the Republic's total industrial output. Companies of the food industry create positive growth rates of industrial output in the sector in general: total food production in the Kazakh national currency terms rose by 38.4% between 2014 and 2018. In terms of physical volume for 2014-2018, per capita production grew in cereals and wholemeal flour (+29.8%) (calculated by the author according to (Statistics Committee of the Republic of Kazakhstan. 2018b)), cheese and cottage cheese (+17.3%), margarine and edible fats (12%), meat and edible meat offal (+13.9%), vegetable oil (+11.6 %), processed milk (+7.7%), sausage and similar meat products (+1.5%). Simultaneously, there was a significant decline in per capita production of fruit and vegetable juices (-30.2%) and sugar (-29.5%). A limited decline is also registered for fresh bread production (-7.8%), fine flour (7.4%), butter and dairy fat spreads (-7%). Notably, processing levels remain relatively low for main agricultural products in Kazakhstan. For example, the 2018 level of grain processing for food consumption was at 13.5% of the total grain resources in the country (calculated by the author according to (Statistics Committee of the Republic of Kazakhstan 2018c)). For instance, the same figure is 25.7% in the Russian Federation (calculated by the author according to the data from (Federal State Statistics Service of the Russian Federation 2020)) or 23.9% in Ukraine (State Statistics Service of Ukraine 2020). The average annual capacity utilisation levels in meat, milk and sugar processing are considerably below the same figures for the Russian Federation and Belarus (Figure 1).

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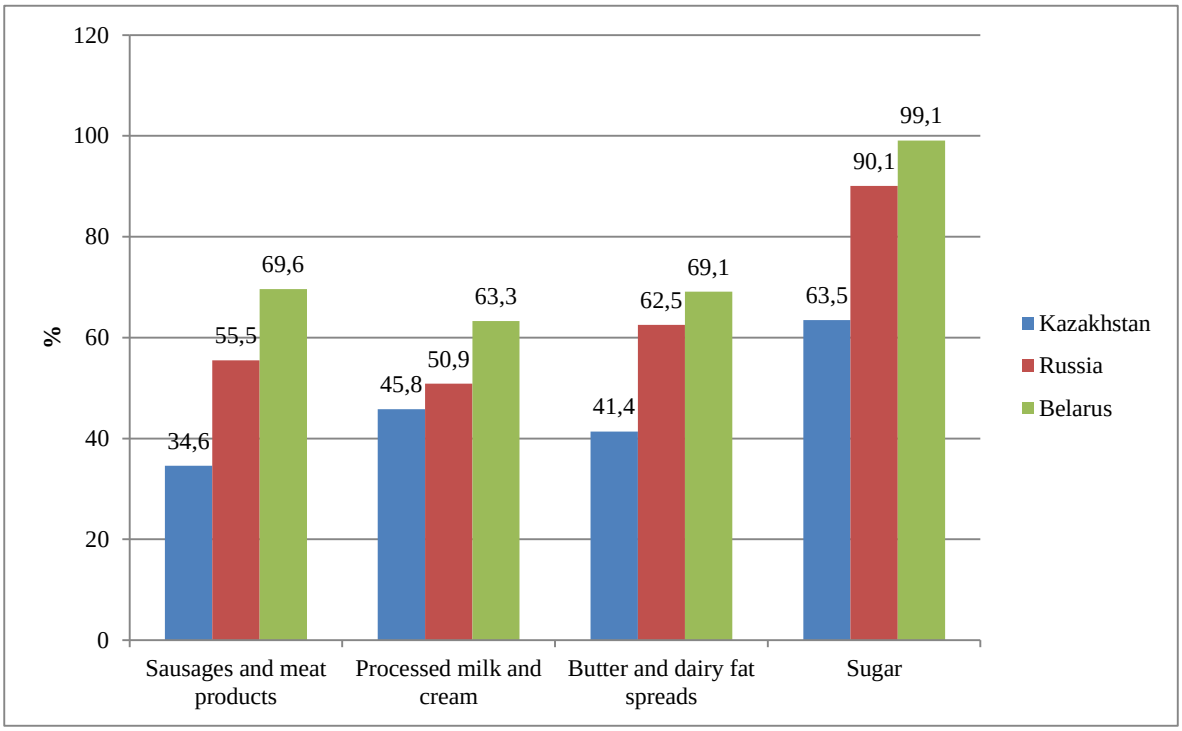

Figure 1. Average annual capacity utilisation levels in meat, milk and sugar processing
Source: Compiled by the authors

Despite the rather wide range of food products supplied by Kazakh food producers, the trade balance is negative. For now, food imports in Kazakhstan exceed exports. With that, product output nationally is almost twice lower than imports (Table 1).

Table 1. Trade balance in food products for the Republic of Kazakhstan in 2018

Products	Trade balance, thousand USD	Exports, thousand USD	Imports, thousand USD
Meat and edible meat offal	-166,041.2	45,050.3	211,091.5
Fish and crustaceans	-14,260.2	56,546.8	70,807
Preparations of meat, fish or crustaceans	-82,308.3	11,520.8	95,829.1
Dairy produce, birds' eggs, honey, other edible products of animal origin	-190,900.9	65,568.8	256,469.7
Vegetables, roots and tubers	-39,628.1	126,769.1	166,397.2
Fruit and nuts	-489,795.8	14,561.7	504,357.5
Coffee, tea, spices	-109,031.7	11,800.5	120,832.2
Preparations of vegetables, fruit, nuts	-198,206	7,649.5	205,855.5
Products of the milling and cereal industry	441,547.4	466,236.3	24,688.9
Preparations of cereals, flour, starch or milk	-227,651.6	53,012.1	280,663.7
Oil seeds and oleaginous fruits	295,149.5	355,406.6	60,257.1
Animal or vegetable fats and oils	-56,752	140,003.8	196,755.8
Sugars and sugar confectionery	-192,963.1	63,656.7	256,619.8

Source: Compiled by the authors

The main categories of Kazakhstan's food exports are products of the milling and cereal industry and oil crops. The bulk of food imports consists of fruit and nuts, sugars and sugar confectionery, dairy products. Value chain

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analysis indicates that almost no highly processed food is currently produced in Kazakhstan, except for starch, mare's milk powder, fish flour.
Overall, the outlook among enterprises of the food industry in Kazakhstan is viewed as satisfactory (Figure 2).

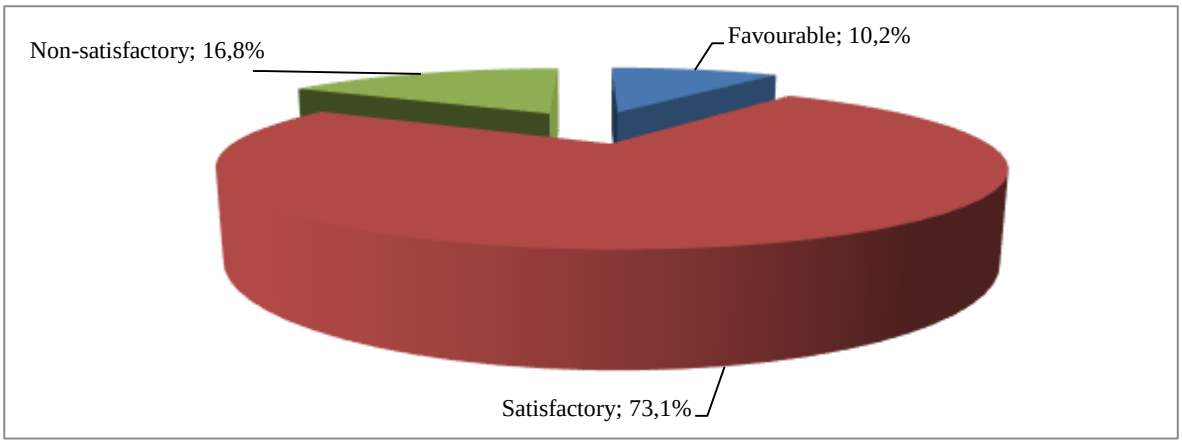

Figure 2. Expert appraisal of the economic conditions at enterprises of the food industry in Kazakhstan
Source: Compiled by the authors

About a third of the experts pointed at economic improvements at enterprises of the food industry over the last three years. However, most experts (44.9%) believed the conditions were unchanged. 13.8% of the respondents cited worsening conditions in the industry (Figure 3).

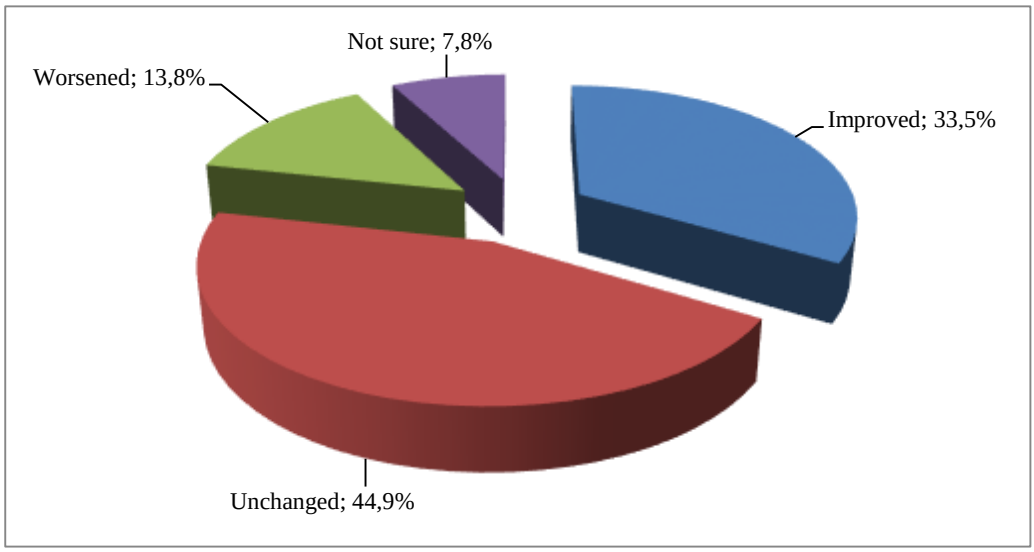

Figure 3. Expert appraisal of dynamic economic conditions in the food industry in Kazakhstan
Source: Compiled by the authors

The absolute majority (97.6%) of the experts mentioned higher prices for finished products at their enterprises. Only 2.4% said prices for finished products had been unchanged over the past year at their enterprises. According to the experts, higher prices are due to growing production costs and, particularly, higher prices for agricultural raw materials. Official figures show that agricultural producer prices for grain crops rose in 2018 by 14.1% compared to the previous year. Considerable price increases were also registered for such major raw materials as chicken eggs (+12.9%), oil seeds (+5,4%), raw milk (+5.9%), poultry (+4.5%), cattle (+ 4.2%) and others.

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The majority of the experts (96.4%) predicted higher prices for major food products for the next year. Within a year, most experts saw rising demand for most food staples, except for butter, oils and fats and sugars and confectionery (Figure 4).

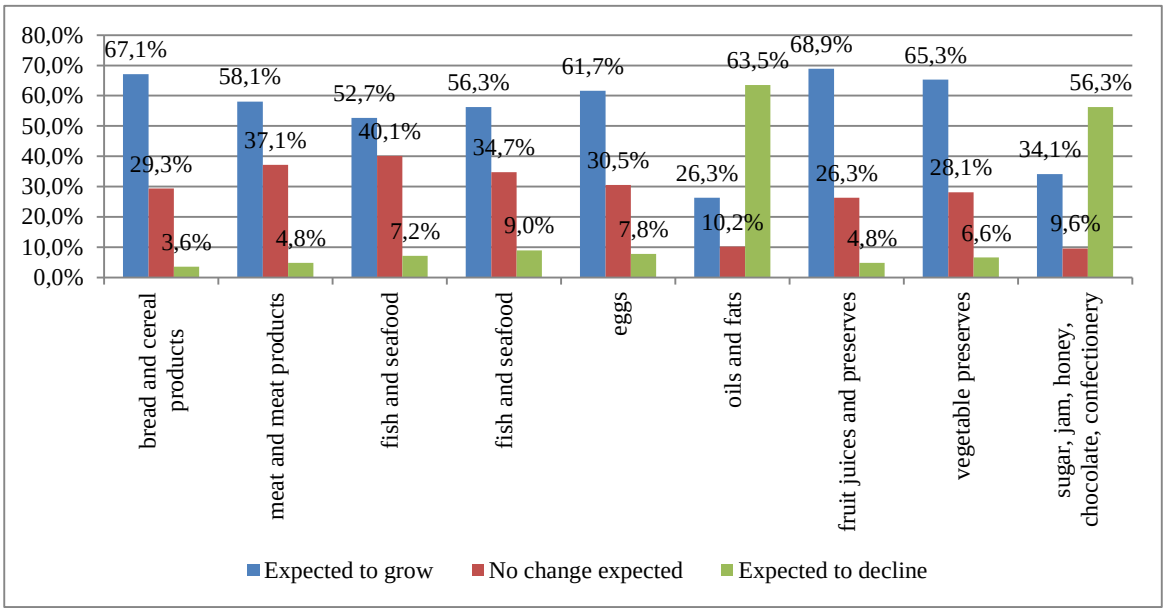

Figure 4. Breakdown of expert views on the demand for major food staples
Source: Compiled by the authors

The primary reasons cited for higher food prices include changes in the purchasing prices of agricultural raw materials, product demand, the tenge exchange rate, etc. (Figure 5).

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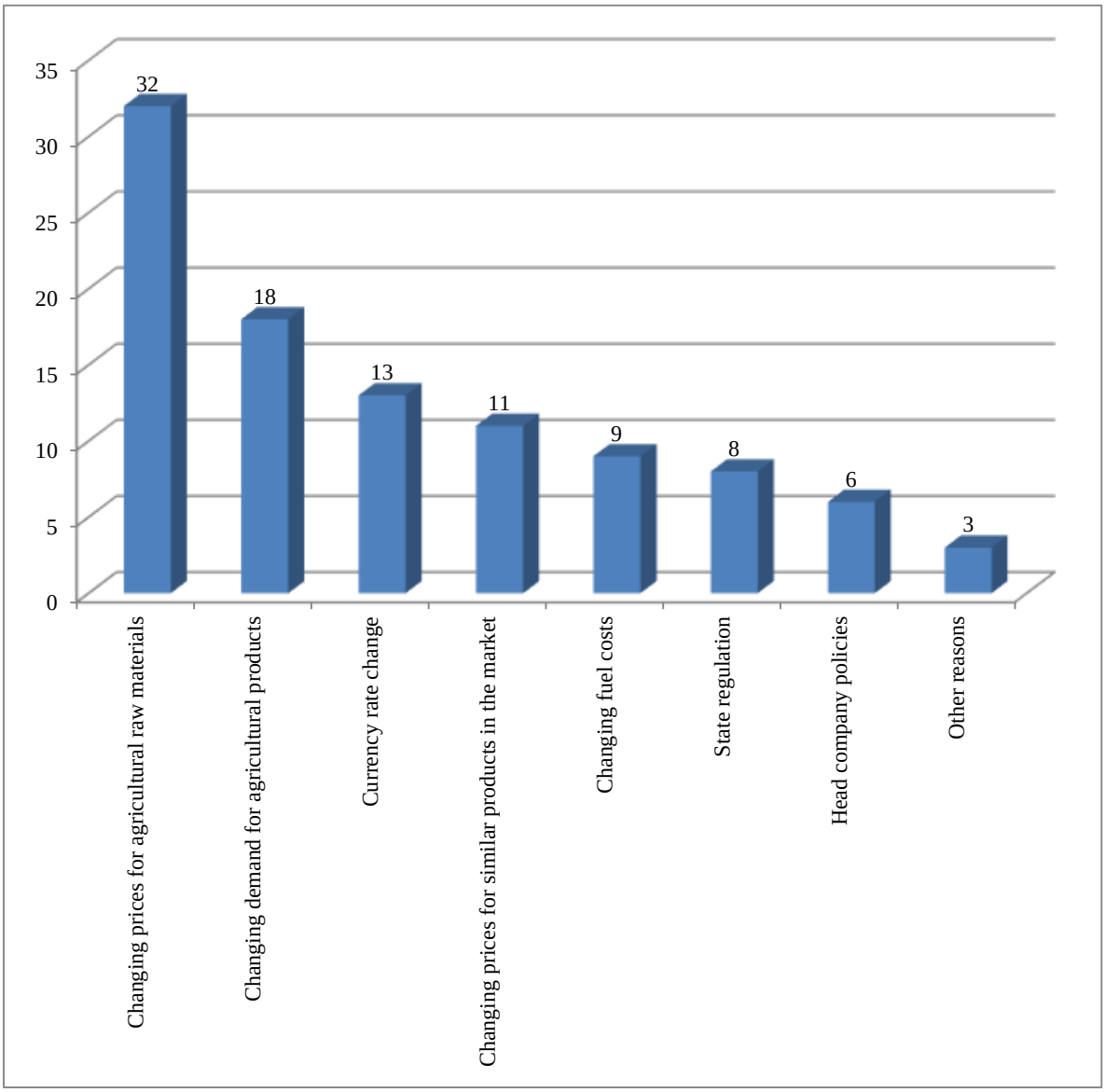

Figure 5. Reasons for expected price increases for products of the food industry in Kazakhstan
Source: Compiled by the authors

According to the experts, the main deterrents exerting the biggest influence on production growth at food enterprises in Kazakhstan include the shortage of affordable domestic materials and working capital, high share of morally and physically outdated and worn equipment, operation under outdated technologies (Figure 6).

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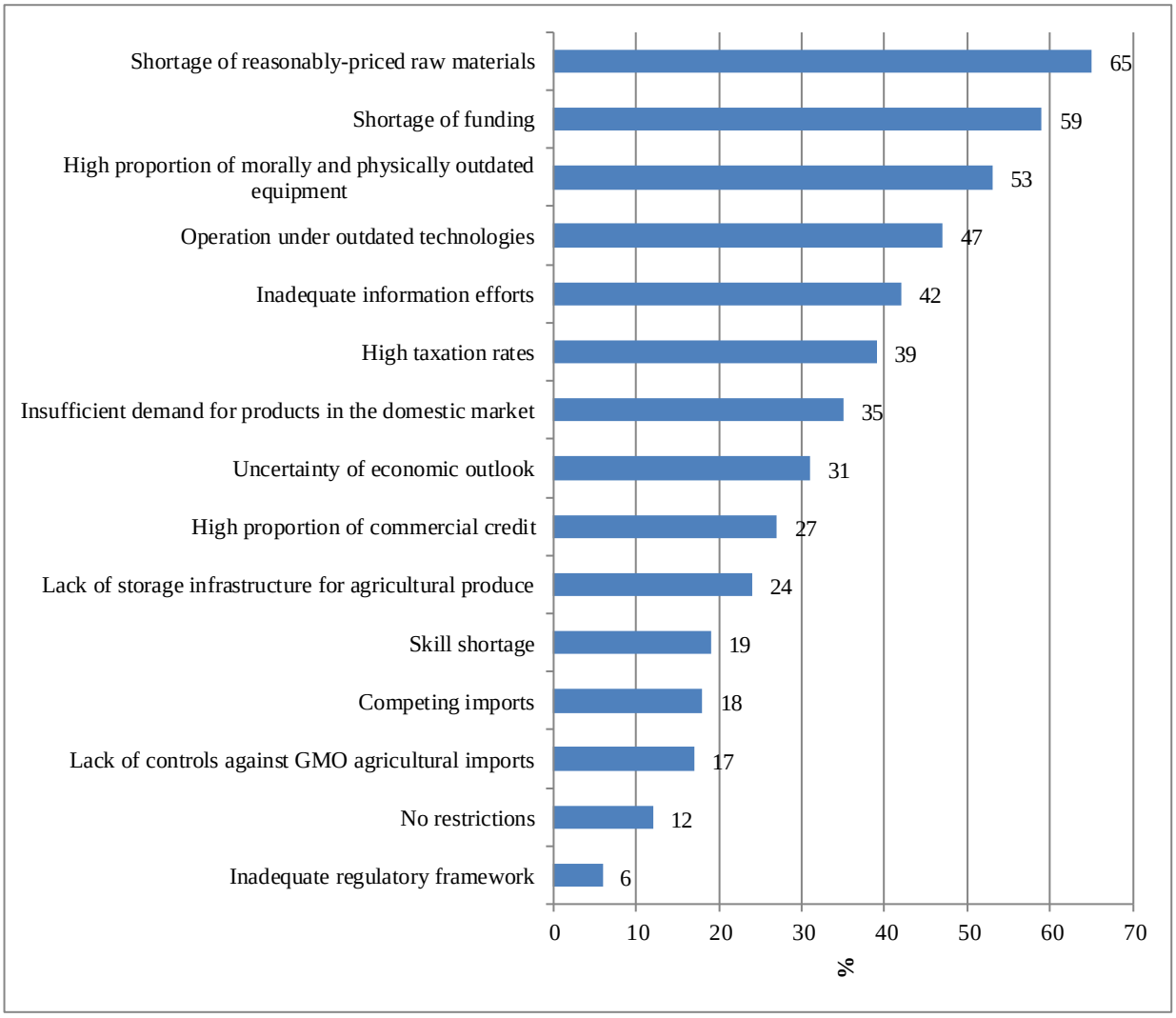

Figure 6. Deterrents of production growth in the food industry of the Republic of Kazakhstan
Source: Compiled by the authors

65% of the experts cited the shortage of reasonably-priced quality raw materials. The issue is especially acute for the meat processing and fat-and-oil sectors of Kazakhstan's food industry. Moreover, after the introduction on January 1, 2020, of the Technical Regulation of the Customs Union 033/2013 "On safety of milk and dairy products", the experts projected sharply lower raw material inventory levels at dairy enterprises of Kazakhstan.
Another strategic challenge, in the experts' view, is the lack of funding (59% of respondents). Further, the shortage of reasonably-priced quality raw materials and funding are interdependent and result in low capacity utilisation levels at enterprises.

The third most significant challenge cited with regard to food industry development is the high rate of physically and morally outdated equipment at enterprises. According to the respondents, their production capacities are dozens of times behind those operated at similar enterprises abroad, and their installed equipment is not energy-efficient, which blocks productivity growth and efforts to achieve sufficient margins in food production. Apart from the above challenges, food industry development is deterred by such factors as outdated technology, inadequate information efforts to shift consumer focus toward Kazakhstan's domestic supply, high taxation rates.

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5. Discussion

The priorities in addressing the challenges of sustainable development in the food industry proposed by the experts primarily include government support of enterprises in the processing industry, development of modern infrastructure for storage and delivery of agricultural raw materials, development of digital technologies in the agroindustrial complex, etc. (Figure 7).

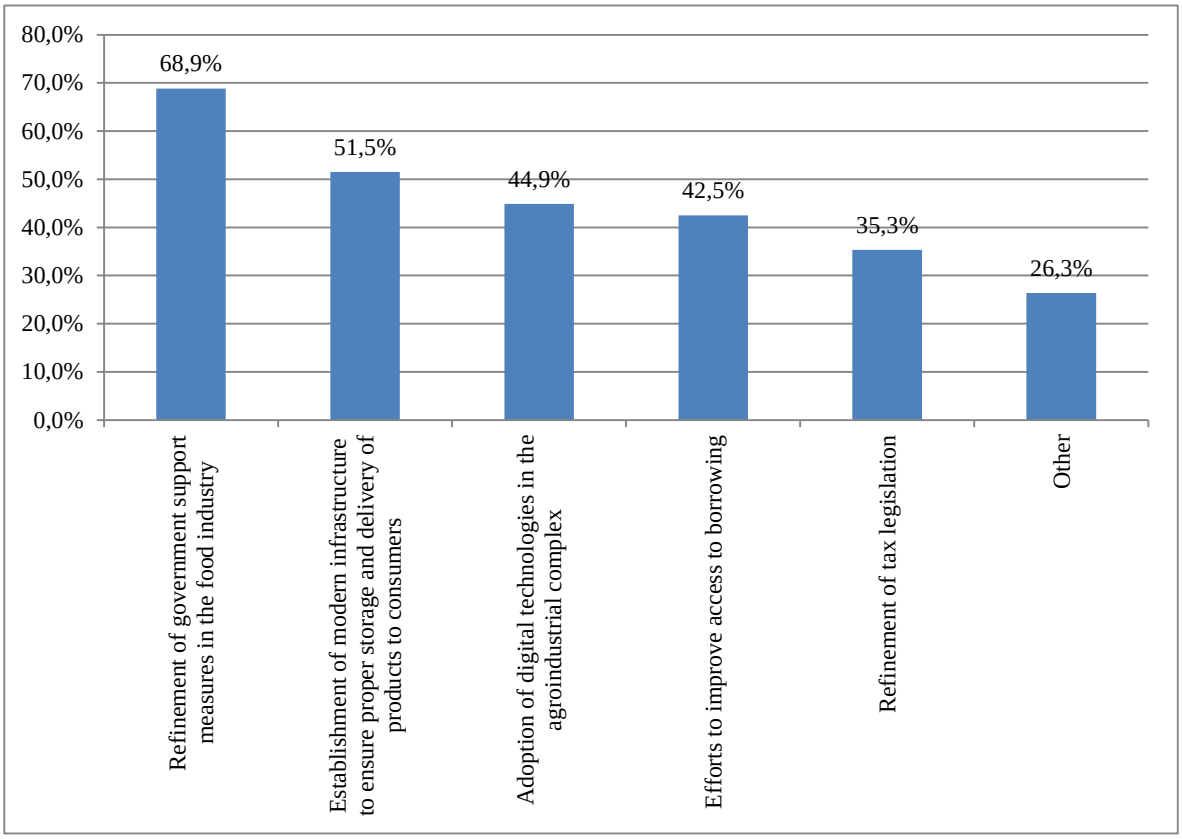

Figure 7. Priority measures in addressing the issues of sustainable development of food industry enterprises in Kazakhstan
Source: Compiled by the authors

Almost 69% (115 respondents) expressed certainty that food industry development would require government support measures focusing on agricultural producers. According to the experts, the most efficient mechanisms of government support include subsidies for raw materials produced and transferred for processing, subsidies to reimburse processing enterprises for the purchasing costs of agricultural products for deep processing and VAT exemption on output of the enterprises engaged in processing of Kazakh agricultural materials (Figure 8).

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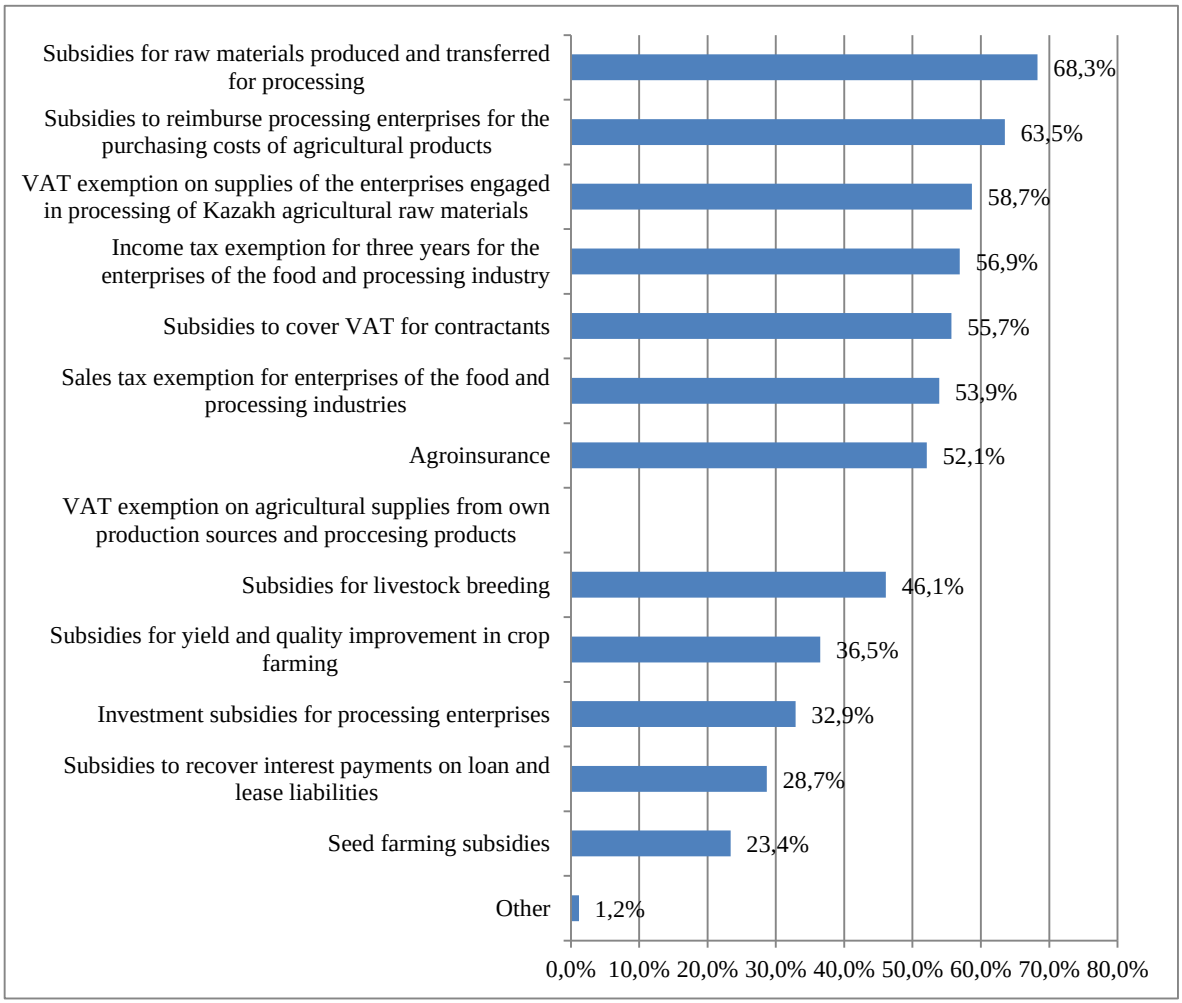

Figure 8. Expert appraisals of the efficiency of government support for processing enterprises in Kazakhstan
Source: Compiled by the authors

Simultaneously, the experts note that the existing government support measures should be subject to a cardinal overhaul. The experts pointed at the need to reduce inefficient natural subsidies, which distort pricing and are qualified by the WTO as the Amber box, for example, per-ha support and subsidies per unit of output in animal farming (kg, litre, head). According to the experts, thus additionally saved funds should be used to resume subsidies for raw materials and develop financial instruments such as interest rate compensation, investment subsidies, agroinsurance, credit society systems and the institute of guarantees, which all require additional funding.

51.5% of the experts believed that developing advanced storage and delivery infrastructure is the second most significant measure to address the issues of sustainable development of the food industry in Kazakhstan. The experts emphasised that a vast majority of Kazakh agricultural producers were not integrated into commercial value chains. With the vast territorial spans to cover, agricultural value chains comprise numerous small subsistence farming operations. Long processing chains between farmers in rural territories and processors in urban areas are inefficient and result in the poor quality of input resources, high post-harvest loss and price rises. If these challenges are resolved successfully, the agricultural sector of Kazakhstan would be able to support agricultural development and sustain future economic growth.

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Despite the excellent growth potential, one of the key obstacles for the development of the food industry in Kazakhstan is the lack of infrastructure to support supplies to processors. Even with Kazakhstan's competitive advantages in certain agricultural crops, such as grains, oil seeds and fruit, the advantage is often lost because of weak links with agroindustry and limited competence of agricultural producers in advanced agricultural practices. Moreover, numerous intermediaries create excessive costs and inefficiencies. Losses on the way from farm gates to end consumers often reach 40% in fresh produce and up to 20% in grain crops, which results in unreasonably high prices. Processors struggle to maintain the required quantities and quality of raw materials due to the fragmented nature of the Kazakh agricultural system. Approximately 61.7% of the experts observed that an integrated production and distribution value chain system should be created by setting up agroindustrial parks (IAIP) and accompanying rural transformation centres to cut inefficient expenditure and attain competitive pricing for local produce. An IAIP is a geographical cluster of independent enterprises grouped to attain economies of scale and positive external effects through infrastructure sharing. As in global practice, an IAIP usually comprises open production zones, precision crop farming, knowledge and research centres, rural centres, agricultural infrastructure, harvesting centres, primary processing centres, RTC, social and agromarketing infrastructure, etc. Specialist infrastructure comprises refrigeration chambers, quarantine facilities, quality control laboratories, quality certification centres, raw material storages, controlled atmosphere and modified atmosphere storages, processing centres, etc.

Each IAIP is supported by a network of RTC maintaining links with the producers. RTC are geographical clusters of infrastructure and services, though on a smaller scale than IAIP. Farmers and farmer groups supply their produce and acquire agricultural resources. RTC accumulate agricultural produce, handle sorting, storage and, in some cases, primary processing before it is transported to IAIP. For most farmers, RTC make the main contact point to reach commercial agricultural value chains. Apart from the main functions, RTC also provide small-scale financial services to agricultural producers, as well as social services. 44.9% of the experts believed that food producers would get the most advantages of digitalisation as it promotes chain production as a standard pattern and brings producers and consumers closer together. Enterprises will be able to ensure acceptable cost levels in production while taking into account individual consumer requirements, with orders placed directly with the producer.

The following digital technologies were identified in the expert survey as having the biggest potential for the food industry (Figure 9).

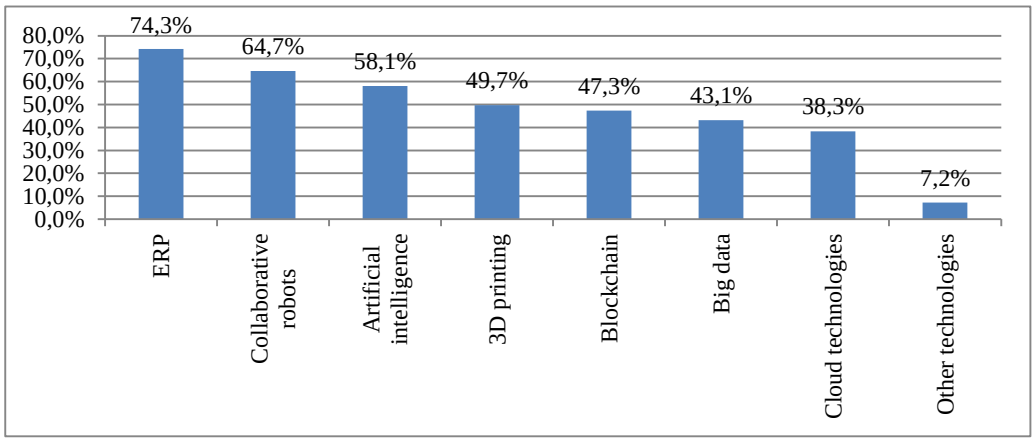

Figure 9. Ranking of digital technologies by the potential for the food industry, % of the respondents
Source: Compiled by the authors

Enterprise resource planning systems (ERP) will be likely central to this process and will remain coordination centres for many processes at food enterprises, as most companies are competent in such systems and the

respondents cited many advantages. However, the survey also found a common belief that the requirements to such systems might be too high and they would prefer more user-friendly operation, extended documentation capabilities and more analytical options in their existing systems.

As to the emerging new technologies with the potential to influence the food industry, collaborative robots and artificial intelligence came in at the top, with 64.7% and 58.1% mentions, respectively. Much lower expectations were pinned down to 3D printing and blockchain. With that, potential applications of advanced digital technology in food production requires further research.

Therefore, the implementation of the above measures to ensure sustainable development in the food industry would help to uncover more of the available potential, speed up economic development and attain the objectives of industrial development in Kazakhstan.

Conclusions

The findings described in the paper support the proposed hypothesis. Unlocking the available potential of the food industry of Kazakhstan will promote growth in the production and exports of higher-value-added products. Kazakhstan needs to increase the production of food to serve its own needs, especially given the fact that the existing low capacity utilisation levels indicate there is room for improvement in this dimension. Moreover, the focus should be on high value added products, with analysis of their marketing potential in external markets. Expert input helped to identify major deterrents of the food industry operations in Kazakhstan and to chart steps to overcome the challenges of sustainable development. Most experts called for a refinement of government support measures for the enterprises of the processing industry, for dedicated efforts to create modern storage and delivery infrastructure and more active adoption of digital technologies in the agroindustrial sector, etc. Further, the environmental aspects of sustainable development of the industry also require further research. Another specific research focus should be the efficiency of government support measures in the processing sector.

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IS EDUCATION OR REAL GDP PER CAPITA HELPED COUNTRIES STAYING AT HOME DURING COVID-19 PANDEMIC: CROSS-SECTION EVIDENCE?

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Abstract. This paper is evaluating whether education or the standard of living in a country helped citizens to stay at home during COVID-19 pandemic. The study implemented a cross-sectional regression on Google mobility trend reports as of 29th March, 2020 which include the mobility trends in retail and recreation, grocery and pharmacy, park, transit station, workplace and residential areas along with real GDP per capita as a proxy for standard of living and Education Index to approximate the level of education. The cross-sectional regression included 123 countries as a sample for the study. The study found that education index, park mobility trends and workplace mobility trends were significate variables in explaining the changes in residential area. However, real GDP per capita was not significate. The study concluded that standard of living is not a significate variable in changing the percentage of people who stayed at home. Moreover, education index has a negative impact on staying at home. Meaning, for each one-point increase in education index, the percentage change for citizens staying at home decreases by 0.087. Although, our result indicates that individual's education has a negative effect, this result can be explained by the decline of political trust in demarcate government were education index is high.

Keywords: COVID-19; Coronavirus; Education; Real GDP Per Capita; Cross-Sectional Regression; Standard of Living

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Introduction

According to the world health organization (WHO) coronavirus disease (COVID-19) was reported from Wuhan, China, on 31st December 2019 for the first time. COVID-19 is one of the large family of other coronavirus that cause sickness ranging from mild common cold to more serve diseases. For example, two coronavirus that have identified in humans are the Middle East respiratory syndrome (MRES-COV) and severe acute respiratory syndrome (SARS-COV). As we are writing this paper, COVID-19 is spreading in more than 185 countries affecting more than two million people all over the world. Because of the fear of sharp increase of cases of COVID-19, many countries implemented number of procedures and policies to slowdown the spreading of the

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virus. Past studies have shown that epidemic infection had a negative impact on the economics activity such as H1N1 (Rassy and Smith 2013).

Beyond the tragic effect of coronavirus on the human lives, the pandemic has a direct economic effect. Families are losing their loved ones at the same time the economic climate are now becoming unbearable. The working population works from home and most workplaces are shutting down laying off their employees. According to the Department of Labor (DOL) in the US, 26 million people are filling for unemployment benefits. The stocks market around the world is trembling and this health crisis is now a world-wide global crisis. The economic impacts on various countries varies, countries such as Germany are having most of their cases absorbed by testing and good governance. However, low income economies like Bangladesh who do not have the needful resource are globe's most vulnerable populations (DOL, 2020).

Essential government measures like shutting down factories in China or closing retail shops in Italy might indicate that a recession is anticipated. According to General Administration of Custom in China, manufacturing and service sector in February has recorded a drop of 80% on automobile sales, a fall in exports by 17.2% between January and February. China is a crucial producer of inputs that are imported by most countries. The decline in exports is because of the shutdown of the factories. Also, most retail shops around the world experienced a drop in demand due to the movement restrictions required to curb the spread of coronavirus (GACC, 2020).

The spread of COVID-19 into the United State, Europe and other countries has led to legislative measures. Japan and Europe are already facing a recession because of their high dependence on international trade and weak fourth quarter performance. The Organization for Economic Co-operation and Development (OECD) has drawn a prediction that the outbreak of COVID-19 will reduce global economic from 2.9% to 2.4% (OECD, 2020).

The level of education or human development is an important factor in united nation development program (UNDP) framework to assess the readiness of pandemic crisis like COVID-19 (see Figure 1). In Figure 1, Asian-pacific countries are divided into different clusters ranging from 1 to 5. Cluster 1 includes China, South Korea, Hong Kong and Singapore where they have high human capital. On the other hand, cluster 5 have mostly medium level of human development which includes countries like Fiji, Bhutan, Tonga, Micronesia, Vanuatu, Nepal, Solomon Islands and Afghanistan.

By looking to the recent OECD forecasts, most worldwide countries are interconnected extremely with China. Countries like Japan, Australia and South Korea will face adverse downward in GDP growth. The spread rate of the disease in the European countries and the United States has led to the adoption of restrictive responses. These restrictive responses will have adverse effects on economic activities risking a loss of billions of dollars. The United Nation (UN) has projected that lowest levels of about -5%-15% in foreign direct investment (FDI) are anticipated in multinational cooperation around the world. Low income countries in Africa like Uganda and Nigeria are not immune from the economic losses from this outbreak. A quarter of Uganda`s imports come from China and Nigeria depends on particular supplies, such as groceries from China. Even South Africa faces to lose over $28 million that is spent by Chinese tourists.

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Figure 1. Asia-pacific countries spread and responses of COVID-19 taking in consideration the level of human development and the degree of value chains integration

	CLUSTER 1	CLUSTER 2	CLUSTER 3	CLUSTER 4	CLUSTER 5
	Very high to high human development, advanced manufacturing value chains	**Mostly high or medium human development, integration into value chains**	**Wide range of income and development levels, reliance on natural resource exports**	**Medium to high human development, relatively less trade integration**	**Wide range of human development levels, LDCs and SIDS**
Spread of the pandemic and responses	Pandemic's early onset, focus on rapid containment, extensive stimulus packages, signs of early recovery	The "second wave" of the pandemic, stimulus packages and containment measures	Different degrees of the spread of the pandemic and wide variety of responses	Late wave of the pandemic, extensive containment measures, massive public health risks	Relatively isolated and potentially less affected by the pandemic, but public health risks due to low capacities
Level of human development	Very high or high human development	Ranges from very high to medium human development	Wide range from very high to low human development	High and medium human development	Wide range of human development levels, but mostly medium level
Degree of global value chains integration and trade	Highly integrated in advanced manufacturing value chains	Integrated in various manufacturing value chains	Forward linkages through supply of natural resources	Lower degree of trade openness	Small open economies, high degree of imports

Source: United nation development program - The Social and Economic Impact of Covid-19 in the Asia-Pacific Region

Countries around the world learned their lesson to be prepared for the next outbreak. Avoiding economic and health damage of similar outbreak can start by building the process and procedure to deal with infectious disease crisis. Sands, El Turabi, Saynisch, and Dzau (2016) found that the ignorance of infectious disease crisis has not been taking seriously, although infectious diseases have been threatening the global security for a long time. Infectious disease danger and threat have been underestimated among human lives and livelihoods, which led us to be unprepared for any outbreak caused by those diseases. Additionally, the authors urge countries to be prepared for such an outbreak and the state that unity between nations is very important to face an upcoming outbreak.

Morin, Kinzig, Levin, and Perrings (2018) differentiate between the duration of infectious diseases to two categories. The first category is a short-term illness where imposing social distancing can be socially optimal by increasing the life cost of the illness. However, in the second category where a disease is extremely infectious, it may not be optimal to encourage social distancing by dropping the cost of disease. Additionally, they concluded that society would prefer less time with a stronger epidemic than longer time with an epidemic of lower intensity. So, it is important to understand why societies prefer short time pandemics rather than long term epidemics and to evaluate if it is because of the level of education in the society or real GDP per capita that led to this finding.

Many factors affected the public's reaction to the COVID-19 pandemic, but the roles of education and real GDP per capita cannot be ignored. In this study, we want to examine if education or real GDP per capita played a role in different countries in staying at home during COVID-19 Pandemic. This study contributes the first COVID-19 paper that investigate which of the two variables education or real GDP per capita were significate in implementing lockdown and isolation.

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Literature Review

In the following sections we will review previous studies in ineffectual diseases and their economic ramification. Studies covered different area of the impact of the ineffectual disease on countries economics. Our study is the first study that examine stay home orders and link it to real GDP per capita and the level of education in different countries during COVID-19 Pandemic.

The importance of education and real GDP per capita was discussed in many public health studies investigating different approaches. For example, according to Nakamura (2016) people with higher income and higher education were to follow healthy diets and follow recommendation by health officials. This study indicates the behaviour of individuals depends on two important factors which are education and income. Thus, including education and real GDP per capita may explain any government policy that's related to individual decision.

Similarly, Davino et. at. (2016) investigated people's reaction in environmental policies in developed and developing countries, precisely, when governments impose new regulation that effect people to change their habit for public health emerge. The authors mainly include two variables that might affect people's reaction, GDP per capita and education. They concluded that developed countries are more likely to follow new regulations and people have more knowledge of the importance of environmental issues than developing countries.

In addition, Elmawazini el. at (2017) investigated the health gap between developed (OCED) countries and developing (SSA) countries, and globalization can shrink this gap. The authors concluded that globalization shows no significant effect on the health gap between the OECD and SSA countries. However, GDP per capita growth has a significant impact of the health gap between SSA and OECD countries.

Additionally, Abdelhafiz (2020) investigate the knowledge and attitude of people in Egypt in dependence on real GDP per capita, education, rural cities, and age. They found that people with low income, less education, and elderly have less knowledge and attitude to any government policies regarding the COVID-19 pandemic.

Moreover, Fernandes (2020) investigated the economics effect caused by COVID-19 outbreak across countries and industries. Additionally, the study shed light on the global economic costs of COVID-19, and 30 different countries' GDP. The author found that the effect of the current pandemic was underestimated in comprising with SARS in 2003 and financial crisis 2008/2009. Moreover, the study found that it is hard to forecast when the lockdown or stay at home order will end. Also, there is no guideline to follow during the length of a lock down for those countries in the study.

There are other Studies that recently focused in the pandemic outbreak that help to understand the COVID-19 pandemic impacts the countries economically. For example, Suborna (2020) examine the behaviour of macroeconomics activities in case of pandemic. The study includes all economic activities such as supply, demand, investment, trade, inflation (price level), supply chain, exchange rates, financial stability, economic growth, and international cooperation. The author concludes that it is important for every country to reform their economic policy and implementing of lockdown to prevent any difficulties in the future.

Moreover, Zhang et al. (2020) investigated the movement of population and its impact on the spread of COVID-19 in China. They found that population movements have statistically significant impact to the disease spread. Travel ban was effective to slow down the spread of the virus. However, the authors found that it would be much helpful if travel ban enforced earlier to prohibit the spread of the disease.

Also, Li, et al. (2020) examine people precaution of containing the disease or keep their normal economic activities during COVID-19 in China. In order to test people perception, they used an online survey with

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randomized controlled trials during the COVID-19. The authors found lower number of confirmed cases has a positive impact on individual's expectation on GDP growth rate. While this cannot be hold on the level of economic recovery, because there is no correlation with their expectations on GDP growth. The authors explained that individual expectations are not updated when new information provided in a randomized controlled trial.

Research objective and methodology

The cross-sectional data is collected for 123 countries. A descriptive statistic of all variables is shown in Table 1. Most of the variables are taken from Google mobility data reports. These reports show the percentage change in visits and length of stay at distinctive areas compared to the beginning of 2020 (between January 3rd and February 6th, 2020 - baseline). This baseline between January 3rd and February 6th is compared to March 29th in which most courtiers are on lockdown or advised to the stay at home during the COVID-19 outbreak. The places are categorized into 6 which are retail and recreation, grocery and pharmacy, parks, transit stations, workplaces and residential. China and Iran are not included in the data since Google services are not offered there. The other two variables are real GDP per capita adjusted to inflation and education index for each country. The data for those two variables are taken from the world economic outlook report (2019) and United Nations human development report (2019).

Table 1. Descriptive statistic of all data

	Retail & Recreation	Grocery & Pharmacy	Parks	Transit Station	Workplaces	Residential	Real GDP per Capita	Education Index
Mean	-59%	-38%	-39%	-59%	-34%	16%	17831	0.6888
Standard Error	0.0203	0.0204	0.0252	0.0182	0.018065	0.006331	2005	0.01511135
Median	-64%	-36%	-41%	-61%	-36%	15%	7223	0.706
Mode	-45%	-25%	-59%	-68%	-52%	15%	#N/A	0.923
Standard Deviation	0.22558	0.22729	0.2796	0.2026	0.20035	0.07022	22238	0.16759
Sample Variance	0.05088	0.05166	0.0782	0.0410	0.04014	0.00493	494561084	0.02809
Kurtosis	-0.6177	0.05367	0.65923	0.03902	-0.72454	0.10773	3.29715	-0.54370
Skewness	0.51590	-0.13449	0.52826	0.74724	0.28714	0.12014	1.80936	-0.49103
Range	0.92	1.18	1.38	0.86	0.87	0.38	115121	0.699
Minimum	-94%	-94%	-90%	-92%	-73%	-3%	$414.328	0.247
Maximum	-2%	24%	48%	-6%	14%	35%	$115,536	0.946
Sum	-72.45	-46.69	-47.82	-72.59	-41.73	19.92	2193331	84.726
Count	123	123	123	123	123	123	123	123

Source: Compiled by the authors

Retail and recreation category include the percentage change in visits in the beginning of the year compared to March 29th, 2020 for places like museums, cafes, movie theatres, shopping centers, libraries, restaurants and theme parks. All countries endured reduction in visits in this classification. However, Italy had the largest contraction in retail and recreation visits compared to the baseline reaching -94% in reduction.

Grocery and pharmacy category include drug stores, grocery markets, farmers markets, food warehouses, specialty food shops and pharmacies. The mobility trends for these places are mixed but mostly negative for most countries. Only 6 countries out of 123 had zero or positive percentage change in visits to grocery and pharmacy compared to baseline which are Belarus, Benin, Trinidad and Tobago, Ghana, Mongolia and Zimbabwe.

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Parks mobility trends surprisingly jumped positively to 48% in Finland and 43% in Sweden and 41% in Belarus compared to the baseline. More people are visiting parks while they should stayed at home in those countries. Moreover, some other countries had a mild percentage change increase by 10%, 5%, 4% and 4%, in Benin, Mongolia, Estonia and Tajikistan respectively. The remaining countries had reduction in the percentage of visits compared to the beginning of the year. Google's classification for parks includes public gardens, public beaches, plazas, national parks, plazas, marinas and dog parks.

Transit station category includes subways, buses, train station and public transport is included under transit station category. The percentage change in mobility trends in these places were negative ranging from -6% to -92%.While all other sectors have at least one country that reached a percentage change in reduction reaching -90%, the maximum negative percentage change in workplace was in Jorden reaching -73% compared to the baseline.

Most countries had a positive percentage change in residential category reaching the maximum of 35% in Bolivia. Only Belarus and Tajikistan had a percentage change decrease by -2 and -3 respectively (see Figure 2). This variable will show the percentage change of all residential places compared to the baseline.

Real Gross domestic product per person adjusted to inflation (real GDP per capita) is a common variable used to measure the standard of living. The data is collected from the world economic outlook report (2019). It approximates each citizen benefit form overall economy of their country. Education index is collected from the Human Development Report (2018). The index is calculated by taking the average of mean years for adult schooling and expected years of children schooling.

The study is testing whether the standard of living or education were a significate contributor for people to stay at home during COVID-19 pandemic. The paper used real GDP per capita in 2018 as an estimator for the standard of living for the 123 countries. Also, the study used education index taken from the human development report (2019) as an approximation for education level for the 123 countries. To test for that, the study developed a cross sectional regression model for 123 countries as follows:

$$Y = \alpha + \beta_1 RR + \beta_2 GP + \beta_3 P + \beta_4 T + \beta_5 W + \beta_6 RGDP + \beta_7 E + \mu \quad (1)$$

Where Y represent the dependent variable which is the percentage change in residential areas compared to the baseline and, RR is the percentage change in retail and recreation mobility trend compared to the baseline, GP is the percentage change in grocery and pharmacy mobility trend compared to the baseline, P is the percentage change in parks mobility trend compared to the baseline, T is the percentage change in transit station mobility trend compared to the baseline, W is the percentage change in work place mobility trend compared to the baseline, RGDP the real GDP per capita in US dollar, E is the education index taken from the human development report (2018) and μ is an error term. RR, GP, P, T, W, RGDP and E are the independent variables.

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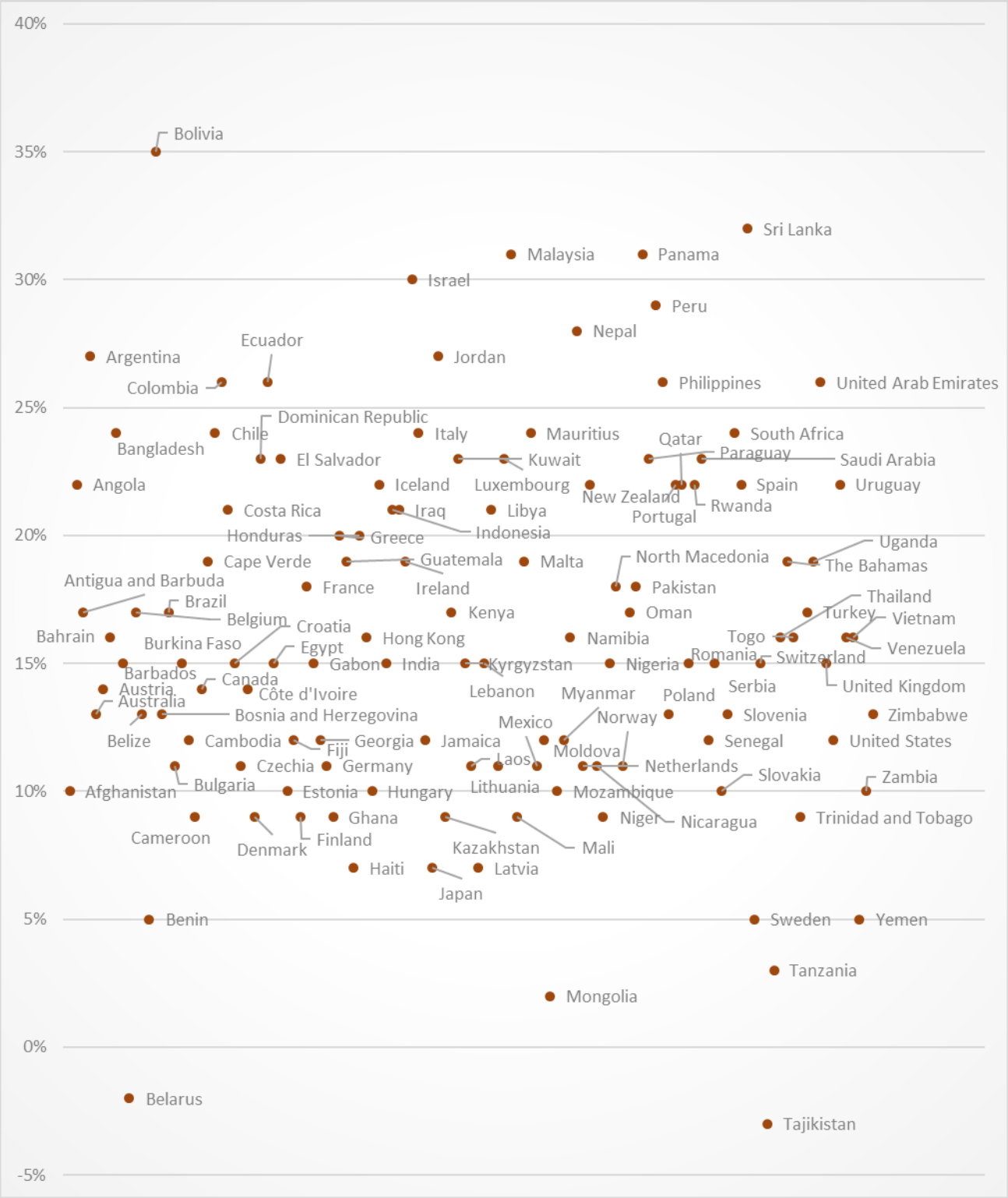
Figure 2. Percentage change in residential areas compared to the baseline for 123 countries in March 29th, 2020



Source: Compiled by the authors

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Results and discussion

After running the cross-sectional regression model using robust command in Stata application, the result is shown in Table 2. Table 2 shows that only parks, workplaces and education where statistically significate. Those variables can explain the percentage change in residential areas in different countries since COVID-19 pandemic. R^2 is 71.2%, which means that 71.2% of the variation in the residential area during COVID-19 pandemic is explained by the percentage changes in parks, workplaces and education mobility trends. The finding is interesting since it shows that living standard is not a significate factor in explaining the percentage change of people staying at home.

Another interesting finding is that education is a significate variable. However, the coefficient for education is negative which means for each one-point increase in education index, the percentage change for citizens staying at home decreases by 0.0872. Education is inversely affecting the percentage change in people staying at home during COVID-19 outbreak. The negative effect maybe because of the decline of political trust in demarcate government were education index is high. There is a significate evidence - especially in young people – showing that citizens display lower levels of political trust. Lower political trust can be the reason why citizens are ignoring stay at home orders (Chevalier, 2019). The OLS estimator equation is the following:

$$\hat{Y} = 0.1146 + -0.1019P - 0.1985112W - 0.0872E \tag{2}$$

Table 2. Cross-sectional regression model results

	Coefficients	Robust Standard Error	t-stat	P-value
Intercept	0.1145864	0.0201152	5.70	0.000***
RR	0.0692686	0.0593392	1.17	0.245
GP	-0.004733	0.0491194	-0.10	0.923
P	-0.1019377	0.0192068	-5.31	0.000***
T	-0.0654919	0.0414065	-1.58	0.116
W	-0.1985112	0.0442529	-4.49	0.000***
E	-0.0872348	0.0289625	-3.01	0.003***
RGDP	0.0000	0.00000	0.26	0.792
F(7.115)	44.24			
Prob>F	0.0000			
R^2	71.26%			
Root MSE	0.03877			
Observations	123			
Notes: *, **, and *** denotes statistical significance at 10%, 5% and 1% respectively.				

Source: Compiled by the authors

Moreover, workplaces and parks mobility trends have a negative sign which is expected since people who are in park and workplace will not be at home. The model shows that each one-point increase in workplace, the percentage change for citizens who are staying at home decreases by 0.1985. Also, for each one-point increase in parks, the percentage change for people who are staying at home decreases by 0.1019.

The model can help governments around the world to design more effective policy that target and limit going to workplaces and parks which ultimately increase the percentage of people staying at home. Not only those variables were significate in the regression model, they were also the highest correlated variables to the dependable variable (residential areas). Table 3 shows the correction matrix of selected variables including parks

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and workplaces relative to residential areas. The highest correction among selected variables relative to residential area is represented by workplace and parks variables which are 74% and 76% respectively. Taking in consideration those variable along with the level of education (education index of a country) since countries with relatively high education index would stay less at home compared with those countries with relatively lower level of education would have more effective government policy. For example, government should consider leaving grocery and pharmacy shops open since it will not have a significate impact for people to stay at home. However, legislatures should design policies that encourage working at home along with closure of parks. Having these steps in place would increase the percentage of people staying at home and eventually decrease the spread of COVID-19.

Table 3. Correlation matrix of selected variables

	Retail & Recreation	Grocery & Pharmacy	Parks	Transit station	Workplaces	Residential
Retail & Recreation	1.00					
Grocery & Pharmacy	0.89	1.00				
Parks	0.74	0.67	1.00			
Transit station	0.88	0.78	0.74	1.00		
Workplaces	0.89	0.78	0.70	0.86	1.00	
Residential	-0.68	-0.64	-0.76	-0.72	-0.74	1.00

Source: Compiled by the authors

Conclusions

During COVID-19 pandemic, policy makers across the world are trying to design the best policy to tackle and minimize the social-economic effect and to increase the percentage of people staying at home to limit the spread of the virus. Countries varies in the implementations depending on their evaluation of the situations and their economical status, that's motivate us to investigate which of the two variables education or real GDP per capita were significate in implementing lockdown and isolation. Many countries have different level of real GDP per capita and education. Using google mobility trends across 123 countries, the study showed that only the level of education can have a negative significate effect on the percentage of people staying at home. The inverse relation between staying at home and education might be related to the political trust in developed countries where less people trust their governments which is confirmed in other studies like (Chevalier, 2019). However, there are other factors that can increase the percentage of individuals staying at home. Limiting and closing parks would have a significate increase the percentage of people staying at home. Also, increasing the percentage of people working at home have a significate positive impact on the percentage of people stayed at home. Other sectors are tested in the study which includes retail, recreation, grocery, pharmacy and transit station but they were not a significate contributor in increasing the percentage of people staying at home.

This study can help policy makers around the world to tailor policies that target workplaces and parks to increase the percentage of people staying at home. Having more individuals works from home along with parks closure would significate increase the level of people staying at home. Also, countries with high level of education index should expect relatively less effective policy implementation compared to countries with lower education index. However, further research is needed as more data feeds in to construct a panel data when this pandemic is ended. Moreover, some countries such as China, Iran and Russia are not included since google services are not offered in them. In order to have a better understanding additional analysis is needed, understanding of economics impact of ineffectual diseases including COVID-19 is vital. Another area of research can be to check and see which business sectors are most affected -positively or negatively- from this pandemic.

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ENTREPRENEURIAL ACTIVITIES OF PUBLIC BENEFIT ORGANIZATIONS

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Abstract. The paper assesses how revenue diversification of the public benefit organizations (which are important part of the polish third sector) is associated with the organizations size (measured by the total year reveneus). The study covered all public benefit organizations (it was almost 8,000 organizations - their number varied depending on the year), which operated in 2015-2017. The results obtained indicate that there is a statistically significant relationship between the diversification of revenues and the size of the organization. The analysis included, in particular, commercial sources of reveneus, which prove the pro-entrepreneurial attitude of the surveyed organizations and the ability to operate on a competitive market. Results also indicate that revenue diversification through the use of commercial earning sources has a positive effect on the overall volume of annual revenue generated. It can therefore be concluded that the diversification of revenue sources is better for Polish public benefit organizations (PBOs) than concentration on one source. Univariate descriptive statistics associated with frequency distributions, including percentages and means, and statistical tests (including the chi-square independence tests and Kruskal – Wallis tests) were used to verify the hypotheses.

Keywords: Public Benefit Organization; NGOs' entrepreneurship; revenues diversification

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JEL Classifications: D20, L31, G23

1. Introduction

Entrepreneurship theories make clear that the concept of entrepreneurship is not confined to the for-profit sector, it is a general principle which can be applied to the nonprofit sector as well (Badelt, 2003, 154). So, the concept of entrepreneurship plays a significant role in NGOs economics and management theorizing. While classic entrepreneurship aims starting a business with profit motivation, nowadays the interest on general social problems has been increasing (accommodation, nature, education, health, gender, poverty etc.), and this interest shows itself with entrepreneurial activities. So, finally the interest on social problems transforms very often the classic entrepreneurship to a volunteer and philanthropic structure (Soysekerci, Erturg, 2010, p. 1850).

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The issues discussed in the article assume that the diversification of revenue sources is a favorable phenomenon for NGOs (in particular, this applies to commercial methods of obtaining revenue). Nevertheless, there are opinions and analyzes in the literature that show that concentration on one source can be more effective. For example, according to Despard, Nanre Nafziger-Mayegun, Adjabeng and Ansong (2017, p. 2129), revenue diversification is associated with decreased fund-raising efficiency. Similar studies were presented by Mozos, Duarte and Ruiz (2016, p. 2). This happens when revenue diversification among NGOs is associated with efforts to meet complex and varying accountability and performance standards of multiple funders (AbouAssi, 2013, p. 584). So, it is much easier and less time consuming to control and monitor the effects of utilisation in the case of more concentrated sources of financing, which doesn't involve complicated procedures from different sources (Fischer, Wilsker, Young 2011, p. 662; Froelich, 1999, p. 246). Similarly, Ecer, Magro, and Sarpça (2017, p. 141) found that US NGOs whose budgets were comprised mostly of earned revenue had greater administrative efficiency but lesser fund-raising efficiency compared to NGOs whose budgets were comprised mostly of grants and donations. Another charge of commercial earning by NGOs is the structural effects of engaging in business activities. It causes predominantly the professionalization of NGO administration but simulatenously the board of directors as an exponent of the governance structure, plays a more important role in overseeing NGO finances and managing possible conflicts of interest and mission drift (Khieng, Dahles, 2015, p.1431).

Most authors, however, clearly recognize the diversification of revenues as a positive phenomenon for NGOs both in terms of financial stability (for example Carroll and Stater; p. 947; Trussel, 2002, p. 17), financial vulnerability (for example Despard, Nanre Nafziger-Mayegun,. Adjabeng Ansong 2017; Hager 2001, p.383), nonprofit financial health (Hung, Hager, 2019, p. 5) or reducing the volatility (Mayer,Wang, Egginton, Flint, 2014, p. 374). The benefits of self-financing and commercial activities are particularly emphasized. For example, Vaceková and Svidroňová (2014, p. 128), after analyzing NGOs in Czech Republic, Slovakia and Austria, managed to confirm that self-financing and commercial activities is a suitable method used for raising funds and also one of the possible ways to gain financial stability, independence and, in the end, also the long-term sustainability of NGOs. The authors indicate that commercial activietes testify to the pro-entrepreneurial attitude of the nonprofit organization. It strives to raise funds for the implementation of a social mission not only through philanthropic funding reminiscent of social transfers, but to act and earn in an entrepreneurial way. These positive effects of earned-income activities on the process and structure of NGOs are also relatively consistent with the writings of Hughes and Luksetich (2004, p. 203), Fowler (2000, p. 125), Weisbrod (2000, p. 61), Gronbjerg (1993, p. 98), and Davis and Cobb jednoznacznie suggests that if dependence comes from relying on a sole-source supplier, then an obvious solution is to find and maintain alternatives (2010, p. 24).

The purpose of this study is to examine the relationship between revenue diversification and size of the organization (measured by total reveneus). We offer a unique contribution by addressing the gap in the literature concerning effects of revenue diversification among specific type of Polish NGOs (i.e. public benefit organizations – PBOs).

The remainder of this paper is organized as follows: in the next section, we characterize a specific type of NGO, which is the public benefit organization. It contains some quantitative data and legal conditions in which Polish PBOs operate. Then, research methodology was presented. It contains purpose, hypotheses and other details regarding tests carried out. Then, the results were presented. This section verifies the hypotheses. The discusion section develops problems signaled in the introduction section, but it is a clear explanation why the diversification of revenues (in particular from commercial sources) should be considered as a manifestation of the PBOs entrepreneurial attitude. In this section (based on the research results), it was also assumed that revenue diversification is a positive phenomenon for Polish PBOs and it is a better solution than focusing on one source of revenue. The whole article is summarized in the conclusions, in which also the research limitations are presented.

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2. Public benefit organization – a specific type of the non-governemental organization

A public benefit organization (PBO) is a specific type of the non-governemental organization (NGO). It has the legal status granted by the Polish National Court Register. Non-governmental organizations, i.e. associations and foundations, as well as the church organizations and non-profit companies, including e.g. sports clubs, have the right to apply for this status (with certain restrictions). The status gives them certain privileges. The most important of these is the privilege of receiving 1% of personal income tax. Although, the status of PBO means the necessity to conduct thorough and transparent reporting. In accordance with article 23 paragraph 6 of the Public Benefit and Voluntary Service Act, every public benefit organization must submit financial statement and a substantive report on its activities by the 15th of July of the year following the year when the statements are submitted.

With the introduction of this 1% donation program to the Polish tax system, the income tax payer has obtained the right to transfer 1% of their income tax to a chosen PBO indicated by the tax payer. According to the Polish Department of Income Taxes of the Ministry of Finance, public benefit organizations were allocated PLN 875 million for 1% personal income tax in 2019. This part of the income tax is not a traditional donation or discount. By transferring this one-hundredth of income tax, you do not use your own money, but the amount that belongs to the State Treasury, but which the taxpayers can decide about the purpose of its use. Before 2008, anyone who wanted to allocate some of the tax to some public benefit organization had to calculate and transfer the tax themselves. In practice, therefore, most people did not make this effort. Therefore, the changes made in 2008 significantly increased the number of donors (it is enough now to choose the organization number from the list of public benefits organizations). So, a specific market was created in this way, which can be described as the "one percent market". In the market, organizations entitled to receive the 1% tax compete with each other. Because of these privileges regarding sources of funding for PBOs, in the past decade the number of registered public benefit organizations in Poland has increased 4-fold from 2.2 up to 9,000. In 2015, the number of active PBOs reached 8,800, which accounted for 10% of nonprofit entities in Poland. After this year, the number of public benefit organizations has stabilized, oscillating between 8,500 and 9,000 (the number of active PBOs, i.e. those submitting financial statements and actually operating is slightly smaller).

3. The research methodology

The study covered the entire population of Polish public benefit organizations. Nevertheless, some organizations were excluded from the study. First, organizations that, despite legal requirements, did not submit substantive and financial reports (which automatically excludes them from having PBO status) in the publicly available database of public benefit organizations were excluded. Secondly, organizations that have begun the process of decommissioning or were not yet registered in the system (new ones) have also been excluded from the study. Thirdly, there is one more type of exclusion, particularly relevant from a research point of view. Namely, during the analysis of substantive and financial reports of PBOs, the amount of revenues obtained from various sources was identified. The purpose of the study was to determine the degree of diversification of revenues from different sources. Therefore, it was considered that a minimum limit of PLN 500 (just over € 100) should be introduced for a specific source of revenue, which would indicate that this source was deliberately used, and this was not an incidental (even accidental) event. For example, obtaining PLN 4.5 (i.e. € 1) for interest in the bank does not mean that the organization consciously and enterprisingly earns financial activities. Therefore, there were organizations which in each source of income did not exceed PLN 500 and these organizations were also not

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taken into account. It was recognized that the functioning of these organizations (despite the presence in the register) is fake and practically nothing happens in it (it is difficult to talk about any pro-entrepreneurial attitude of such kind of the organization).

Therefore, in 2015, 7616 organizations met the assumed research requirements, in 2016 - 7740, while in 2017 - 7932 organizations. It was decided to dynamically approach the analyzed problem due to the fact that data from one year might not reflect the actual state of affairs (e.g. legal changes from a given year, or anomalous macroeconomic event could distort the results).

Obtaining data from the database was a tedious and long-lasting task. First, each substantive report of the organization was opened individually (there is no aggregate report available from the website of The National Freedom Institute - agency responsible for supporting civil society, public benefit activities, and volunteering, which maintains the PBOs database). Secondly, the pdf file in which the report was saved was not editable, which meant that each feature sought was saved and manually entered into an Excel spreadsheet (converting this type of file using specialized software was also impossible).

The analyzed sources of reveneus included:

- revenue from gratuitous public benefit activities (free-of-charge services for beneficiaries),
- paid public benefit activities for beneficiaries (the beneficiary payment service covers only the costs without profit for the organization),
- business revenues which consisted of revenues from business activities,
- other revenues (including income from financing activities).

According to paragraph 7 of Polish Act of law (April 24th 2003) on Public Benefit and Volunteer Work, a free-of-charge services for beneficiaries (revenues from gratuitous public benefit activities) are an activity for which organizations do not receive remuneration. So, revenues from gratuitous public benefit activities, organizations include, among others, received subsidies (e.g. from local government units), donations and membership fees in the case of an association.

Paid public benefit activity for beneficiaries is an activity for which organizations collect remuneration, in accordance with the conditions set out in paragraph 8 of the Act of law of on Public Benefit and Volunteer Work. Fees collected from participants and recipients of the organisation's statutory activities are included as paid public benefit activities for beneficiaries. Paid public benefit activity must be a statutory activity carried out in the sphere of public benefit (i.e. it must result from the objectives enshrined in the statute and fit in public tasks of public benefit). The income from this activity is intended solely for public benefit activities. Charges (remuneration) from purchasers of services or goods (e.g. from beneficiaries, institutions, companies) cannot be higher than what results from (direct and indirect) costs of this activity (there is no margin). Paid public benefit activity becomes an economic activity (requiring registration) if the average monthly remuneration of a natural person for employment in performing statutory paid public benefit activity for the last 3 months exceeds 3 times the average monthly salary in the enterprise sector announced by the President of the Central Office Statistical data for the previous year. Both paid public benefit activity and running a business requires separated accounting. There is no formal requirement for a sub-account by an organization conducting business activity or paid public benefit activity. In the category “other revenues” (including reveneus from financing activities), they are revenues not included in previous sources of income, e.g. school fees run under the Act of 7 September 1991 on the education system, revenues from the sale of fixed assets or real estate. Pursuant to a paragraph 3 of the Accounting Act of 29 September 1994, this is the category in which the organization shows revenues that cannot be qualified as a part of gratuitous or paid activities.

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In connection with the research issues outlined in the paper, it was decided to put the following hypotheses:

H_1. The increase in the size of the public benefit organization is accompanied by an increase in the diversification of funding sources.

$H_{2.}$ The increase in the size of the public benefit organization is accompanied by an increase in commercial financing sources.

Due to the fact that commercial sources include paid public benefit activities and business activities, the second hypothesis should be divided into two parts:
$H_{2a.}$ The increase in the size of the organization is accompanied by an increase in revenues from paid public benefit activities.
H_{2b} The increase in the size of the organization is accompanied by an increase in revenues from business activities.

In connection with such hypotheses, the phrase "size of the public benefit organization" needs to be clarified. The size here is measured by the total revenues obtained by organizations in a given year. Therefore, the surveyed organizations were divided into four groups (PLN 4.5 is about €1):

- Group I (large organizations) – more than 10 million PLN,
- Group II (medium organizations) – more than 1 milion PLN to 10 million PLN,
- Group III (small organizations) – more than 100 thousand PLN to 1 mln PLN,
- Group IV (micro organizations) –below 100 thousand PLN.

Explanation requires the recognition of paid public benefit activities and business activities as typically commercial sources (i.e. related to the entrepreneurial attitude of the organization and the need to operate on a competitive market). Business activities do not raise any doubts (these are activities related to running own business activities under PBOs). They are recorded and accounted for as classic commercial enterprises (including the need to pay income tax). In fact, paid public benefit activities do not differ in essence from business activities. In this case, you also have to serve customers who pay for the products or services received. The only difference is that the amount of payment collected from beneficiaries cannot be higher than the cost resulting from the production of these products or services. Therefore, separate records must be kept, and the earnings of specific people providing the services are limited (so that too high wages do not reduce potential profit). The similarity of both these forms (i.e. business activities and paid activities) is evidenced by the fact that as a result of making a profit from paid activities it begins to be treated as an economic activity.

Another issue that requires justification is recognizing annual revenues as the basis for dividing the organization into large, medium, small and micro units. A gross or net profit was not taken into consideration, because these organizations are not created for making profits. Therefore, the appropriate measure that allows assessing the functioning of an organization is reveneue and not income (understood as reveneue reduced by operating costs).

In business practice, apart from revenues, the second parameter is also used, which is the number of employees. In this case, this parameter can only be of an auxiliary nature. The surveyed PBOs largely use civil law contracts (instead of full-time jobs) and volunteering (i.e. these people are not employed, but often do useful work - just like employees). These arguments also suggest that only revenue should be used to measure the size of the organization.

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Data analysis was conducted using univariate descriptive statistics associated with frequency distributions, including percentages and means, and statistical tests (including chi-square independence test and the Kruskal–Wallis tests).

4. Results

The most frequently used source of financing for public benefit organizations are gratuitous public benefit activities (subsidies, donations, membership fees, etc.). Only about 4% of organizations (slight fluctuations depending on the year) do not use this source of funding (table 1). Another most frequently used source of financing are other revenues together with financial revenues (e.g. interest on bank deposits). These revenues include the sale of property (real estate or fixed assets) and other extraordinary events that have generated any revenue for the organization. About 1/3 entities earned on the so-called paid public benefit activities for beneficiaries (it covers only the costs without profit for the organization and it is strictly controlled). However, the rarest situation was earning money as part of a classic business activity.

On average, one public benefit organization has less than 2 sources of financing used (depending on the year it was 1.82 in 2015, while in 2016 and in 2017 - 1.84). The average number of sources of revenue used increases with the size of the organization. For large organizations, there were almost 3 sources of reveneues (in 2015 - 2.83, 2016 - 2.85, and in 2017 - 2.91). For the organization of the medium size, it was about 2.5 sources of revenue (in 2015 - 2.52, 2016 - 2.53, 2017 - 2.57). Small organizations used on average 2 sources (in 2015 - 2.01; 2016 - 2.02, 2017 - 2.02). The smallest (micro) organizations used less than 1.5 sources (in 2015 - 1.45, 2016 - 1.44, 2017 - 1.45). Thus, it can be seen that, along with the organization's sizes, the average number of sources of revenues decreases.

Kruskal-Wallis tests carried out for these averages indicated that the size of the organization has a statistically significant relationship with the level of diversification of the sources of reveneue used.

Table 1. Sources of revenue used by public benefit organizations in 2015-2017

Source of revenue	**2015** **N = 7616**	**2016** **N = 7740**	**2017** **N = 7932**
	%		
Gratuitous public benefit activities	96.1	96.4	94.1
Paid public benefit activities	28.3	28.7	30.7
Business activities	9.5	9.7	9.9
Other activities	48.2	46.9	49.3

Source: composed by authors according to PBOs reports

Table 2 presents data showing the use of specific sources of revenues in the activities of PBOs, depending on the size of the organization. As for commercial sources of earning, you can see some progress in paid public bevnefits activities, which is not only related to the size of the organization, but also improves in subsequent years (e.g. revenues from this activity increased in 2017 compared to years previous in all groups of organizations). Unfortunately, the increase in business activities is not as consistent as in the previous case (in fact, only in large organizations there was a more pronounced increase).

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Table 2. Sources of revenue used by PBOs depending on the size of the organization

Source of revenue	2015			2016			2017		
	Size	Number	Percentage	Size	Number	Percentage	Size	Number	Percentage
Gratuitous public benefit activities	**Large N= 120**	118	98.3	**Large N= 112**	111	99.1	**Large N= 129**	128	99.2
Paid public benefit activities		59	49.2		56	50.0		69	53.5
Business activities		51	42.5		46	41.1		56	43.4
Other activities		112	93.3		106	94.6		122	94,6
Gratuitous public benefit activities	**Medium N= 1030**	992	96.3	**Medium N= 1058**	1030	97.4	**Medium N= 1146**	1093	95,4
Paid public benefit activities		515	50.0		529	50		617	53.8
Business activities		248	24.1		265	25.0		287	25.0
Other activities		845	82.0		855	80.8		940	82.0
Gratuitous public benefit activities	**Small N= 2736**	2638	96.4	**Small N= 2773**	2690	97.0	**Small N= 2898**	2757	95,1
Paid public benefit activities		1014	37.1		1037	37.4		1101	38.0
Business activities		321	11.7		347	12.5		358	12.4
Other activities		1530	55.9		1514	54.6		1625	56.1
Gratuitous public benefit activities	**Micro N= 3730**	3574	95.8	**Micro N= 3797**	3632	95.7	**Micro N= 3759**	3483	92.7
Paid public benefit activities		564	15.1		597	15.7		652	17.3
Business activities		102	2.7		95	2.5		84	2,2
Other activities		1185	31.8		1152	30.3		1227	32.6

Source: composed by authors according to PBOs reports

The chi-square independence test indicated that a statistically significant correlations exists for the size of the public benefit organization and the diversification of funding sources: 2015 ($\chi 2$ (9, N = 7616) = 1899.28, $p < .001$); 2016 ($\chi 2$ (9, N = 7740) = 1986.04, $p < .001$); 2017 ($\chi 2$ (9, N = 7932) = 2180.53, $p < .001$). Although the strength is quite modest (Cramer's V, .288, .292 and .303 respectively).

Kruskal-Wallis tests carried out for these averages indicated that the size of the organization has a statistically significant relationship with the level of diversification of the sources of income used. This applies to all years

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covered by the research. For 2015, the results were as follows: $\chi2(3) = 14.230$, $p<0,001$; average rank for large organizations = 6091.16; average rank for medium organizations = 5483.23; average rank for small organizations = 4314.57; average rank for micro organizations = 2904.29). For 2016, the results were as follows: $\chi2(3)= 1715.114$, $p<0,001$; average rank for large organizatuions = 3974.45; average rank for medium organizations = 3906.58; average rank for small organizations = 3893.17; average rank for micro organizations = 2963.00). For the last year analyzed (i.e. 2017), the results were as follows: $\chi2(3)= 1923.452$, $p<0,001$; average rank for large organizatuions = 6384.08; average rank for medium organizations = 5743.20; average rank for small organizations = 4461.06; average rank for micro organizations = 2963.00).
The comparison between pairs allows to know if there are statistically significant differences between particular groups. As can be seen from Table 3, all pairwise comparisons showed such differences. It can therefore be concluded that each of the separated groups - divided by the size of the organization to a greater extent diversifies its own sources of income along with its size. The exception here is the difference between small and micro organizations in 2015 (this means that only in this year can not be clearly identified the difference in the diversification of revenue sources between two groups of the smallest entities, although in the following years such a difference already exists).

Table 3. Pair comparison - size of the public benefit organization and diversification of revenue sources

Size of the organization Sample 1 vs Sample2	Test statistics	Standard deviation	Deviation Test Statistics	p-value	Adjusted p-value*
2015					
Large-Medium	1410.274	51.631	27.315	.000	.000
Large-Small	2578.931	72.200	35.719	.000	.000
Large-Micro	3096.864	190.235	16.279	.000	.000
Medium-Small	1168.657	74.984	15.585	.000	.000
Medium-Micro	1686.591	191.309	8.816	.000	.000
Small-Micro	517.933	197.854	2.618	.009	.053
2016					
Large-Medium	1479.420	52.052	28.422	.000	.000
Large-Small	2647.722	72.441	36.550	.000	.000
Large-Micro	3258.879	199.782	16.312	.000	.000
Medium-Small	1168.302	75.299	15.515	.000	.000
Medium-Micro	1779.458	200.836	8.860	.000	.000
Small-Micro	611.156	207.058	2.952	.003	.019
2017					
Large-Medium	1498.062	52.944	28.295	.000	.000
Large-Small	2780.199	72.269	38.470	.000	.000
Large-Micro	3351.080	191.775	17.474	.000	.000
Medium-Small	1282.136	74.735	17.156	.000	.000
Medium-Micro	1853.018	192.717	9.615	.000	.000
Small-Micro	570.881	198.896	2.870	.004	.025

Each row tests the null hypotheses about whether the distributions of Sample 1 and Sample 2 are the same. Asymptotic significance (2-sided tests) are displayed. The significance level is 0.05.
* significance values for many tests were corrected by the Bonferroni method
Source: composed by authors according to PBOs reports

Therefore, the first hypothesis has been supported.

Regarding the second hypothesis, calculations was made separately for paid public benefit activities for beneficiaries and business activities, since both these sources are considered as commercial sources. As for paid public benefit activities, the percentage of organizations using this source of income fluctuates around 50% for large and medium organizations (in 2017 it is slightly higher and reaches almost 54%), after which it drops to 37% -38% (depending on the year) for small organizations, while for micro organizations it amounts to 15% - 17% depending on the year. Thus, it can be seen that the increase in the size of the organization is accompanied

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by an increase in the use of paid public benefit activities for beneficiaries as a source of revenue. This is also evidenced by Kruskal-Wallis tests carried out for individual averages, which indicate that the size of the organization has a statistically significant relationship with the use of paid public benefit activities as a commercial source of earning. This applied to all years covered by the research. For 2015, the results were as follows: $\chi2(3) = 688.125$, $p<0,001$; average rank for large organizatuions = 4604.77; average rank for medium organizations = 3308.29; average rank for small organizations = 4143.80; average rank for micro organizations = 4636.50). For 2016, the results were as follows: $\chi2(3)= 674.706$, $p<0,001$; average rank for large organizatuions = 4696.00; average rank for medium organizations = 3369.48; average rank for small organizations = 4208.24; average rank for micro organizations = 4696.00). Finally, for 2017, the results were as follows: $\chi2(3)= 706.732$, $p<0,001$; average rank for large organizatuions = 4868.35; average rank for medium organizations = 3434.90; average rank for small organizations = 4253.75; average rank for micro organizations = 4882.27).

Regarding the first source of revenue included in the group of commercial revenues (paid public benefit activities), it can be stated that there is no significant statistical difference between the two groups of the smallest entities (i.e. small and micro organizations). This applies to the entire period of analysis (i.e. each specified year – Table 4). It can therefore be concluded that in the case of paid public benefit activities, the division into small and micro organizations cannot be justified - they can be considered as behaving similarly in terms of using this source of revenue.

Table 4. Pair comparison - size of the public benefit organization and utlization of paid public benefit sources of revenues

Size of the organization Sample 1 vs Sample2	Test statistics	Standard deviation	Deviation Test Statistics	p-value	Adjusted p-value*
2015					
Large-Medium	835.504	43.160	19.358	.000	.000
Large-Small	1328.206	60.354	22.007	.000	.000
Large-Micro	1296.473	159.023	8.153	.000	.000
Medium-Small	492.702	62.681	7.860	.000	.000
Medium-Micro	460.968	159.921	2.882	.004	.024
Small-Micro	-31.733	165.392	-.192	.848	1.000
2016					
Large-Medium	838.760	43.719	19.185	.000	.000
Large-Small	1326.522	60.844	21.802	.000	.000
Large-Micro	1326.522	167.799	7.905	.000	.000
Medium-Small	487.762	63.245	7.712	.000	.000
Medium-Micro	487.762	168.684	2.892	.004	.023
Small-Micro	.000	173.911	.000	1.000	1.000
2017					
Large-Medium	818.847	45.244	18.098	.000	.000
Large-Small	1447.368	61.759	23.436	.000	.000
Large-Micro	1433.445	163.885	8.747	.000	.000
Medium-Small	628.521	63.866	9.841	.000	.000
Medium-Micro	614.597	164.691	3.732	.000	.001
Small-Micro	-13.923	169.971	-.082	.935	1.000

Each row tests the null hypotheses about whether the distributions of Sample 1 and Sample 2 are the same. Asymptotic significance (2-sided tests) are displayed. The significance level is 0.05.
* significance values for many tests were corrected by the Bonferroni method

Source: composed by authors according to PBOs reports

Therefore, the 2a hypothesis has been supported.

Regarding revenues from business activities, the percentage of organizations using this source of revenue ranges around 41% -43% for large organizations, 24% -25% for medium, 11% -12% for small and 2% -3% for micro. The differences in the frequency of using business activity depending on the size of the organization are also

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confirmed by Kruskal-Wallis tests carried out for individual averages. As in the previous case, it applies to all analyzed years. For 2015, the results were as follows: $\chi2(3) = 622.108$, $p<0,001$; average rank for large organizatuions = 5006.90; average rank for medium organizations = 4364.38; average rank for small organizations =3894.27; average rank for micro organizations =3551.63). For 2016, the results were as follows: $\chi2(3)= 658.177$, $p<0,001$; average rank for large organizatuions = 5083.46; average rank for medium organizations = 4463.33; average rank for small organizations = 3978.27; average rank for micro organizations = 3590.83). While, for 2017 the results were as follows: $\chi2(3)= 724.340$, $p<0,001$; average rank for large organizatuions = 5286.67; average rank for medium organizations = 4567.23; average rank for small organizations = 4063.93; average rank for micro organizations = 3662.63).

Taking into account business activities, it can be stated that statistically significant differences in the use of this source of income can be proved in all years and in all groups (Table 5). It can therefore be concluded that regardless of the period and regardless of whether large, medium, small and micro organizations are involved, there are differences in the frequency of doing business by these entities. Business activities can be considered the most pro-entrepreneurial activities of public benefit organizations. Conducting such activities does not differ formally from classic enterprises. Of course, nonprofit organization customers may be aware that they support the organization's mission through purchases (often this may prompt them to buy products or services). Nevertheless, in terms of labor law, tax regulations, registration obligations and other regulations, PBOs and for-profit organizations are treated the same.

Table 5. Pair comparison - size of the public benefit organization and utilization of business sources of revenues

Size of the organization Sample 1 vs Sample2	Test statistics	Standard deviation	Deviation Test Statistics	p-value	Adjusted p-value*
2015					
Large-Medium	342.639	28.081	12.202	.000	.000
Large-Small	812.745	39.267	20.698	.000	.000
Large-Micro	1514.267	103.464	14.636	.000	.000
Medium-Small	470.106	40.782	11.527	.000	.000
Medium-Micro	1171.628	104.048	11.260	.000	.000
Small-Micro	701.522	107.607	6.519	.000	.000
2016					
Large-Medium	387.447	28.650	13.523	.000	.000
Large-Small	872.502	39.872	21.882	.000	.000
Large-Micro	1492.638	109.962	13.574	.000	.000
Medium-Small	485.056	41.446	11.703	.000	.000
Medium-Micro	1105.191	110.543	9.998	.000	.000
Small-Micro	620.135	113.968	5.441	.000	.000
2017					
Large-Medium	401.308	29.278	13.707	.000	.000
Large-Small	904.605	39.965	22.635	.000	.000
Large-Micro	1633.049	106.054	15.398	.000	.000
Medium-Small	503.297	41.329	12.178	.000	.000
Medium-Micro	1231.741	106.575	11.557	.000	.000
Small-Micro	728.444	109.992	6.623	.000	.000

Each row tests the null hypotheses about whether the distributions of Sample 1 and Sample 2 are the same. Asymptotic significance (2-sided tests) are displayed. The significance level is 0.05.
* significance values for many tests were corrected by the Bonferroni method

Source: composed by authors according to PBOs reports

Therefore, the 2b hypothesis has been supported.

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5. Discussion

From economic point of view, the diversification of revenues in non-governmental organizations seems to be a rational strategy. It is a chance to increase the revenues, strengthen the stability and predictability of NGOs' functioning (Mikołajczak, 2018, p. 774). The literature on the functioning of the third sector highlights the benefits of diversifying the sources of funding for NGOs (as mentioned in the introduction section). Among these advantages, it is mentioned that greater number of revenue sources is associated with lower probability of financial vulnerability (eg Despard, Nafziger-Mayegun, Adjabeng, Ansong, 2017, p. 2138; Silva, Burger, 2015, p. 17; Hodge, Piccolo, 2005, p. 171), which is defined as an organization's susceptibility to financial problems that interfere with fulfilling their mission (Tevel, Katz, Brock, 2015, p. 2502). Other authors emphasize the relationship between revenue diversification and stability (e.g. Froelich 1999, p. 246; Hager 2001, p. 376; Mozos Duarte, Ruiz, 2016, p. 1). This approach is based on the idea that an non-governmental organization, which generates revenue relatively equally from private donation, government grants, earned income, and investment income might be more financially sustainable than one that relies on a single funding source (Zhu, Ye, Liu, 2018, p. 1176). Therefore, it should be noted that the conducted research pays special attention to the advantages of obtaining revenues from commercial sources. However, there are also opinions that focusing on commercial sources of revenue has its pros and cons. Arguing against the use of commercial sources, it is emphasized that nonprofit organizations are becoming too much like for-profit enterprises, while losing their social mission. When nonprofit organizations are engaged in businesses that are not central or even related to their mission, they could face the issue of "mission-drift" or 'mission creep' (Mitchell, 2014, p. 79). Indeed, too large share of commercial revenues in the total income pool may cause nonprofit organizations to become similar to commercial enterprises. However, carefully matching revenue types and sources can strengthen the independence and degree of implementation of a social mission. In addition, the acquisition of commercial sources of financing by nonprofit organizations demonstrates its resourcefulness and entrepreneurship. Both public and private donors are more willing to help, seeing that the organization is trying to get additional income by offering specific values on the market, and not just "reaching out" for donations. The fact that people are more likely to help other people who are trying to get out of a difficult situation is also relevant to the world of organizations. This means that organizations that are more entrepreneurial and strive to be active in the market are better perceived by donors. Thus, a pro-entrepreneurial approach may also have a positive marketing effect in the efficient acquisition of finances from non-commercial sources. Moreover, NGOs diversifying their sources of reveneue can protect own flexibility and autonomy. Thus, the entrepreneurial attitude of these organizations goes far beyond purely economic factors. Independence (which is difficult for one donor, regardless of whether it is a private or public donor) of nonprofit organization is one of the basic conditions for a reliable and honest implementation of the mission and bridging the gap between the public sector and the private commercial sector.

Summing up the conducted research proves that the diversification of revenue sources is conducive to the functioning of Polish public benefit organizations. Better functioning is understood as having more revenue that can be allocated to the implementation of the social mission, which is specified in the statutes of each organization. The research did not cover the topic of improvement or deterioration of efficiency obtained using specific sources of financial resources. Such issues should be studied using a different methodology than the classic ratio analysis from financial statements used for classic enterprises. Such analysis includes parameters such as gross profit, net profit, cash, etc. In the case of PBOs, such analysis would be a distortion of the assessment of the organization's functioning, because maximizing profits, high liquidity ratios, etc., would even contradict the idea of the functioning of this type of organization. That is why PBOs were forced to be transparent and obligate to publish substantive and financial reports and other additional information so that the organization's mission could be reliably assessed, and not just its financial standing. Therefore, effective social control is assumed here, e.g. donations made by donors or services purchased by clients are the result of the fact that these organizations transfer most of their money to statutory activities (mission) and not to employees' remuneration.

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Specific organizations and individuals appreciate pro-entrepreneurial attempts to raise funds in a commercial manner and if the offered products or services are of satisfactory quality, they become loyal customers.

Conclusion

One of the ways to diversify a non-profit organization's revenues is to obtain them from a commercial sale of goods and services in return for payment (Mikołajczak, 2018, p.765). So, running a business (in this paper it is called business activity) or activity similar to running a business (in this paper it is called paid activity) is described as a manifestation of PBOs commercialization and entrepreneurial attitude. Research has confirmed that using various sources of earning (including commercial) is profitable in terms of maximizing revenues. In Polish PBOs conditions it is therefore a better strategy than focusing on one source.

While we believe our findings and recommendations are important for the Polish and foreign third sector, we acknowledge the study's limitations. Mainly, the division between large, medium, small and micro organizations was subjectively established. In Polish law, there is only a division into smaller and larger organizations, set at PLN 100.000 revenue per year. Organizations that exceed this threshold must submit full (more complex) reports, while those with revenues less than PLN 100.000 may submit simplified reports. For the purposes of this research, these organizations were considered micro-organizations. They constitute almost half of the entire surveyed population. However, the other divisions were not made according to some logical indicator. It seems that dividing into micro, small, medium and large organizations requires separate conceptual work and research that would convincingly confirm the division.

Another limitations is the period under consideration (2015-2017). To confirm that the relationships studied are of a long-term nature, the period 2012-2014 could be examined. However, it would have a historical significance above all. Therefore, it will be much more desirable to conduct research covering the 2018-2020 period. There are already (for several months) data available for 2018 (documentation analysis of over 8,000 PBOs has already begun). However, data for 2019 will be available in the second half of 2020. Therefore, confirmation of the trends presented in the article will be possible only at the end of 2021. Then it will be possible to validate the research results presented in this article. Besides, we only examined the frequency of use of revenues sources. The research did not take into account the amount of sums obtained from individual sources (except for the fact of excluding from the research sources whose income was below PLN 500). Research not only taking into account the frequency, but also the value of funds obtained from individual sources, could bring additional cognitive value regarding the importance of diversifying revenues sources and using commercial revenues to implement missions. The last key study limitation includes the fact of collective recognition of "other sources of revenues". This is a collective group, from which revenues are rather incidental, but in this group you can probably find some specific "entrepreneurial sources". To examine it, one should analyse these sources, which is very difficult (in PBOs reports there is no analytics to this collective source of revenues). Therefore, this source cannot be unequivocally considered as "entrepreneurial income" in its entirety, but you should be aware that in some cases this could be justified.

The identified limitation sets the direction for further in-depth research. First, it would be useful to extend the analysis period to capture long-term trends. Secondly, sources of reveneue should be more precisely defined (especially in relation to other activities). In addition, it would be advisable to conduct qualitative research (e.g. in the form of case studies) as a supplement to the quantitative research presented in this paper.

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SAFEGUARDING THE LEGAL BALANCE BETWEEN COMPETITIVE ENTREPRENEURSHIP (BUSINESS) AND SUSTAINABLE CONSUMPTION

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Abstract. In this article it is argued that traditional consumer policy increasingly requires transformation towards sustainability. For this purpose, consumer protection regulation must be reshaped into taking environmental needs into account rather than focusing solely on the realization of the European Union internal market, and the satisfaction of endless consumer demands. In order to bring benefits to both the economy and the environment, sustainable consumption choices have to be fostered. The authors focus on the pre-contractual stage of business-to-consumer legal relations, and argue that businesses rethink their marketing strategies and try to emphasize environment friendly aspects. *Competitive advantage* usually gained by offering consumers greater value by *means* of lower prices gradually loses its impact, and other methods such as environmental claims become more important in this sense. As advertising can be a powerful force for promoting sustainable consumption by highlighting the sustainable dimensions of goods and convincing consumers to purchase these products, the issue is raised of assuring the truth of advertising as a tool for basic consumer protection in the pre-contractual stage of business-to-consumer legal relations. The authors emphasize that consumer protection against unfair commercial practices should play a significant role in the assessment of environmental claims. The aim of this article is to examine the legal regulation on unfair commercial practices in order to find a balance between the efforts of sustainability-driven entrepreneurs to succeed in a competitive market and the protection of the interests of consumers supporting greener goals.

Keywords: sustainable consumption, sustainable consumer protection law, Unfair Commercial Practices Directive, environmental claims, sustainable consumption initiatives in Lithuania

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1. Introduction

Consumer law has come to occupy a central position in the European Union's (EU) internal market policy through numerous pieces of secondary legislation, as the first directives in this field were already adopted in the 1980s. These were market-based consumer laws aimed at providing more legal certainty and increasing the confidence of consumers in order to achieve their maximal activity in the market. Consumer law aimed to tackle the asymmetry of bargaining power between contractual parties by introducing information duties and prohibitions imposed on businesses on the one side, and safeguards (remedies) for consumers on the other. In its recent case-law, Court of Justice of the European Union (CJEU) has repeatedly placed emphasis on the nature and significance of the public interest constituted by the protection of consumers, who are in a weaker position relative to sellers or suppliers both in terms of their bargaining power and the level of their knowledge (see for example, CJEU judgment in *Aqua Med sp. z o.o. v. Irena Skóra*, C–266/18, paragraphs 27 and 43; *Györgyné Lintner v. UniCredit Bank Hungary Zrt.*, C–511/17, paragraph 23). Consumption is necessary for growing the economy, as the market requires the consumer to buy more products and to constantly replace old ones with new ones. The rule is simple: the more consumer buys, the better it is for the economy. However, market economy and endless consumption over the course of decades have raised the problem that the resource needs generated by current production and consumption far exceed the limits of the planet. This tension will be even more obvious in the context of the COVID-19 crisis, after which the need for fostering economic growth will come to the forefront.

Traditionally, consumers have been recognized by the law almost exclusively in their role as purchasers of new goods. Moreover, they are seen as the weaker party in commercial transactions, the rights of whom therefore need protection. New forms of use and consumption, such as the Sharing Economy, redefine the role and needs of consumers, and will also require the law to adapt (Maitre-Ekern & Dalhammar, 2019, p. 203). Today it is more than clear that if consumer law wants to remain relevant it must not only take into account consumer protection aims, but it should also balance them with sustainability goals, as sustainable consumption is inevitable. Meeting the needs of the present should not compromise the ability of future generations to meet their needs (United Nations, 1987). As more and more consumers are reassessing their priorities, it is necessary to find ways of protecting them that keep up with the times.

The aim of this article is to examine the trends towards sustainable consumption at the EU level, focusing on the prohibition of unfair commercial practices (i.e. unfair green claims). Together, from a Lithuanian perspective, core problems of national regulation and application are revealed. On the basis of this analysis, the authors make justified predictions as to how the existing legal framework could contribute to the better achievement of sustainability goals. At the same time it should be noted that this is the first comprehensive and complex research in Lithuanian legal doctrine analysing the application of consumer protection from unfair commercial practices to specific sector, i. e. environmental claims. It is expected that this research will contribute to the proper application and interpretation of law and ensure protection of consumer rights in this field.

2. Assumptions about sustainable consumption

Consumption is one of the main drivers of societal development. On the one hand it provides opportunities for growth for both individual businesses and the national economy as a whole, whilst on the other hand it causes various problems, including global warming and the extinction of individual flora and fauna across the entire ecosystem. Mass consumption, especially when demand exceeds supply, also leads to reduced product quality. As an alternative to excessive consumption, socially responsible consumers are emerging who care both about their own well-being and public welfare, and are not indifferent to the environment and sustainability. Thus, consumer social responsibility is perceived as 'a conscious and thoughtful choice of consumption based on personal and moral beliefs' (Jusčius & Maliauskaitė, 2015).

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The close link between what a human being chooses to consume and their surroundings has been observed for some time, thus research into various aspects of the relationship between consumer behaviour and its impact on the environment has been carried out over the last few decades. Today, this connection is very evident. Everyday consumption that is common to almost every person has a very significant impact on nature, leading to a constant increase in environmental pollution. The surroundings are of great importance to society and to each individual, and so the use of environmentally friendly – so-called 'green' – goods and services, such as the use of recyclable packaging, reusable shopping bags, and other measures that reduce the use of plastic and negative impacts on the environment, contribute to sustainable consumption. This aims at decreasing the impact of consumption on the environment and the use of natural resources, and improves the products and services placed on the market. According to R. Zhang, 'sustainable consumption is the antithesis of consumerism that can be categorized as the purchase of useless, inferior, or dangerous products, the delivery of misleading advertising, and pricing goods in an unfair manner' (2014, p. 26). Thus, the concept of sustainable consumption encompasses the use of services and products designed to meet the basic needs of the consumer and the environmental impact of the products or services consumed.

The scientific literature analysing various issues in sustainable consumption distinguishes different factors that influence this phenomenon. As E. Kostadinova (2016) points out, growing awareness of environmental problems is also reflected in the increased demand for environmentally friendly products, so investing in sustainability is no longer just about efficiency in production or compliance with legal requirements, but also meeting consumer demand for sustainable products. R. Zhang (2014) classified the factors influencing sustainable consumption into the macro and micro levels (see Figure 1).

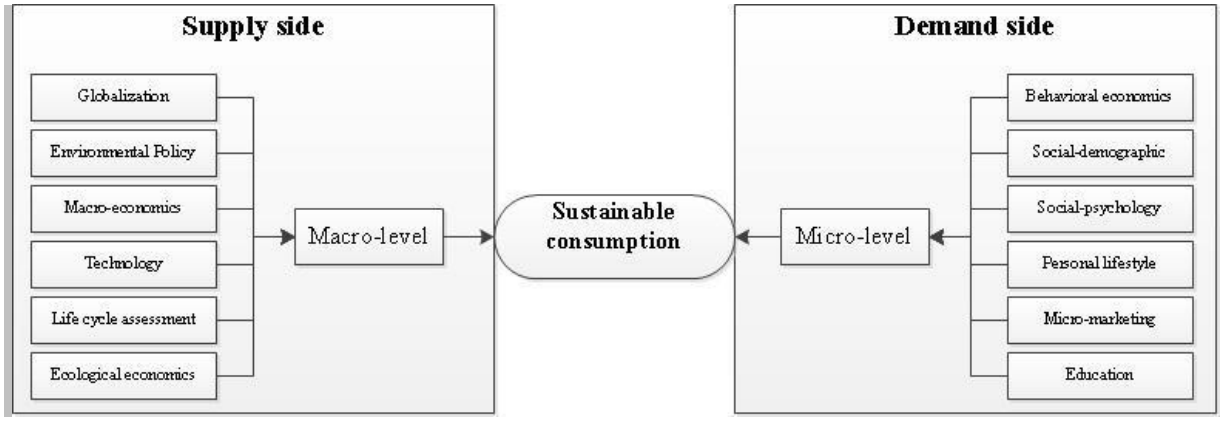

Figure 1. The Macro versus Micro perspectives on sustainable consumption (R. Zhang, 2014)

At the macro level, the focus is on the supply side of consumption, while the micro level largely reflects the demand side of consumption. Therefore, in order to ensure sustainable consumption, the balance between the appropriate macro-level policy framework and the micro-level, which incorporates consumer values and attitudes, should be maintained. At the micro level, individual values and lifestyles are linked to consumption patterns, and this is where the great potential for the development of sustainable consumption lies. One study on the factors hindering and promoting the transition towards a circular economy (Jusel & Burinskienė, 2019) showed that, initially, consumer culture must be influenced by government (at the macro level), and a changing consumer culture would encourage businesses (at the micro level) to join social marketing, promoting their 'green' products and services. In this way, information about the 'circular' lifestyle would reach the remaining consumers.

It should also be noted that consumption patterns are strongly influenced by the market and the category of consumer goods, as different factors determine the consumer's choice to buy products such as organic food,

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natural, non-synthetic fabric clothing, or environmentally friendly household appliances. The research conducted by R. Lynikaitė and V. Liesionis revealed that the process of purchasing green products is influenced by various conditions. The key condition determining whether a consumer prefers to buy green products is the consumer's knowledge of environmental issues. Another important factor influencing the consumer's decision is the availability of green products, i.e. whether the product is easily accessible or the consumer specifically has to look for it. Price is also taken into consideration by the consumer when accepting or rejecting the possibility of buying the green product, as this study showed that 'it is most common to pay a higher price for green food and children's goods. Consumers are most reluctant to pay a higher price for green video and audio equipment, small and large household appliances, and cars' (Lynikaitė & Liesionis, 2010). Similar trends have been observed in subsequent studies (Jusčius & Maliauskaitė, 2015). It has also been observed that the needs of society and the needs of consumers are different. The implicit interest of consumers is in buying the best possible product at the lowest possible price, and the implicit interest of society is in sustainable environmental management. Despite the fact that 'linear' (in line with the principles of the linear economy, i.e. disposable) products do not meet the global needs of humankind, at the micro level such products are desired by consumers because of their lower price. The environmental aspect often does not redeem the price difference to be paid for a 'circular' (in line with the principles of the circular economy) product, and therefore consumers prefer linear products. In this way, the high costs of circular materials and products have a negative impact on consumer culture, and consumer culture has a negative impact on business culture (Jusel & Burinskienė, 2019).

At the same time, it should be noted that consumers' interest in environmental issues and their commitment to living more responsibly while protecting the environment do not mean that they will buy green, environmentally friendly products. The reasons for this may vary, but can include mistrust of companies' environmental claims or lack of information. Jusel and Burinskienė (2019) have observed that consumers wish to have new products encourages companies to adhere to the principles of the linear economy, in such a way postponing consumers, businesses, and products themselves from having to adhere to the solutions of the circular economy. The barriers of consumer culture and business culture are closely interrelated. Consumer culture influences business culture through need and demand, and business culture influences consumer culture through marketing, advertising, and the supply of low-cost linear products.

Therefore, a big role in the development of sustainable consumption is played by the entrepreneurs' attitudes towards environmentally friendly business models and the promotion of sustainable consumption. Responsible use of sales promotion measures such as advertising, fair commercial conduct, fair consumer information, labelling, etc., play an important role in the development of sustainable consumption, which will be further discussed in the following sections of this article.

3. Legal regulation: EU and national levels

The Treaty on the European Union (TEU) states that the Union is determined to promote economic and social progress which is both balanced and sustainable (Article B). Protection of the environment together with consumer protection are overarching objectives for the EU, which is committed to a high level of environment protection as well as to the attainment of a high level of consumer protection (Articles 3(k), (s), 129(a), 130(r) of the TEU). Having in mind that, in terms of EU primary law, consumer protection goals are proceeding in parallel with environment policy, it could be presumed that the idea behind this was to ensure that consumers meet their needs without causing irreversible environmental changes. However, it seems that, until now, consumer law has neglected the environmental dimension and, as a result, consumer and environmental law have followed their own different paths both at the EU and national levels.

Goals of consumer protection and the improvement of environmental quality have been enabled through Articles 11 and 12 of the Treaty on the Functioning of the EU (TFEU), which require environmental protection and

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consumer protection to be integrated into the definition and implementation of the Union's policies and activities. These requirements are repeated in Articles 37 and 38 of the EU Charter of Fundamental Rights, and the Union's goals are further elaborated on in secondary legislation in the fields of consumer and environmental law. However, the balancing of these goals, in instances where they compete, remains a question for the legislator or the courts to decide within the boundaries of their respective political and legal competences (Mak & Lujinovic, 2019, p. 164). It can be fully agreed that, at present, consumer law does not sufficiently take into account sustainability aims, and more can be done to reconcile the aims of consumer protection and sustainability (Terryn, 2019, p. 128).

In this context it should be mentioned that on 2 December 2015, the European Commission adopted a new EU action plan for the transition to a circular economy (European Commission, 2015; hereafter – Action Plan). This plan has the objective of triggering the gradual transition from a linear economy, which is very resource-intensive, to a circular economy in Europe. Namely, consumers are identified as one of the driving forces in the transition towards a more circular economy. The measures under the Action Plan are aimed at the entire economic cycle – from the use of primary and secondary raw materials in the design, production, and delivery of materials, products and services, to the distribution and consumption of products and services, as well as the proper disposal and recycling of materials (Keirsbilck & Terryn, 2019, p. 6). The EU Action Plan for the circular economy had a strong impact on national policies, and Lithuania is no exception.

In Lithuanian national policy the key strategic planning documents recognize the principles of sustainable development as a priority direction for the country. These documents include the 'National Sustainable Development Strategy' (hereinafter – Sustainable Development Strategy) of 2003 (updated in 2011), the Lithuanian progress strategy 'Lithuania 2030' (hereinafter – Lithuania 2030), the 'National Progress Program of 2014–2020' (hereinafter – Program for 2014–2020), and the 'National Climate Change Management Policy Strategy for 2014'.

By analysing the provisions of the Sustainable Development Strategy, one might notice that it focuses on manufacturing and related environmental problems and their solutions, as it covers directions of sustainable consumption such as the quality of the environment, the use of natural resources, economic and social development, pollution control, cleaner production, and recycling. Sustainable consumption is indicated as one of the options for achieving strategic goals (i.e. paragraph 192.1. Promoting the use of cleaner organic fuels; paragraph 187.4. Increasing energy efficiency).

Meanwhile, the most important strategic document of the country's long-term plan – Lithuania 2030 – sets three directions of progress: smart society, smart economy, and smart management, and provides insights which suggest that production and consumption could be regarded as interdependent. The latter are reviewed in the section of this document entitled "Smart Economy". Point 6.7 of the Lithuania 2030 progress strategy states that:

> Economic development is based on the principles of sustainable development and the concept of 'green' growth, therefore it should not cause negative impact on the environment and human health. … Businesses should understand and take responsibility not only for their activities success, but also for its contribution to the development of the community, region or country and its impact on the environment. The development of socially responsible business should also be promoted by the culture of community and responsibility for one's activities formed in the society.

Point 6.9.2 of the Lithuania 2030 progress strategy states that the development of a smart economy and corporate social responsibility include, among other goals, the need to 'increase incentives for businesses to invest in 'green' technologies, goods and services'. Accordingly, in the Program 2014–2020 strategy that is implementing the Lithuania 2030 strategy, sustainable development is defined as one of the horizontal principles enabling long-term national progress in the economic, social, and governance spheres. In the 'National Climate Change Management Policy Strategy for 2014–2020', the importance of sustainable, conscious, and efficient consumption

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in the context of climate change was also highlighted (e.g. Articles 81, 142.1.11). Aspects of increasing the sustainable use of natural resources and the use of renewable energy sources have remained in the project of 'National Climate Change Management Policy Strategy for 2021–2030'.

The fact that, in the long term, the issues of sustainable consumption have been addressed in Lithuania's strategic documents is natural, as production and consumption are very closely related. Demand determines supply and vice versa, and in the absence of supply there would be no demand. It is also natural that the growth of production is mainly determined by the increasing volumes of consumption, while with the growth of production, consumption will not always grow. Therefore, the current goal of sustainable development emphasizes the importance of promoting methods of consumption and production that have the least possible impact on the environment, and that can meet the basic needs of humankind.

The Program for 2014–2020 expires in 2020. Therefore, to ensure the country's long-term progress, on 28 March 2018 the Government decided to prepare the 'National Progress Plan for 2021–2030'. This plan is intended to further implement the Lithuania 2030 progress strategy, and to contribute to the implementation of the United Nations Sustainable Development Goals.

There are many existing tools, dedicated to the conciliation of green economical precepts, such as green public procurements, certificates for green produced or renewable energy, eco-friendly labels on products or pollution-rate labels on cars. Further, one of the ways to contribute to a more circular economy – namely fostering sustainable and eco-friendly consumer choices through green claims – will be analysed. The Action Plan emphasizes information disclosure as a way of shaping consumer choices, together with cautioning against the negative effects of unreliable, inaccurate, and unclear environmental claims.

4. Fostering sustainable consumption through environmental (green) claims and avoiding 'greenwashing'

Moving towards sustainable consumption leads to the need for businesses to reconsider their marketing models and strategies. As consumer awareness and sensitivity to the environmental impact of products is increasing, the c*ompetitive advantage* gained by offering the widest possible selection of goods at the cheapest price gradually reduces, and other means of attracting consumers' attention, e.g. environmental claims, become more important (European Commission, 2020).

The expressions 'environmental claims' and 'green claims' refer to the practice of suggesting, or otherwise creating the impression, (in commercial communication, marketing, or advertising) that a good or a service has a positive or no impact on the environment, or is less damaging to the environment than competing goods or services. This may be due to its composition, how it has been manufactured or produced, how it can be disposed of, or the reduction in energy or pollution expected from its use (European Commission, 2016, p. 95). However, using environmental claims in practice raises the issue of ensuring the truth and accuracy of these claims and avoiding the deception of consumers.

When environmental claims are not true or cannot be verified, this practice is often called 'greenwashing'. Greenwashing can relate to all forms of business-to-consumer commercial practices concerning the environmental attributes of goods or services. According to the circumstances, this can include all types of statements, information, symbols, logos, graphics, and brand names. It can also include the interplay of these attributes with colours on packaging, labelling, advertising, and in all media (including websites), and can be performed by any organisation that qualifies as a 'trader' and engages in commercial practices towards consumers (European Commission, 2016, p. 95).

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In this context, the provisions of Directive 2005/29/EC of the European Parliament and of the Council of 11 May 2005 concerning unfair business-to-consumer commercial practices in the internal market (hereinafter – UCPD) come into play. UCPD is the main instrument for combatting misleading environmental claims. Though UCPD does not provide specific rules, it establishes a legal basis to ensure that traders do not present environmental claims in ways that are unfair to consumers. UCPD prohibits unfair business-to-consumer commercial practices by introducing a comprehensive regulatory regime applied to all types of commercial activities that can influence the economic behaviour of consumers. This covers any business-to-consumer commercial practice before, during, and after a transaction, and thus includes marketing, negotiation, sales practices, and after-sales conduct. The Directive has a three–layer structure to the evaluation of commercial practices in terms of fairness, introducing a general prohibition on unfair business-to-consumer commercial practices. These practices are specified with provisions on misleading and aggressive commercial practices, and by establishing a comprehensive list of commercial practices which shall, in all circumstances, be regarded as unfair.

It is obvious that the aim of avoiding unfair commercial practices firstly requires ensuring that consumers have access to clear and accurate information. In order to ensure high level consumer protection, both EU legislation (for example, Directive 2011/83/EU of the European Parliament and of the Council of 25 October 2011 on consumer rights, amending Council Directive 93/13/EEC and Directive 1999/44/EC of the European Parliament and of the Council and repealing Council Directive 85/577/EEC and Directive 97/7/EC of the European Parliament and of the Council) and Lithuanian national legislation (for example, Civil Code, the Law of Consumer Protection, etc.) obliges entrepreneurs not only to provide all necessary information, but also not to mislead consumers, i.e. by providing only correct information.

In consumer relations, the consumer's right to information may be a general one that arises from the essence of civil legal relations – i.e. to disclose all available information to counterparties. It may also be a contractual one that arises from legal norms regulating individual consumer contracts – for example, Article 6.353 (1) of the Lithuanian Civil Code stipulates a general duty of the seller towards the consumer to disclose correct and necessary information on product labels or in any other way.

Enforcement of the consumer's right to information may be divided into two stages: provision of information before the purchase of a good or service; and provision of information after the purchase of a good or service, when it becomes apparent that the consumer's right to information has been violated (i.e. the information provided is incomplete, not thorough, or even incorrect, or misleading information is presented about the product's characteristics, composition, environmental friendliness, etc.).

According to the authors, the entrepreneur's obligation to disclose all necessary and essential information prior to the conclusion of the transaction should be interpreted in a broad sense, and should include not only the legal requirements for disclosure, but also for non-disclosure. The entrepreneur's conduct is considered misleading if they do not disclose to the consumer the information relevant in making the decision to purchase the product, and if this indirectly influences the consumer's decision which they might not have made had they had access to all of the necessary information.

When talking about combatting greenwashing, the main attention should be focused on the analysis of the Directive's provisions on misleading practices, which by deceiving the consumer prevent them from making an informed and thus efficient choice. Having in mind that the right to information is one of the basic *consumer* rights, a substantial part of UCPD aims at ensuring that information on the main characteristics of a product or service, i.e. the price and key conditions, are provided to consumers in a truthful, complete, and timely manner. This makes it easier for consumers to understand and compare the environmental characteristics of products and services, and has a direct impact on the marketing or advertising techniques developed by traders. As will be seen

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below, provisions on misleading practices in the text of UCPD are further classified into misleading actions (Article 6) and misleading omissions (Article 7).

It is important to note that UCPD does not discourage the use of 'green claims'. On the contrary, the UCPD can help traders investing in the environmental performance of their products by enabling them to communicate these efforts to consumers transparently, and by preventing competitors from presenting misleading environmental claims (European Commission, 2016, p. 95). Green claims should demonstrate clear environmental benefits compared with competing products or traders, and should be easily publicly accessible. The application of the UCPD to environmental claims can be summarised in two main principles: (i) based on the general clauses of the UCPD, particularly Articles 6 and 7, traders must present their green claims in a clear, specific, accurate, and unambiguous manner, to ensure that consumers are not mislead; (ii) based on Article 12 of the UCPD, traders must have the evidence to support their claims and be ready to provide this evidence to competent enforcement authorities in an understandable way if the claim is challenged (European Commission, 2016, p. 97).

4.1. Misleading actions

Misleading actions in a general sense are prohibited under Article 6(1) UCPD, which states that 'a commercial practice shall be regarded as misleading if it contains false information and is therefore untruthful or in any way, including overall presentation, deceives or is likely to deceive the average consumer, even if the information is factually correct', in relation to one or more of the elements listed in Article 6(1)(a) to (g) (e.g. the existence or nature of the product, the main characteristic of the product, etc.), 'and in either case causes or is likely to cause him to take a transactional decision that he would not have taken otherwise'.

According to its wording, Article 6(1) UCPD explicitly identifies two ways of actively misleading consumers and thereby distorting their economic behaviour when a commercial practice either: (i) contains false information and is therefore untruthful or (ii) in any way, including overall presentation, deceives or is likely to deceive the average consumer, even if the information is factually correct (Keirsbilck, 2011, p. 313). In any event, Article 6 can only be applied if it is additionally proven that the misleading character of the practice is likely to cause the average consumer to make a transactional decision that they would not have made otherwise.

An example where an environmental claim contains false information is given by the Commission, where a product is presented as being made of 'eco-leather' despite not being made of material that is of an animal origin but rather of other comparable materials on which no tests have been carried out demonstrating their environmental performance (European Commission, 2016, pp. 98–99).

Environmental claims can be misleading if they are based on vague and general statements of environmental benefits such as 'environmentally friendly', 'green', 'nature's friend', 'ecological', 'sustainable', 'environmentally correct', 'climate friendly', or 'gentle on the environment'. Such claims could fall under Article 6(1)(a) and 6(1)(b) of the UCPD if they are likely to deceive the average consumer and to cause them to make a transactional decision that they would otherwise not have taken (European Commission, 2016, p. 99).

An example of when an environmental claim deceives or is likely to deceive the average consumer even if the information is factually correct is provided in the 'Guidance on the Implementation/Application of Unfair Commercial Practices Directive', where it is provided that the statement that electric cars are 'ecological' has been found misleading. In this case, a misleading advertisement promoting the eco-friendly nature of electric cars for hire was presented without providing information to put the claim into perspective. It was founded that since it could not be established that the electricity needed to recharge the cars would entirely derive from renewable energy sources, using the service would have a negative impact on the environment. Another common example is when manufacturers claim that their product is low in terms of water use. However, at the same time the product

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consumes more energy than a comparable product of the same category, which increases the product's overall environmental impact significantly (European Commission, 2016, p. 100).

When assessing an environmental claim, the product's main environmental impacts over its lifecycle, including its supply chain, are relevant. An environmental claim should relate to aspects that are significant in terms of the product's environmental impact (European Commission, 2016, p. 100).

4.2. Misleading omission

The general rules establishing the prohibition of misleading omissions are set out in Article 7(1)–(2) of the UCPD. When analysing these rules, it is important to note that Article 7(1) of the UCPD establishes a general clause on misleading omissions, according to which commercial practices must not omit material information that the average consumer needs in order to make an informed transactional decision. Accordingly, Article 7(2) indicates that material information that is hidden or provided in an unclear, unintelligible, ambiguous, or untimely manner can render an omission equally misleading as information that is omitted altogether. This omission has an impact on the average consumer's economic behaviour.

We should agree with the position of Keirsbilck, who states that the UCPD does not clearly define 'material information', except for in the specific case of an 'invitation to purchase' which is dealt with in Article 7(4). According to the text of the UCPD, the meaning of 'material information' depends strongly on its use in the specific 'factual context' of a case, taking into account all of the 'features', 'circumstances', and 'limitations of time and space' (Article 7(3)) of the practice at issue. Information in relation to the environmental impact of products will, on many occasions, constitute 'material information that the average consumer needs to take a transactional decision'. Where such information on product sustainability must be provided, but is not, and where this omission is likely to cause the average consumer to make a different transactional decision, this constitutes a breach of Article 7 (Keirsbilck, 2011, pp. 101–102).

When applying the rules on misleading omissions it has to be determined every time which information in a concrete situation has to be considered as material and essential for the average consumer to be able to make an informed transactional decision.

In this context, it is important to note that environmental claims of a general nature could breach both Article 6 and Article 7 of UCPD, except in cases when the good is labelled with a well-known ecolabel.

4.3. Requirement to provide evidence confirming the accuracy of environmental claims

Article 12 of the UCPD clarifies that any claim (including environmental claims) should be based on evidence which can be verified by the relevant competent authorities. Traders must be able to substantiate environmental claims with appropriate evidence. Consequently, claims should be based on robust, independent, verifiable, and generally recognized evidence, which takes into account updated scientific findings and methods (European Commission, 2016, p. 104). This means when the truth of environmental claims is contested that the burden of proof rests on the trader.

In order to ensure that environmental claims are substantiated, traders should either have the evidence necessary to support their claims from the time the claims are put into use, or be certain that it can be obtained and presented upon request (European Commission, 2016, p. 105).

If a trader uses environmental statements in its company name, product name etc., and the name is used for marketing purposes, such marketing is subject to the same documentation requirements as other environmental

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claims in marketing communications, unless the company can prove that this name has no environmental connotation or existed already before environmental issues were taken up on the political/business agenda. However, incompliance with the UCPD would only be established if a name used in marketing were to mislead the average consumer and was likely to cause them to make a transactional decision that they would not have made otherwise (European Commission, 2016, p. 106).

5. National initiatives towards more sustainable consumption. The regulation and practice of using environmental claims in Lithuania

The ideas of sustainable consumption and the need to shift towards eco-friendly purchasing behaviour are not new in Lithuania. According to The special Eurobarometer 501 report 'Attitudes of European Citizens towards the Environment' (2020), 35 percent of Lithuanian citizens believe that changing the way we consume is the most effective way of tackling environmental problems.

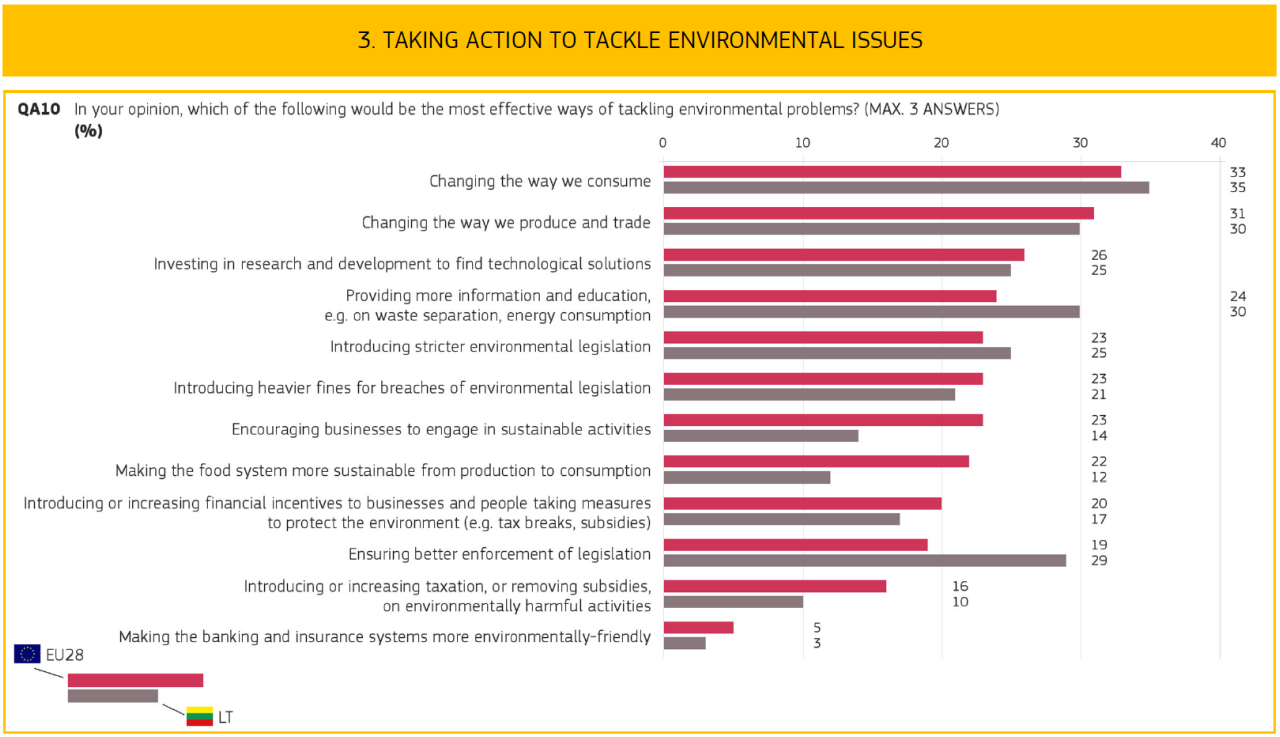

Figure 2. Attitudes of European citizens towards the Environment**.**
European Commission (2020, Factsheet: Lithuania).

Support for the transition towards more sustainable consumption can be seen from both government action and private initiatives. It is obvious that sustainable consumption in Lithuania, as in other Member States of the European Union, is not a fashion but an inevitability.

In 2001, the Lithuanian environmental labelling for non-food products 'Water Lily under the Roof' was created (Lithuanian Consumer Institute, 2003). Despite the fact that the legal basis for granting this label has been prepared and approved by the Ministry of Environment of the Republic of Lithuania, the consumer will not yet find any product signed with the Water Lily label on the Lithuanian market. Apparently, there are reasons for this: the small market, the insufficient promotion of this brand, and the economic situation, which determines the habit of consumers to buy cheaper goods. After the assessment of Lithuania to the EU, it became possible to use the EU

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ecolabel 'Flower' and the legal basis for granting national ecolabel was repealed. As it was discussed above, according to the UCPD, which was adopted later in 2005, environmental claims of a general nature do not breach its provisions in cases when the good is labelled with a well-known ecolabel. In our view, the importance of national environmental labelling in the context of consumer protection from unfair green claims has increased, as it makes the presentation of environmental characteristics of the product simple, easily understandable for the average consumer and could encourage the local business to produce more goods or services having positive or no impact on the environment. Some national self-regulatory measures, like the German certification (the Blue Angel) or the Nordic certification (the Swan) could serve as an inspiration for further development of Lithuanian national labelling scheme.

As another initiative the Public Institution Žiedinė ekonomika [Circular Economy] (n.d.) was established in order to promote waste-free production and lifestyles in Lithuania, and to popularize the principles of the circular economy among business and government institutions. The Circular Economy works actively with municipalities and the Ministry of the Environment, which shares its knowledge and experience of non-governmental European environmental networks including Zero Waste Europe and the European Environmental Bureau. It also cooperates with a variety of businesses and helps them in their transition to a circular economy business model.

When discussing private initiatives, it should be mentioned that Iloverecycled.com (n.d.) – 'Sustainable Design & Sustainable Fashion Marketplace' – was established in order to unite sustainable designers and sustainable fashion designers from all over the world, bringing positive changes and actively working in the eco design industry to create unique handmade sustainable design products.

National regulation in the field of unfair commercial practices (including environmental claims) is based on the transposition of the UCPD into national legislation. UCPD was transposed into the Lithuanian legal system by adopting a completely new legal act – the Law on Prohibition of Unfair Business-to-Consumer Commercial Practices of the Republic of Lithuania of 21 December 2007. After the adoption of the UCPD, and after the transposition of its provisions into the national legal system, protection against unfair commercial practices in Lithuania was based on the special legal norms, establishing the protection in several legal acts (Law on Prohibition of Unfair Business-to-Consumer Commercial Practices, Law on Advertising, together with general norms included in the Law on Consumer Protection and in the Civil Code). As will be seen further, national consumer protection authority and courts, when assessing environmental claims, usually apply the provisions of the Law on Advertising. Having in mind that after the adoption of the UCPD the notion of misleading commercial practices among other practices includes and misleading advertising, national practice, when advertising in business to consumer relations continues to be governed by Law on Advertising and not by Law on Prohibition of Unfair Business-to-Consumer Commercial Practices, in our view should be reasonably criticised for creating legal uncertainty.

Article 2(3) of the Law on Advertising establishes the notion of misleading advertising, stating that it is

> advertising which in any way, including its presentation, deceives or is likely to deceive the persons to whom it is addressed or whom it reaches and which, by reason of its deceptive nature, is likely to affect their economic behaviour or which, for those reasons, impedes or is likely to impede another person's opportunities to compete.

The use of misleading advertising is prohibited under Article 5(1) of the Law on Advertising. In Article 5(2), it is stated that:

> when judging whether or not advertising is misleading, account shall be taken of the following criteria of accuracy, comprehensiveness and presentation thereof: 1) claims in advertising are false if the provider of advertising is unable to substantiate the accuracy of the claims in the course of the use of advertising; 2) the information presented in advertising is incomplete if a certain part of the information has been omitted, where the presentation thereof is, taking account of another information presented in such advertising, necessary in

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> order to avoid misleading of consumers of advertising. The information presented in advertising shall also be considered as incomplete if material information is undisclosed, concealed or is provided in an obscure, incomprehensible, ambiguous or untimely manner, where the average consumer needs this information to be able to make an informed transactional decision and thus causes or is likely to cause the average consumer to take a transactional decision that he would not have taken otherwise.

These principles are reflected in a national guidance document – 'Guidelines for Evaluating Misleading and Unacceptable Comparative Advertising' – which was released by the Competition Council of the Republic of Lithuania (2013). Unfortunately, this document does not provide any rules concerning environmental claims. It is important to note that from 1 May 2019, the functions of supervising misleading advertising and comparative advertising that were performed by the Competition Council were taken over by the State Consumer Rights Protection Authority (hereafter – Authority).

Although the problem of using environmental claims in a misleading way is well-known, there is not yet much practice in this field, so only several cases can be analysed. In one of these cases (ruling of the Authority No. 12R-14 of 3 April 2017), it was ascertained that in the labels of a product used for hair strengthening the word 'ecological' was used. However, the manufacturer could not provide evidence proving the environmental friendliness of the product. According to the Authority, the company breached Article 17 of the Law on Advertising, which states that advertising not conforming to the provisions of Regulation (EC) No. 1223/2009 of the European Parliament and of the Council of 30 November 2009 on cosmetic products shall be prohibited. The Authority concluded that such advertisement could mislead consumers, as they were not provided with information on organic components in the product description and on its packaging. A fine of €300 was imposed.

In this context, it is important to note that one of the most important ways to communicate information to consumers is through product labelling. This performs three main functions: the disclosure of the essential characteristics of the product, the exercise of a consumer's right to information, and product marketing. These are all interconnected, as only by providing the correct information will the features of the product be disclosed and the consumer's right to information be properly exercised.

The environmental aspect that determines the consumer's choice to buy a product is particularly important for food labelling. The Order of the Minister of Agriculture of the Republic of Lithuania No. 3D-2 'On the Labelling of Organic Agricultural and Food Products and the Use of the Organic Agricultural and Food Product Label' of 6 January 2009 (consolidated version from 9 August 2018; hereafter – Order No. 3D-2) provides that the label 'organic' on products may be used only on products supplied to the Lithuanian market that are packaged and comply with the requirements of organic production. They must also be certified as organic by a certification body approved under the order of the Minister of Agriculture of the Republic of Lithuania. In Lithuania the functions of certification and control of organic production have been entrusted to the Public Institution Ekoagra.

Accordingly, Article 8 of the Order No. 3D-2 prohibits the labelling of non-organic products by: (1) placing them on the market as organic; (2) promoting and providing information about them by using 'organic' on the product label; and (3) displaying the product on shelves or in compartments marked with the label 'organic', or providing other indications referring to organic production.

It should be noted that Council Regulation (EC) No. 834/2007 of 28 June 2007 prohibits the use in advertising of terms which are likely to mislead the consumer or user into believing that a product or its ingredients comply with the requirements laid down in this Regulation. Increased consumer interest in healthy eating and food composition has led to a response from the food industry in the labelling of products, with a clear distinction between 'less fat', 'no E', 'organic' and so on. It is important to note that in cases where the manufacturer identifies certain characteristics, for example by emphasizing that the product does not contain relevant

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substances, the absence of such a property should be confirmed by objective investigations and tests. At the same time, it should be noted that the indications on the packaging of products such as 'only from natural ingredients', 'without hormones', 'non-genetically modified', 'farmers' products', or 'natural', do not confirm that the food is organic.

The Authority in its practice (ruling No. 12R-8 of 23 February 2017) assessed a situation when a manufacturer of baby food produced advertising leaflets which presented both the products currently being manufactured and the new ecological products which manufacturer planned to release. A fine of €1,500 was imposed on the manufacturer by the Authority for the violation of Article 14 (1)(1) of the Law on Advertising, which states that 'in advertising it shall be prohibited to: indicate or mention the food characteristics which it does not possess …, unless the provision of such information conforms to the requirements stipulated in legal acts'. The Authority concluded that the manufacturer advertised non-organic baby food in jars by distributing leaflets in medical institutions and on a website, together with the advertising of future organic products. As the leaflet provided the European Union organic production logo, the National Organic Product Label, the certification body code (LT-EKO-001), and the indication of the origin of the raw materials (EU AGRICULTURE) on the last page of the leaflet, it could mislead the consumer into thinking that all of the products in the leaflet were organic, although they were indeed not.

The manufacturer disagreed with the fine imposed for the use of misleading advertising, and appealed to the court seeking the annulment of the decision of the Authority in the case of violation of the Law on Advertising. The Vilnius Regional Administrative Court, examining the manufacturer's complaint in administrative case No. eI-2934-790/2017, rejected the appeal, arguing that:

> the advertising targeted the parents of infants and young children who are particularly sensitive to information related to children's health, ecology and who can be classified as more vulnerable consumers. Given the nature of the infringement, taking into account the duration of the infringement and the mitigating circumstance that the applicant cooperated in good faith with the Commission of the Authority, the fine imposed on the applicant is significantly lower than the average, thus cannot be considered as adequate to the violation of the law.

According to the Court, the imposition of a lower fine would prevent the legislator from achieving the objective of publishing only correct and non-misleading consumer food information in the future.

The State Consumer Rights Protection Authority, as the institution performing the functions of supervision of misleading advertising in order to ensure compliance with the requirements for the use of advertising set out in the Law on Advertising in Lithuania, plays an important role, and annually carries out a risk assessment of the consumption segments within its competence, on the basis of which it selects and carries out the monitoring of advertising (the Order of the Director of State Consumer Rights Protection Authority No. l-57 of 22 March 2017 'Regarding the Approval of the Monitoring Rules'). During such monitoring, the Commission provides methodological assistance and consults or implements other preventative measures that help economic operators to comply with the requirements of legal acts.

It should be noted that the Order of the Director of State Consumer Rights Protection Authority No. 1-36 of 24 January 2020 approved the segment of advertisement that will be monitored in 2020, which will be dedicated to evaluating the usage of green statements in advertising. Specifically, advertisers whose websites contain green statements will be inspected. This monitoring aims at assessing whether the use of green statements complies with the requirements for the use of advertising established in the Law on Advertising.

Conclusions

Sustainable consumption is one of the most important steps towards sustainable development. The legislative objectives of sustainable development emphasize that it is very important to promote consumption and production

which have the least possible impact on the environment, and which meet the basic needs of humankind. It is difficult to imagine the growth of sustainable consumption without the creation of the necessary legal preconditions that promote sustainable production, ensuring the balance between the macro- and micro-factors that determine sustainable consumption. Promoting sustainable consumption as an antipode to consumerism does not always align with the sales promotion measures used by businesses, which are precisely aimed at increasing consumption. Additionally, misleading advertising claims about the 'environmental friendliness' of products are encountered in practice.

This article has demonstrated that consumer law and environmental law have existed apart for too long. The balancing of economic and environmental goals increases the need for a new attitude towards consumer law, which should be based on fostering sustainable consumption choices. As so-called 'green products' have a lot of potential for boosting the transformation towards more environment friendly consumer choices, consumer protection against unfair commercial practices should play a significant role in the assessment of environmental claims.

Environmental claims used by traders, including labels, have to be based on verifiable information, communicated to consumers in a transparent way. Green claims should demonstrate clear environmental benefits compared with competing products or traders, and such information should be easily publicly accessible. The display of information in a way which is likely to mislead or confuse the final consumer is not acceptable.

As no specific regulation has been adopted at the EU level, legal acts of general nature (e.g. the Law on Prohibition of Unfair Business-to-Consumer Commercial Practices or the Law on Advertising) have to be invoked when combatting misleading green claims. Having in mind that it is for the national courts to verify, in view of all the relevant factors and regarding the perception of the average consumer as to whether the display of a concrete environmental claim is likely to mislead or confuse end-users, it is apparent that courts will face ambiguities when developing practice in this field. In order to provide more clarity, it is the position of the authors that the national 'Guidelines for Evaluating Misleading and Unacceptable Comparative Advertising' should be updated, and should include concrete examples of which claims used in advertising should be assessed as greenwashing.

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FINANCIAL LITERACY IN THE COVID-19 PANDEMIC: PRESSURE CONDITIONS IN INDONESIA

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Abstract. The COVID-19 (novel coronavirus disease 2019) has become a worldwide disaster. This pandemic not only affected the world economy but also the family economy. Good financial literacy will help individuals avoid financial problems, especially during the COVID-19 pandemic. Financial literacy can facilitate individuals to manage their income well even in demanding situations. This study aims to analyse how financial literacy helps in the depression condition of the COVID-19 pandemic. This study takes a sample of 396 household heads. This study uses partial least square (PLS) analysis to analyse the data. Results show that all financial attitudes, behaviour and literacy variables positively affect financial literacy and wellbeing. The implication of this research is that financial literacy, which is reflected by financial attitudes and behaviour plays a key role in public financial welfare.

Keywords: financial literacy; financial attitude; financial behaviour; financial wellbeing; a case study

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JEL Classification: G41

1. Introduction

The COVID-19 (novel coronavirus disease 2019) pandemic rattled the economies of countries worldwide, one of which was Indonesia. Economically, Indonesian people are not equipped to face the economic paralysis. This unpreparedness is partly caused by the lack of people's financial literacy. Financially blind individuals are typically susceptible to immoral formal and informal financial institutions (Munoz-Murillo, Alvarez-Franco & Restrepo-Tobón, 2020) and therefore incur high return costs (Choi, Laibson, & Madrian, 2010). Low financial literacy causes people to not have the ability to assess and make effective decisions regarding personal finances (Chinen & Endo, 2012).

Every family in the community has different financial literacy states. Certain people have low financial capacity, some have sufficient finances and other families exist who have the financial means more than enough to meet their daily needs. Every family in the Sidakarya village has their own procedure for financial management. Some are diligent in saving and others do not have any savings because they must cover monthly expenses, which are sometimes lacking. Based on temporary observations of behaviour and lifestyles that are escalating daily, people

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are more likely to consume than save when they have money. Especially in 2020, clothing, technology, accessories, vehicle, home, holiday trends and so on are making rapid development, making some people join in to meet this coupled with COVID-19 pandemic emergency conditions nationally. For example, Table 1 presents the data rate of financial wellbeing of society from 2018–2020 in the village of Sidakarya Denpasar Bali Indonesia.

Table 1. Data Rate Financial Wellbeing of Rural Community in Indonesia from 2018–2020

No	Income Per Month	Category KK	2018	2019	2020
1	1,000,000–2,500,000	Prosperous 1	1,059	1,071	1,063
2	2,500,000–5,000,000	Prosperous 2	1,587	1,549	1,562
3	5,000,000–above	Prosperous 3	1,373	1,399	1,338
Number of KK			**4,019**	**4,019**	**3,963**

Source: Office Data Head of Sidakarya Village (2020)

Table 1 exhibits that the level of community income tends to increase annually. Where in 2019 there was a significant increase in income from 2018 although in 2020 there was a decrease in the level of income of the Sidakarya villagers because several head families moved domiciles from the Sidakarya village. This is a material consideration for the Sidakarya customary village head to improve the standard of living of the Sidakarya village community to support the level of community wellbeing.

Financial literacy is a basic need in the form of knowledge and ability to manage personal finances, particularly to make accurate decisions in finance and to avoid financial problems (Chen & Volpe, 1998; Kezar & Yang, 2010). Financial literacy is not intended to complicate or curb people in enjoying life and using the money they have, but rather with financial literacy, individuals or families can enjoy life by using their financial resources appropriately to achieve their personal financial goals (Stolper & Walter, 2017). Financial literacy is considered important for consumers operating in an increasingly complex financial landscape (Atkinson & Messy, 2012). Ajzen (1991) stated that attitude influences behaviour through a careful and reasoned decision-making process and its impact is limited to only three things. Firstly, behaviour is not much determined by general attitudes but by specific attitudes towards something. Secondly, behaviour is influenced not only by attitudes but also by (subjective norms), namely, our beliefs about what other people want us to do. Thirdly, attitudes towards a behaviour together with subjective norms form a certain intention or intention to behave. Previous research used this theory to explain financial decision making (Koropp et al., 2014) and behaviour (Griffin, Loe, & Hesketh, 2012; Rutherford & DeVaney, 2009).

Financial literacy identifies the human resources needed to engage in correct financial behavior. Appropriate financial behaviour can prevent someone from negative financial behaviours and problems (Bhushan & Medury, 2013; Munoz-Murillo et al., 2020). Individuals who want to live prosperously in their finances must not only have high financial literacy but must also have good financial management skills. Good financial management is the main key to achieving a healthy financial condition. Financial problems are not only caused by errors in the use of credit but often due to a lack of financial planning. Good financial management, which is collaborated with good financial literacy will prompt maximum financial benefits to improve its financial wellbeing (Coşkuner, 2016; Gerrans, Speelman, & Campitelli, 2014; Shim, Xiao, Barber, & Lyons, 2009).

A person's level of financial literacy determines their ability to manage their resources properly throughout life. A person being able to manage funds/cash owned by being able to feel prosperous concerning his finances and conversely a decrease in one's wellbeing can arise due to poor financial management behaviour (Gerrans et al., 2014; Kamakia, Mwangi, & Mwangi, 2017; Zulfiqar & Bilal, 2016). Someone who has good financial literacy is shown by the behaviour in managing finances properly, that person can be said to be prosperous in terms of his finances, and to be claimed prosperous, a person must have high financial literacy by exhibiting good management behaviour (Mudzingiri, Mwamba, & Keyser, 2018; Munoz-Murillo et al., 2020).

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Besides financial literacy, another factor that influences financial wellbeing is financial behaviour. Financial attitude is a measure of the state of mind that can be considered by looking at one's psychological perspective when assessing the practice of financial management so that it becomes a principle in finance to create and maintain value in making financial decisions (Rajna, Ezat, Al Junid, & Moshiri, 2011). Individuals who have financial attitude can reflect how their personalities perform good financial management practices for their future. An attitude in good financial management starts with applying good financial attitude towards the world in which it lives. For the attitude to be interpreted as a state of mind, the opinion and evaluation of a person against his personal finances are applied to the attitude. Some studies linking financial attitude with financial literacy found that financial attitude positively affects financial literacy (Ameliawati & Setiyani, 2018), but other research found that financial attitude does not affect financial literacy (Isomidinova, Singh, & Singh, 2017). Other studies also that link financial attitudes with financial wellbeing concludes that financial attitude positively affects financial wellbeing (Haque & Zulfiqar, 2016).

Another factor, financial behaviour, is an issue that is currently widely discussed (Bruggen et al., 2017). This relates to the consumption behaviour of people in Indonesia. Financial behaviour of Indonesian people who tend to be consumptive leads to various irresponsible financial behaviours, such as lack of savings, investments, emergency fund planning and budgeting for the future. This is synonymous with impulsive shopping practices in that individuals with sufficient income still experience financial problems (Cole, Sampson, & Zia, 2009). Previous studies found the effect of financial behaviour with financial literacy (Mudzingiri et al., 2018; Rai, Dua, & Yadav, 2019; Sabri et al., 2008; Sabri & Zakaria, 2015), which revealted that financial behaviour positively affects financial literacy. Meanwhile also several studies that linked financial behaviour to financial wellbeing unveiled that financial behaviour positively affects financial wellbeing (Gutter & Copur, 2011; Mokhtar & Husniyah, 2017; Setiyani & Solichatun, 2019; Younas et al., 2019). Several other studies that also linked financial literacy with financial wellbeing, such as the study of Sabri & Zakaria (2015) and Zulfiqar & Bilal (2016), which claimed that financial literacy positively affects financial wellbeing. However, Kamakia, Mwangi & Mwangi (2017) concluded that financial literacy does not affect financial wellbeing.

This explanation reveals that the understanding of financial literacy is important in every aspect of human life that is a financial actor. Having financial literacy is a foundation for having a prosperous financial life. This applies to everyone because no matter how much a person's income is, without proper financial management, money can also be wasted and financial goals that are set will be difficult to achieve. Based on the explanation and explanation above, conducting a research on explaining the relationship between financial attitude and financial behaviour towards financial literacy and financial wellbeing during corona outbreak would be interesting.

The next section of this article is a literature review that continues with developing the hypotheses. The third section outlines the methods used in this study. The fourth section describes and discusses the results. The final section concludes and provides suggestions for further research.

2. Literature Review

2.1 Financial Literacy

Financial literacy needs and desires of the community are increasingly complex. This makes the consumptive lifestyle of the community disproportionate, such as making an impulsive purchase without considering the future. This is encouraged because of the increasingly widespread online shopping system that can be accessed through every smartphone, shopping centres that are located everywhere and all banking transactions or others are carried out with internet technology (online based), to date, the community is facilitated and spoiled in this situation in that not only a few people will feel financial difficulties. Financial difficulties are not only caused by income effects but can also be influenced by excessive or consumptive lifestyles and mistakes in financial management, such as the

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absence of financial planning. Behaviours and lifestyles increasingly tempt people to be happy and to consume than to save when they have money. Especially in 2019, clothing trends, technology trends, accessories trends, vehicle trends, home trends, holiday trends and so on are making rapid development, making some people go along to fulfil this. Good financial management can be measured by the level of financial literacy owned (Caplinska & Ohotina, 2019; Njaramba, Chigeza, & Whitehouse, 2015).

Financial literacy is a basic need in the form of knowledge and ability to manage personal finances to make correct financial decisions to avoid financial problems (Munoz-Murillo et al., 2020). An attitude in good financial management starts with applying financial attitude a good towards the world in which it lives. So that it can be interpreted as a state of mind, opinion and evaluation of a person against his personal finances that are applied to the attitude. Attitudes in financial management often affect one's financial behaviour. Financial behaviour of Indonesian people who tend to be consumptive has led to various irresponsible financial behaviours, such as lack of saving, investment, emergency fund planning and future budgeting (Ramli et al., 2013; Younas et al., 2019).

Numerous people have problems regarding how to manage their personal financial assets. Every individual must possess basic intelligence to manage his personal financial resources effectively and efficiently for his wellbeing. The development of technology provides various facilities in financial learning, such as information that is easier to obtain. Many theoretical studies established that financial attitude, financial behaviour and financial literacy are determinants of increasing financial wellbeing. Current research confirms previous studies by examining financial attitude and financial behaviour towards financial wellbeing through financial literacy.

2.2 Financial Attitude and Financial Literacy

Financial attitudes are pre-dispositions to behave in certain ways that are formed due to some economic and non-economic beliefs held by individuals on the results of certain behaviours (Ajzen, 1991). Attitude also signifies as an evaluative statement, pleasant and unpleasant emotions towards objects, individuals and events. Financial behaviour or financial attitude possessed by someone will help the individual in determining their attitude and behaviour in financial matters in terms of financial management, personal financial budgeting or how individual decisions regarding the form of investment to be taken. Previous research demonstrated that financial attitude positively affects financial literacy (Ameliawati & Setiyani, 2018; OECD, 2013), financial planning (Agarwal, Amromin, Ben-David, Chomsisengphet, & Evanoff, 2015; Atkinson & Messy, 2012; Lusardi & Mitchell, 2011) and more tendency to save (Agarwal et al., 2015; Atkinson & Messy, 2012). Thus, this study formulates the first hypothesis:
H1: *Financial attitude positively affects financial literacy*.

2.3 Financial Attitude and Financial Wellbeing

Financial attitudes are states of mind, opinions and judgments about finance. An individual required financial attitude every day and in all aspects of human life (Rai et al., 2019; Rajna et al., 2011) with no exception to the financial aspects. Financial attitudes possessed by someone will help the individual in determining their attitudes and behaviour in financial matters, in terms of financial management, personal financial budgeting or how individual decisions regarding the form of investment to be taken. Zulfiqar and Bilal (2016), Mutang, et al. (2017) uncovered that financial attitude positively influences financial wellbeing. Thus, the second hypothesis was formulated:
H2: *Financial attitude positively affects financial wellbeing.*

2.4 Financial Behaviour and Financial Literacy

Financial behaviour is how humans behave in a financial determination, specifically studying how psychology influences financial, corporate and financial market decisions. Financial behaviour is built on various assumptions and ideas of economic behaviour. The involvement of emotions, traits, preferences and various kinds of factors inherent in humans as intellectual and social creatures will interact as the basis for the emergence of an action

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decision. Previous research stated that financial behaviour positively affects financial literacy (Mudzingiri et al., 2018; Rai et al., 2019; Sabri et al., 2008). The results of this study state that financial behaviour has a strong relationship with financial literacy. Hence, the third hypothesis was formulated:
H3: *Financial behaviour positively affects financial literacy.*

2.5 Financial Behaviour and Financial Wellbeing

Financial behaviour defines as how humans behave in a financial setting. Specifically, studying how psychology influences individual and organisational financial decisions. Individuals who can make right decisions about finances will not have financial problems in the future and can show healthy financial behaviour. The way a person behaves will significantly affect his financial wellbeing. Therefore, capturing evidence of behavioural dimensions in financial literacy measures (OECD, 2013) is crucial. The results show that financial behaviour positively affects financial wellbeing (Ameliawati & Setiyani, 2018; Gutter & Copur, 2011; Mokhtar & Husniyah, 2017; Younas et al., 2019). Thus, the fourth hypothesis was formulated:
H4: *Financial behaviour positively affects financial wellbeing.*

2.6 Financial Literacy and Financial Wellbeing

Financial literacy is about being able to understand money and finance and being able to confidently apply that knowledge to make effective financial decisions. Knowing how to make healthy money decisions is a core skill in today's world, regardless of age (Coşkuner, 2016). Financial knowledge is an inseparable dimension of financial literacy but has not been able to describe financial literacy. Today, financial literacy is an important aspect of life. Ultimately, financial literacy influences financial wellbeing in determining decisions (Sabri & Zakaria, 2015; Zulfiqar & Bilal, 2016). Thus, the fifth hypothesis was formulated:
H5: *Financial literacy positively affects financial wellbeing.*

2.7 Financial Attitude, Financial Literacy and Financial Wellbeing

Financial literacy is closely related to the welfare of an individual. Financial knowledge and skills in managing a personal finance is essential in everyday life. A person's financial attitude also affects the way a person regulates his financial behaviour. Zulfiqar & Bilal (2016) stated that financial literacy mediates the effect of financial attitude on financial wellbeing. Thus, the fifth hypothesis was formulated:
H6: *Financial literacy mediates the effect of financial attitude on financial wellbeing.*

2.8 Financial Behaviour, Financial Literacy and Financial Wellbeing

Individual needs and increasingly complex financial products require people to have adequate financial literacy Self-control is a useful financial behaviour when understood and can be applied in everyday life. Financial behaviour is related to a person's financial responsibilities related to the financial management**.** A conceptual model of financial wellbeing showed the impact of a person being able to manage funds/cash owned by being able to feel prosperous in terms of his finances and conversely a decline in one's wellbeing can arise due to erroneous behaviours in managing his finances. The previous results unveiled that financial literacy mediates the effect of financial behaviour on financial wellbeing (Ayuba, Saad & Ariffin, 2015; Sabri & Falahati, 2013). Thus, the seventh hypothesis was formulated:
H7: *Financial literacy mediates the effect of financial behaviour on financial wellbeing.*

On the basis of the explanation above, a conceptual model can be built in this study in Figure 1.

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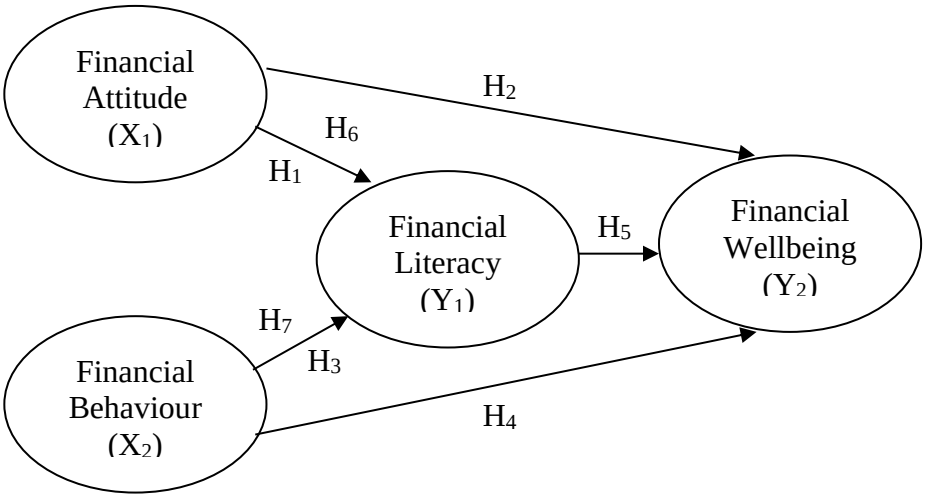

Fig. 1. Conceptual Framework Model

3. Method

This study was conducted on the community in Sidakarya Village, south Denpasar district. The duration of this study is planned to be carried out for two months starting from February 2020–March 2020. The population size in this study was 13,361 inhabitants in 2018 comprising 3,963 households. This study used a sample of 10%, namely, 396 respondents. This study is a causal research because this research aims to determine the causal relationship between variables financial attitude, financial behaviour, financial literacy and financial wellbeing. This study collected the data the through interviews, documentation and distribution of questionnaires, followed by tests of validity and reliability. This study analysed the data through a variance-based analysis, namely, PLS. The results of the analysis will then be interpreted and discussed so that the results of the research can be concluded.

4. Result

4.1 Hypothesis Testing Results

This study conducted the hypothesis testing by t-test on each path of direct influence partially and indirectly through mediating variables. Associated with this test, the hypothesis testing can be broken down into direct influence testing and indirect effect testing direct or testing mediation variables. The following sections describes the results of the direct influence test and the mediation variable test.

1) Direct Effect Testing

Table 2 presents the results of the coefficient validation test path on each path for the direct effects.

Table 2. Test Results Direct Effects

No	Relationship between Variables	Path Coefficient	P-Value	Result
1	Fin. Attitude (X_1) -> Fin. Literacy (Y_1)	0,290	0,000	Significant
2	Fin. Attitude (X_2) -> Fin. Wellbeing (Y_2)	0,132	0.005	Significant
3	Fin. Behaviour (X_2) -> Fin. Literacy (Y_1)	0,596	0,000	Significant
4	Fin. Behaviour (X_2) -> Fin. Wellbeing (Y_2)	0,177	0.005	Significant
5	Fin. Literacy (Y_1) -> Fin. Wellbeing (Y_2)	0,600	0,000	Significant

Note: P-Value < 0.05 -> Data shows a significant difference exists
P-Value > 0.05 -> Data shows no significant difference

Source: autors, data 2020, processed

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Table 2 exhibits that the results of testing the hypothesis that financial attitude (X_1) is proven to positively and significantly affect financial literacy (Y_1). These results indicated by the path coefficient positive value of 0.290 with a P-value t < 0.05, therefore supporting H1. The results show that the better the financial attitude carried out by the Sidakarya village community, the better financial literacy owned by the Sidakarya village community will benefit themselves and the families.

Financial attitude (X_1) positively and significantly affects financial wellbeing (Y_2). This result is shown by a positive path coefficient of 0.132 with a P-value of t < 0.05, hence supporting H2. The results uncover that the better the financial attitude done by the Sidakarya village community, the financial wellbeing felt by the Sidakarya village community will increase and be felt by themselves and their families.

Financial behaviour (X_2) positively and significantly affects financial literacy (Y_1). These results are indicated by a positive path coefficient of 0.596 with a P-value of t < 0.005, thus supporting H3. The results reveal that the better the financial behaviour carried out by the Sidakarya village community, the more beneficial the application of financial literacy by the Sidakarya village community will be for individuals and their families.

Financial behaviour (X_2) positively and significantly affects financial wellbeing (Y_2). This result is shown by a positive path coefficient of 0.177 with a P-value of t < 0.05, hence supporting H4. The results unveil that better financial behaviour of the Sidakarya village community will improve the financial wellbeing felt by the Sidakarya village community for themselves and their families.

Financial literacy (Y_1) positively and significantly affect financial wellbeing (Y_2). This result is shown by a positive path coefficient of 0.600 with a P-value of t < 0.05, thus supporting H5. The results state that the better the financial literacy done and implemented by the Sidakarya village community, the greater the financial wellbeing felt by the Sidakarya village community will increase.
The analysis performed can be presented in the image research model according to the PLS analysis as follows (figure 2):

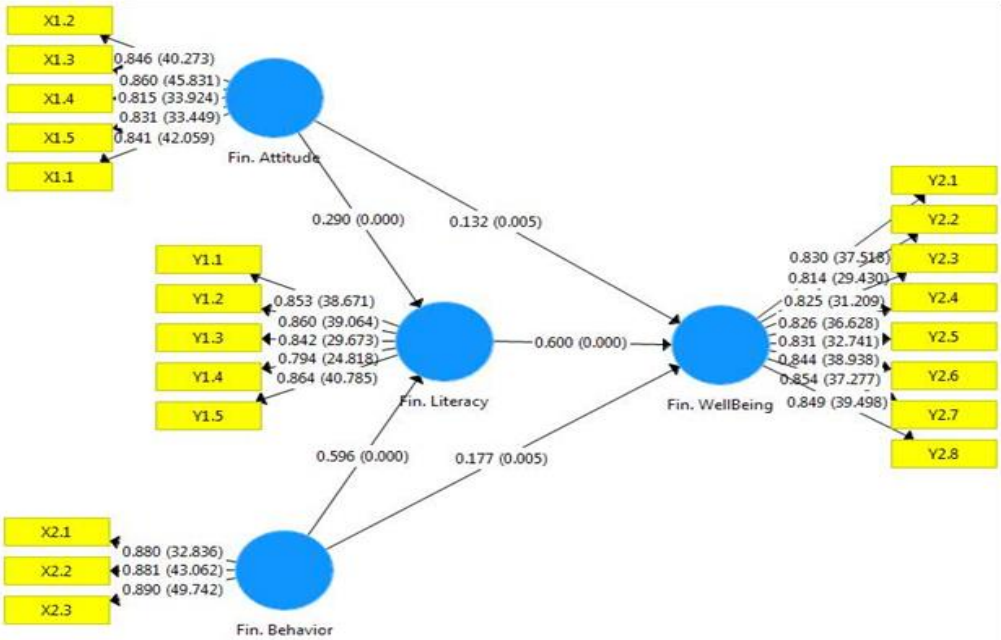

Fig. 2. Full Model PLS

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2) Testing the Effect of Indirect Effects Through Variable Mediation

By testing the following hypothesis this study can analyse the role of the mediating variable financial literacy (Y_1) in the indirect influence of financial wellbeing (Y_2). The hypothesis testing for indirect effects in this study can present the results of the analysis in the Table 3:

Table 3. Recapitulation of Testing Results of Mediation Variables

No	Mediation Variables	(a)	(b)	(c)	(d)	Remarks
1	Financial attitude (X_1) - > Financial wellbeing	0.132 (Sig)	0.306 (Sig)	0.290 (Sig)	0,600 (Sig)	Partial Mediation
2	Financial behaviour (X_2)-> Financial wellbeing	0.177 (Sig)	0,535 (Sig)	0.596 (Sig)	0,600 (Sig)	Partial Mediation

Note: P-value < 0.05 -> Data shows that a significant difference exists
P-value > 0.05 -> Data shows no significant difference

Information gathered from Table 3 is the result of testing mediation variables. Financial literacy (Y_1) can positively mediate the indirect effect of financial attitude (X_1) on positive financial wellbeing (Y_2). These results are shown from the mediation tests conducted, it appears the effect of C, D and A has a significant value. The results of this test determine that financial attitude (X_1) can positively influence financial wellbeing (Y_2) through financial literacy (Y_1), which can be proven empirically. On the basis of these results, it can be interpreted that the better the financial literacy owned by the community based on good financial attitude, the better the financial wellbeing will be in the Sidakarya village community. Other information that can be conveyed is the mediating effect of financial literacy (Y_1) on the indirect effect of financial attitude (X_1) on financial wellbeing (Y_2) that is partial (partial mediation) thus supporting H6. This finding provides a clue to the variable financial literacy (Y_1) not as a key determinant of the effect of financial attitude (X_1) on financial wellbeing (Y_2).

Financial literacy (Y_1) can positively mediate the indirect effect of financial behaviour (X_2) on positive financial wellbeing (Y_2). These results are shown from the mediation tests conducted, it appears the effect of C, D and A has a significant value. The results of this test determine that financial behaviour (X_2) can positively influence financial wellbeing (Y_2) through financial literacy (Y_1) can be proven empirically. On the basis of results it can be interpreted, the better the financial literacy owned by the community based on good financial behaviour, the better the financial wellbeing becomes in the Sidakarya village community. Other information that can be conveyed is the mediating effect of financial literacy variables (Y_1) on the indirect effect of financial behaviour (X_2) on financial wellbeing (Y_2) that is partial (partial mediation), which supports H7 . This finding provides a clue to the variable financial literacy (Y1) not as a key determinant of the influence of financial behaviour (X_2) on financial wellbeing (Y_2). To determine the overall effect for each relationship between the variables studied, Table 4 presents the recapitulation of direct, indirect and total effects.

Table 4. Calculation of Direct, Indirect and Total Effects

No	Relationship Variable	Direct Effect Indirect	Effect	Result
1	Fin. Attitude (X_1) -> Fin. Literacy (Y_1)	0,290	-	Positive
2	Fin. Attitude (X_1) -> Fin.Wellbeing (Y_1)	0,132	-	Positive
3	Fin. Behaviour (X_2) -> Fin. Literacy (Y_1)	0.596	-	Positive
4	Behaviour (X_2Fin.) -> Fin. Wellbeing (Y_2)	0,177	-	Positive
5	Fin. Literacy (Y_1) -> Fin. Wellbeing (Y_2)	0,600	-	Positive
6	Fin. Attitude (X_1)-> Fin.Literacy (Y_1)-> Fin. Wellbeing (Y	0.132	0.174 (0.290 * 0.600)	Mediating
7	Fin. Behaviour (X_2Literacy (Y_1) -> Fin.) -> Fin. Wellbeing (Y_2)	0,177	0,358 (0.596 * 0,600)	Mediating

Source: authors, 2020 data, processed

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Information collected from Table 4 mediates the effect of financial literacy variable (Y_1) on the indirect effect of financial behaviour (X_2) on financial wellbeing (Y_2) is greater, such as with a path coefficient of 0.358, compared to the indirect effect of financial attitude (X_1) on financial wellbeing (Y_2) with the resulting path coefficient of 0.174. Thus overall, the path of financial behaviour (X_2) -> financial literacy (Y_1) -> financial wellbeing (Y_2) is greater with the total effect obtained by 0.535 compared to the path financial attitude (X_1) -> financial literacy (Y_1) -> financial wellbeing (Y_2) with a total effect of 0.306. These findings imply that the better financial behaviour makes the public better understand the importance of knowledge about finance will improve the financial welfare of the community individually and their families.

4.2 Discussion of Research

The results of testing H1 show that financial attitude positively affects financial literacy. These results mean that the better a financial attitude a persons holds, the more knowledge and ability in applying financial literacy will be. Financial attitude is the application of financial principles to create value through decision making and good resource management (Rajna et al., 2011). Financial attitudes can be considered individual psychological tendencies when evaluating financial management. This assessment will produce a recommendation in the form of approval or disagreement or a financial decision (Parrotta & Johnson, 1998). Financial literacy reflects the financial attitude of the community. For example, if the community has a positive attitude towards the importance of having savings in the future, especially in emergencies or disasters, this financial attitude will lead to the community to have to save consistently. However, if the community tends to prioritise short-term needs, the community tends to neglect saving behaviour. Regarding pandemic conditions, financial attitude is an important factor affecting financial literacy, especially their financial decisions. The results of this study indicate that the public has a perception that an event must be anticipated financially. Even though the community no longer has income as before, it can be overcome because the community has responded to positive financial behaviour, such savings funds and making savings. The results of this study support the results of the study by Ameliawati and Setiyani (2018).

The results of testing H2 unveil that financial attitude positively affects financial wellbeing. These results indicate that the better a person adopts financial attitude, the more his financial prosperity will improve. The findings of this study illustrate that the better a person's financial attitude is, the more financially prosperous the community will be. Financial attitudes possessed by someone will help the individual in determining their attitudes and behaviour in financial matters, in terms of financial management, personal financial budgeting or how individual decisions regarding the form of investment to be taken. The Sidakarya village community already has a good financial attitude, as evidenced by the ability to manage finances well. In this case the individual community can maintain a balance between income and expenditure, even able to plan for emergency funds in the future. Thus, when the COVID-19 pandemic occured, people were not stressed and are were able to survive economically. The results support the previous results (Sabri et al., 2008; Sabri, Cook & Gudmunson, 2012; Zulfiqar & Bilal, 2016) by stating that financial attitude positively affects financial wellbeing.

The results of testing H3 reveal that financial behaviour positively affects financial literacy. These results imply that the better a person applies financial behaviour, the more they can optimise their knowledge and application of financial literacy. Individuals need financial literacy to make decisions that will improve the quality of life today and in the future. One of the factors that influence financial literacy is financial behaviour. Financial behaviour is defined as human behaviour in relation to financial management (Klontz & Britt, 2012; Xiao, 2008). Atkinson & Messy (2012) described four conditions that reflect individual financial behaviour. Firstly, individuals can afford to pay for their potential purchases. Secondly, individuals can pay their obligations on time. Thirdly, individuals often pay close attention to records relating to financial matters. Fourthly, individuals can set long-term financial goals and efforts made to achieve these goals. The findings of this study illustrate that people who must know how to apply financial literacy well so that people will be able to make decisions that prioritise prudence in financial decision making. Caution indicates a preventive attitude if another pandemic occurs. In the past few days, the

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financial condition of the people remains quite stable, but their regular income has decreased. Nonetheless, good financial attitudes, which existed before the COVID-19 pandemic, have guided the wise community in managing funds. This is shown with caution in spending money and tends to save or invest. Finally, this behaviour that has been established long before caused the community to have good financial literacy. The results support previous studies that financial behaviour positively affects financial literacy (Mudzingiri et al., 2018; Rai et al., 2019). In accordance with the study on the variable profile understudy, financial behaviour in Sidakarya village communities can be stated to have gone well and should be maintained because the important role in the savings and investment aspects is in accordance with community perceptions.

The results of testing H4 unveil that financial behaviour positively affects financial wellbeing. These results show that the better the application of financial behaviour in society, the better the financial welfare of the community will increase. Financial behaviour is the way individuals manage funds, including decisions on the use of funds, determining the source of funds and retirement planning (Gitman & Zutter, 2011). Financial behaviour will help explain the factors that cause the inefficient spending behaviour of individuals (Sewell 2007). This also relates to the habits a person displays when using money, such as making plans (shopping lists) before shopping, saving shopping receipts or using credit cards (Shim et al., 2009). In principle, individual behaviour is a way of managing funds related to one's responsibilities in managing finances. The more responsible in managing finances, the easier it is to achieve financial prosperity. The behaviour of this community can maintain prosperity in a depressed COVID-19 pandemic condition. The family economy is not easy to collapse because of good behaviour, similarly with previous results (Gutter & Copur, 2011; Mokhtar & Husniyah, 2017; Setiyani & Solichatun, 2019; Younas et al., 2019)

The results of testing the H5 show that financial literacy positively affects financial wellbeing. These results give the sense that the increasing financial welfare of the community shows that the community has been able to properly apply knowledge about financial literacy. The level of financial literacy is reflected in its ability to manage funds for savings, investment, debt repayment or fulfil living needs in accordance with its portion. Financial literacy also allows someone who has money to be entangled in bulging investments (Munoz-Murillo et al., 2020). The concept of financial literacy includes knowledge of financial concepts, the ability to understand communication about financial concepts, the ability to manage personal / company finances and the ability to make financial decisions in certain situations. With proper financial management, individuals can obtain the maximum benefit from their money (Association of Chartered Certified Accountants, 2014). Good behaviour and attitude in dealing with the conditions of this COVID-19 pandemic due to good public knowledge of family financial management and prevention of deteriorating economic conditions due to the stress of the COVID-19 pandemic. Good financial literacy is not only acquired from the public, but also from formal education in the family and surrounding environment. In the family environment, parents play a role in educating children to manage finances early and provide examples of appropriate financial decision making. Thus, good financial literacy will create financial prosperity, including when the COVID-19 pandemic occurs. The results support the results of previous research (Mohamad Fazli Sabri & Zakaria, 2015; Zulfiqar & Bilal, 2016) that stated that financial literacy positively affects financial wellbeing.

The results of testing H6 present that financial literacy positively mediates the effect of financial attitude on financial wellbeing. This finding indicates that the better the knowledge about finances owned by the community based on attitudes in managing good finances, the better financial welfare of the community will increase. Financial literacy will affect the ability and confidence of individuals in making effective financial decisions. At present, financial literacy is a key skill that must be possessed by everyone who has income (Coşkuner, 2016). The lack of financial literacy led to the emergence of a power–prestige attitude (Yamauchi & Templer, 1982), which is making money a source of power, seeking status, competition, gaining recognition and buying luxury goods. If the attitude is carried out continuously over the long term, it does not eliminate the possibility that individuals may experience financial difficulties; as a result, individuals will not achieve financial prosperity. Financial literacy will affect the ability and confidence of individuals in making effective financial decisions. Good financial literacy will be able to show good

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welfare as well. In a depressed COVID-19 pandemic condition, so far the people's welfare has been maintained. The results of this study support the results of (Mohamad Fazli Sabri et al., 2012), by stating that financial literacy mediates positive financial attitude towards financial wellbeing.

The results of testing H7 show that financial literacy positively mediates the influence behaviour of financial to financial wellbeing. This finding means that the better knowledge about finances owned by the community based on good financial decision-making behaviour the greater the financial welfare of the community will increase. Financial literacy is related to one's competence to manage finances. Individuals who have good financial literacy will reflect their knowledge in good financial behaviour. Good financial behaviour is reflected in five components, namely, the ability of individuals to use money wisely, pay obligations timely, able to plan future finances, set aside money for savings or investments and manage expenses for themselves or family (Perry and Morris, 2005). The existence of financial knowledge will determine financial behaviour to maximise the time value of money so that individuals can acquire financial prosperity. Financial literacy also shows good behaviour in managing finances in the best possible condition, including during the COVID-19 pandemic. The results of this study support the results of the research conducted by Zulfiqar and Bilal (2016), by stating the that financial literacy mediates the positive financial behaviour towards financial wellbeing.

Conclusion

We can conclude that financial attitude positively and significantly affects financial literacy. People who can apply financial literacy will change attitudes and assessments of finance regarding recording income and expenses and maximising the budget that has been made. Financial attitude positively affects the financial wellbeing in the Sidakarya village community. The better the welfare of the community financially the better the patterns and attitudes of the community in managing finances will be. Financial behaviour positively affects financial literacy in the Sidakarya village community. People who can apply financial literacy well can help people make decisions that prioritise prudency in financial decision making. Financial behaviour positively affects financial wellbeing in the Sidakarya village community. The better the application of financial behaviour in the society, the greater the financial welfare of the community will increase. Financial literacy positively affects the financial wellbeing in the Sidakarya village community. The increasing financial welfare of the community shows that the community has been able to properly apply knowledge about financial literacy.

Financial literacy mediates the effect of financial attitude on financial wellbeing in the Sidakarya village community. The better knowledge about finances owned by the community based on attitudes in managing good finances the quicker financial welfare of the community will increase. Financial literacy mediates the effect of financial behaviour on financial wellbeing in the Sidakarya village community. The better the knowledge of finances owned by the community based on good financial decision-making behaviour, the sooner the financial welfare of the community will increase.

Suggestions

Financial literacy is necessary to change people's behaviour and welfare levels. Therefore, financial learning and understanding must be improved in schools, universities or in the environment of rural or urban communities to help peple gain knowledge about financial literacy in a depressed condition. Financial literacy is also expected to increase public knowledge and change people's behaviour leading to better management of finances and investment. Financial literacy can prevent people from making hudge unnecessary investment. Development of financial instruments can be instrumental for increasing public financial literacy and the target of financial inclusion index (financial access) of the community by 75% in 2020 set by the government can be achieved. Big number of people with financial literacy may affect other people's financial literacy and welfare. Ultimately, people will not only be

aware of financial products, such as savings, insurance policies, investments, deposits, but also understand the risks that are related to each of these financial instruments.

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MEDICATION MARKET PERFORMANCE ANALYSIS WITH HELP OF ANALYTIC HIERARCHY PROCESSING

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Abstract. This study proposes the concept of Analytic Hierarchy Processing (AHP) on the market of active substances used in treatment of HIV and checks the control factors and criteria interconnection and implements Random Forest forecasting model. The new method must help to improve the management decision-making process in the fields of healthcare government budget planning. It has become a prime concern for understanding and comparing of publicly available information with internal market data and the consequences of companies` and government`s actions in choosing the best approach for correct construction of to reduce HIV incidence in Russia. The paper develops the forecasting model of one of the parameters, which has a substantial role in decision-making process. The medication market data in this study represents the cumulative daily concluded contracts, used in treatment of HIV in Russia, the level of HIV incidence (yearly) and federal budget on healthcare (yearly). The proposed approach have more than 82% average accuracy at predicting the sum of medication contract prices at the 3-year time period. The received figures are effective in predicting the factors` behavior in future. It can be used for improved modulation of AHP and consequently, the overall accuracy of the model structure.

Keywords: medical contract prices analysis; multy criteria decision making; machine learning approach; innovations; healthcare management; HIV; Russia

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1. Introduction

Medication market sustainability is a permanent concern of any society as it is a crucial part of its wellbeing. The changes in the development of this market is influenced by political, economic, social, technological, legal and environmental factors and can have drastic outcomes in the short and long run.

The main objective of the government and society as a whole is proposedly a reduction in new HIV cases in the country, increasing market activity and accessibility of medical treatment. Obviously, it is very hard to achieve all of the above by one drastic policy change. Following the theory of Multi Criteria Decision Making (MCDM) and Analytical Hierarchy Processing (AHP) in particular, the main groups of actors in achieving this goal are:

society – actor, which goal is less infected people;
government – actor, which goal is increasing business activity and reducing prices;
private companies (suppliers/vendors) – actors, which goal is to increase profits.

The composition of control factors is the same as one of the data: the federal budget spending on healthcare, HIV incidence and concluded contract prices for 32 selected INNs.

The dynamics of HIV spread rate should be reflected by the government spending, subsequently affecting the number of concluded contracts in the related medical supply.

This paper not only proposes the concept of AHP on the market of active substances used in treatment of HIV, but also checks the control factors and criteria interconnection and implements Random Forest forecasting model for one of them, enabling the ability for preemptive actions at regulating and achieving one or several objective parameters, mentioned earlier.

2. Literature review

The problem of exploiting powerful multiple criteria decision making approaches is indispensable for healthcare organizations while evaluating different alternatives in the presence of varying types of criteria like many researchers wrote for industry and for banking sector (Kucukaltan, 2016; Akyıldız, 2015, Onar, 2019; Gul, 2018).

Some of the existing papers, regarding government spending, are focused on the hospital performance metrics (Kumar et al., 2019; Chang et al., 2015; Lee et al., 2019) or regional statistics (Belton and Stewart, 2002; Edmonds et al., 2019; Kruger et al., 2019) which partially influenced our study. Most of the authors were focused on predicting mortality rates compared with government spending, improving healthcare benefits and patient treatment, inequality of services or other related concerns, using advanced statistic technics and neural networks.

The topic of HIV was broadly discussed in multiple studies, including government spending (Beyrer et al., 2017; Haakenstad et al. 2019). It was also reported that Russian Federation has the largest HIV epidemic in Europe (Stuikyte et al., 2019). The current strategy of Russian government is well described in paper (Nyangarika et al., 2018).

The virus itself, its spread rate, health and economic impact was discussed numerous times by many researchers. Some of their works were used by authors to understand the threat and regional situation (Lebedev et al., 2019; Vetrova et al., 2018; King et al., 2019; Pape, 2018). We also looked at the potential active substances used in the treatment of HIV in Russia (Tremblay et al., 2018).

The paper used solutions from several reliable studies of MCDM application for different sectors and cases (Sabaei et al., 2015). There were also researches, concentrated on the evaluation of different methods of MCDM, which guided this study to the strategy applied (Asadabadi et al., 2019). To create a general understanding of the MCDM in healthcare and hospital sector we analyzed the existing literature related to the AHP (Schmidt et al., 2015). Subsequently, we used methods and proposals in application of AHP in the selected sector (Padilla-

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Garrido et al., 2014). One of the researches was also considering the local government spending the country, but it covered the healthcare infrastructure (Kharisma et al., 2019; Mitsek, 2015). Despite that, some of the AHP methods from that paper were partially applied in this study.

In our study, we use Random Forest algorithm as one the most recent decision tree classifiers and regression models, which can be used for various tasks (Browne, 2000; Mikhaylov et al, 2018). Its functionality is used to forecast future values of sum of contract prices (Nyangarika et al., 2019b; Nyangarika et al., 2019a).

There are numerous works, which describe multiple approaches at treating the time-series data using neural networks and, in particular, Random Forest algorithm (Pavlyshenko, 2019; Dingli and Fournier, 2017). But those are mostly concentrated on the publicly available data of trading stock prices or sales, rather than prices of contracts.

The Random Forest or boosting algorithm weren't that popular, but still has some respectful and significant works, which included time-series forecasting and data mining (Lohrmann and Luukka, 2018; Singh Maini and Govinda, 2017; An et al., 2019a; An et al., 2019b; An et al., 2019c; An et al., 2020a).

The authors of this study see AHP techniques and statistical data as an opportunity to accurately predict and advise the future government healthcare spending in regards of HIV treatment.

3. Methods

Data sources

This study is based on the public data provided by Russian Federal State Statistic Service (Rosstat), Ministry of Finance of the Russian Federation and World Health Organization (WHO) via open source. The statistics, related to the internal market situation is granted by Cursor Marketing Ltd. (www.cursor-is.ru). Official government reports of Rosstat and Ministry of Healthcare of the Russian Federation has recently boosted the media activity, regarding increasing HIV incidence in Russia (Holt, 2019; Beyrer et al., 2017; Stuikyte et al., 2019).

In 2018 the federal budget expenditure on healthcare was equal to 537,3 billion RUB (www.minfin.ru) or 7,73 billion USD, as of exchange rate on 30 Dec 2018 (www.cbr.ru). The government spending on healthcare has increased since 2008, but it is still not the highest in reported years. These statistics are ought to represent the active measurements, taken by the Russian government, to prevent or at least slow down the spread of HIV infection in the country.

We included recent statistic concerning overall HIV infected people, Federal budget healthcare spending and the daily contract prices in Russia since Oct 2008 till Feb 2019. This time span was chosen as maximum available for internal market information, thus limiting the number of observations to this period. For the purpose of this study, we use the data only till 31 Dec 2018 in the general analysis and the rest is implemented into the model`s train and test sets (Mikhaylov, 2018a; Mikhaylov, 2018b; Mikhaylov et al., 2020; An et al, 2020b).

Data structure and statistical analysis

The Federal budget spending is presented in yearly format, as is HIV incidences statistics. We used this data for brief overview and comparison of market and government data.

The medical treatment of HIV is a complex task (Lebedev et al., 2019; Vetrova et al., 2018; Tremblay et al., 2018; Mikhaylov, 2019), thus we gathered the information, referencing to the 32 INNs and their supplements, which were mentioned as the part of the supply order in the documentation of the concluded contracts. These can be found in the list below:

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1.	Abacavirum	17.	Maravirocum
2.	Amprenavirum	18.	Natriinucleospermas
3.	Atazanavirum	19.	Nelfinavirum
4.	Darunavirum	20.	Nevirapinum
5.	Didanosinum	21.	Phosphazidum
6.	Dolutegravirum	22.	Raltegravirum
7.	Doravirine	23.	Rilpivirinum
8.	Efavirenzum	24.	Ritonavirum
9.	Elsulfavirinum	25.	Saquinavirum
10.	Emtricitabinum	26.	Stavudinum
11.	Enfuvirtidum	27.	Tenofovirum
12.	Etravirinum	28.	Tipranavirum
13.	Fosamprenavirum	29.	Treonil
14.	Indinavirum	30.	Valgancyclovirum
15.	Lamivudinum	31.	Zalcitabinum
16.	Lopinavirum	32.	Zidovudinum

Furthermore, the study concentrates on the current and historical market situation, related to the INNs mentioned above. This includes region, client, vendor, provider, INN and price of the contract analysis, either overall for the chosen period or top 10 positions yearly.

The paper uses the base method of AHP, proposed by (Saaty, 1987) to establish base connections between goal and factors and come up with possible solutions to the established objective. See figure 1.

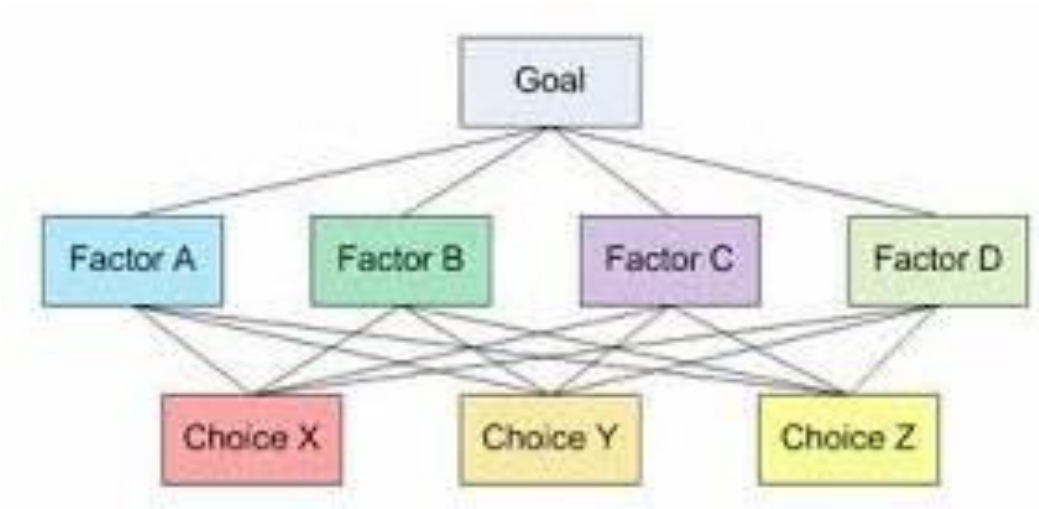

Figure 1. Structure of AHP method

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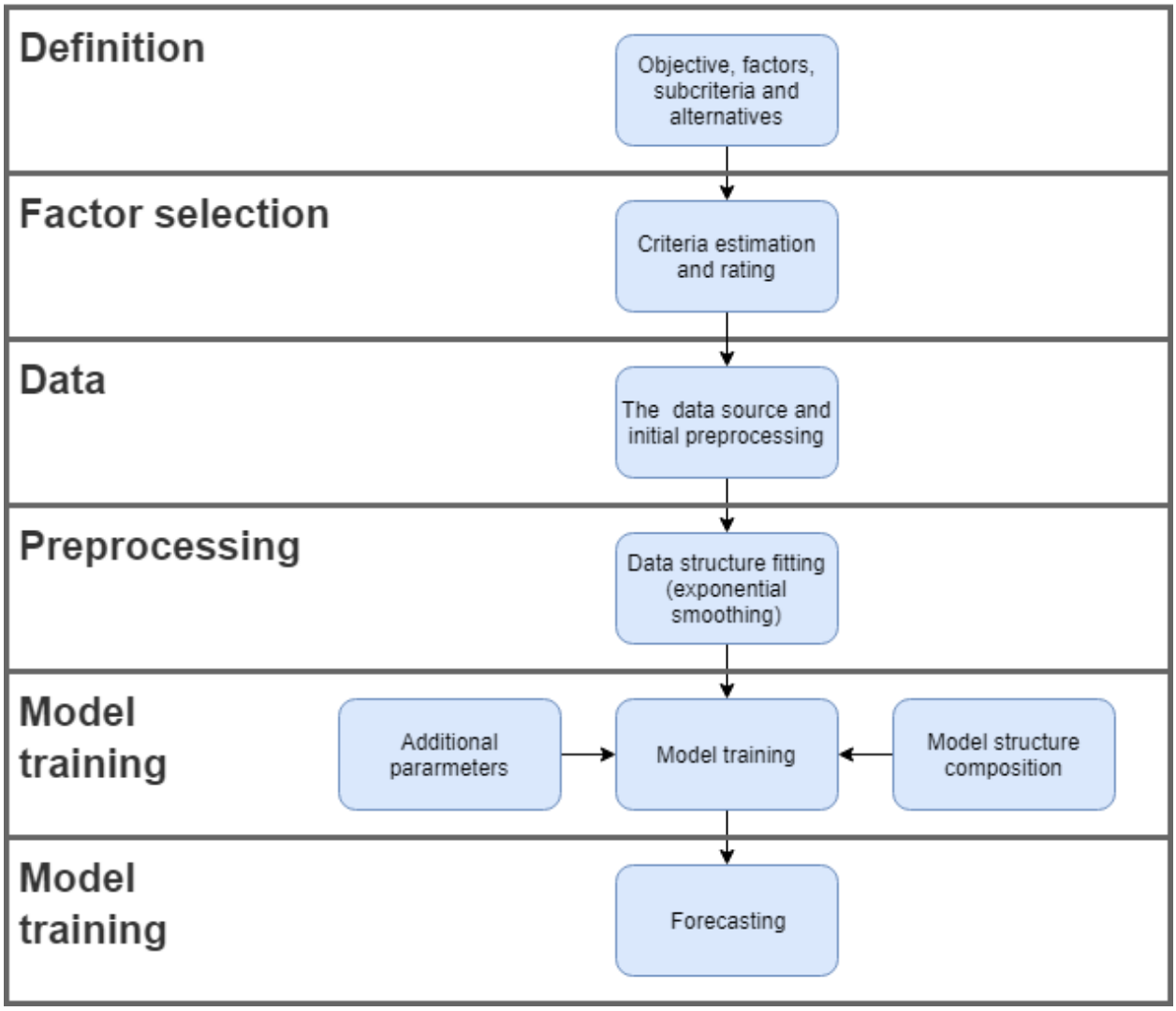

Figure 2. Proposed preprocessing methodology

These methods help to evaluate the factors, which is necessary for reaching the final goal of improving the healthcare procedures and financial planning of government spending, concerning HIV incidence in Russia. By using the AHP, we analyze the significance of each factor and propose the best strategy of resolving the issue, based on the statistics and graphics acquired. See fifure 2.

For this purpose, we also implemented Random Forest regression model for forecasting of concluded contract prices. The source data consisted of final contract price and sum of positions in the particular tender. We used sum of positions as the base of calculations for each INN in contract if possible. Otherwise, the duplicated final price for each INN of the contract was divided by its amount and price of supplied medicine, according to the info, provided in the document. The data also contained some duplicated companies, excluding subsidiaries. Those were replaced by the original full name of the legal entity as of 01 Sep 2019.

Finally, we sorted and combined the data for each year into one table. But the initial figures were incomplete, regarding every day observation, thus creating inconsistency with zero or non-existent values and preventing algorithm from processing it properly. It was decided to use a widely accepted method of simple exponential

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smoothing to deal with highly convoluted data (Ostertagová et al., 2012). The data preparation for the Random Forest model was as follows. In order to achieve confident results, we added Moving average, Exponential Moving Average and the raw data values. This decision was based on the experimental results of this study and others (Gao et al, 2018), concerning predicting future values of the time series.

$$\text{Moving Average} = \frac{A_1 + A_2 + \cdots + A_n}{n} \quad (1)$$

where:
A_n – average
n = 30

$$\text{Exponential Moving Average}_t = \alpha \times P_t + (1 - \alpha) \times EMA_{t-1} \quad (2)$$

where:
α – weight coefficient (from 0 to 1)
EMA_{t-1} – value of EMA mean for the time period (t-1)
t = 30

$$\text{Pearson`s correlation coefficient} = \frac{N\sum xy - (\sum x)(\sum y)}{\sqrt{[N\sum x^2 - (\sum x)^2][N\sum y^2 - (\sum y)^2]}} \quad (3)$$

where:
N = number of pairs of scopes
$\sum xy$ = sum of the products of scores
$\sum x$ = sum of x scores
$\sum y$ = sum of y scores
$\sum x^2$ = sum of x scores
$\sum y^2$ = sum of y scores

Data preparation and handling is entirely conducted in Microsoft Office Excel (Microsoft Corp.), Python 3.6 (Python Software Foundation), with the following packages: numpy (Zavadskas et al., 2014), matplotlib (Liberatore, 2008) and pandas (Kinney, 2010). We make use of Scikit-learn (Lee and He, 2019) for the random forest regression model.

Prediction algorithm

Random Forest algorithm is a combination of tree predictors such that each tree depends on the values of a random vector sampled independently and with the same distribution for all trees in the forest. We make use of the method presented in the paper (Khaidem, 2016).

Considering numerical part of the experiment, we followed the (Krauss et al. 2017), whose method guarantees the generalization and accuracy of the prediction model. For the proper model setting we create two sets of data: training and test. First consist of 80% of historical data, the second – the 20%. The overall amount of days is 3793 and all of them are used in predicting the future parameters.

As mentioned above, we make use of Random forest regression model with bootstrap aggregation. By using the training data, it performs the following procedure (Khaidem, 2016):

1. Selects each group of subsamples in N training set.
2. Creates a random-forest tree R_n to the bootstrapped data until the minimum node size is reached, repeating the following steps:
    a. Selects u variables at random from the U set of all variables.
    b. Chooses the best variable from u.
    c. Splits the node into to new nodes.
3. Output the ensemble of Rn
4. In order to make a prediction of the given test data at each point in the future it averages the output:

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$$F` = \frac{1}{B}\sum_{i=1}^{B} Fi(x) \quad (4)$$

For the measurements of the model validity, we utilize train and test accuracy score, Oob-score and cross-validation score, provided by base metrics of scikit-learn. Subsequently, the first one gives an approximation of how well the model is trained, whether it is overfitting or not and its forecasting accuracy. The Oob-score is specific to the Random Forest algorithm. The main base of the random forest is a bootstrap aggregation, which helps to improve the stability and accuracy of the machine learning technics. It also helps to avoid or reduce overfitting and works especially well with decision trees. In this paper for regression, we simply fit the same regression tree many times to bootstrap sampled versions of the training data, thus creating a large amount of end points and average the result (Carayannis, 2018; Dayong et al., 2020; Denisova et al., 2019; Dooyum et al., 2020).

Finally, k-fold cross-validation is a resampling procedure used to evaluate machine learning models on a limited data sample (Browne, 2000; Mikhaylov, 2015). This study uses base 3-fold random data shuffle, in order to evaluate the model.

4. Results

Federal budget analysis and HIV incidence in Russia

The overall spending (Table 1) has increased through the time period of the study in rubles, but its peak was in 2012. Since then, the figure below demonstrates the stable downwards trend, with last specific increase in 2018. Unfortunately, publicly available data does not represent the division by sectors of medical supply, thus unable to provide more than general apprehension.

Table 1. Federal budget spending on healthcare for the studying time period in RUB and USD based on the exchange rates of 01 Jan 2008.

Healthcare budget spending	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Billions/RUB	278,2	352,3	347,4	499,6	613,8	502,0	535,5	516,0	506,3	439,8	537,3
Billions/USD	11,3	14,4	14,2	20,4	25,0	20,5	21,8	21,0	20,6	17,9	21,9

Source: Russian Federal State Statistic Service (Rosstat) https://www.gks.ru/

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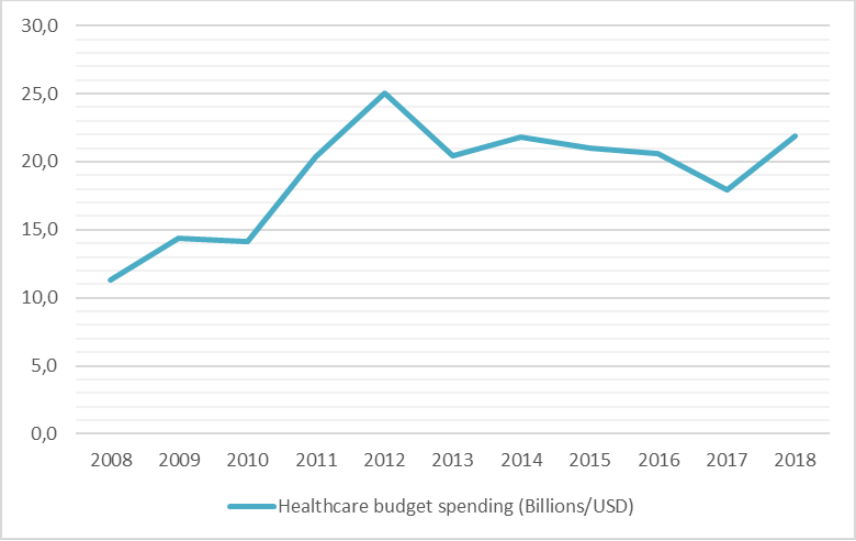

Figure 3. Federal budget spending on healthcare for the studying time period in USD, based on the exchange rates of 01 Jan 2008. Graphical representation.

These tendencies are most possibly due to the current long-term economic recession in Russian Federation caused by multiple factors (Eberhardt et al., 2015; Viktorov and Abramov, 2019) alongside with government budget policy (Stepanovich, 2018; An et al., 2019; Nyangarika et al., 2019). See figure 2.

To better understand the situation with HIV incidences in Russia we gathered the publicly available statistics, including worldwide. The overall amount of infected people in the world is steadily increasing with each year. Nevertheless, this rate is still lower than the one in Russia, as shows Figure 4 and Table 2.

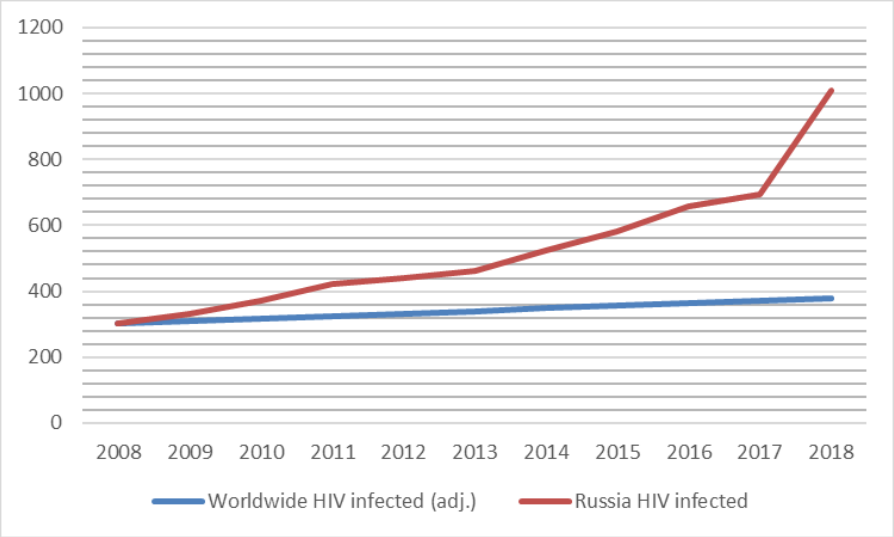

Figure 4. Overall number of HIV infected people among all age groups

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Table 2. Overall number of HIV infected people among all age groups, including newly infected.

Prameter/Year	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Worldwide infected (th. People)	30200	30900	31700	32400	33200	34000	34800	35600	36400	37200	37900
Worldwide newly infected (th. People)	2200	2100	2100	2000	2000	1900	1900	1900	1800	1800	1700
HIV infected in Russia (th. People)	301,3	332,9	372,9	422,3	438,4	463,3	522,6	581,7	658,1	693,1	1007,36
Newly HIV infected in Russia (th. People)	44,1	50,7	57,2	59,6	59,7	63,6	73,5	87,3	86,9	85,8	101,34

Source: Russian Federal State Statistic Service (Rosstat) https://www.gks.ru/

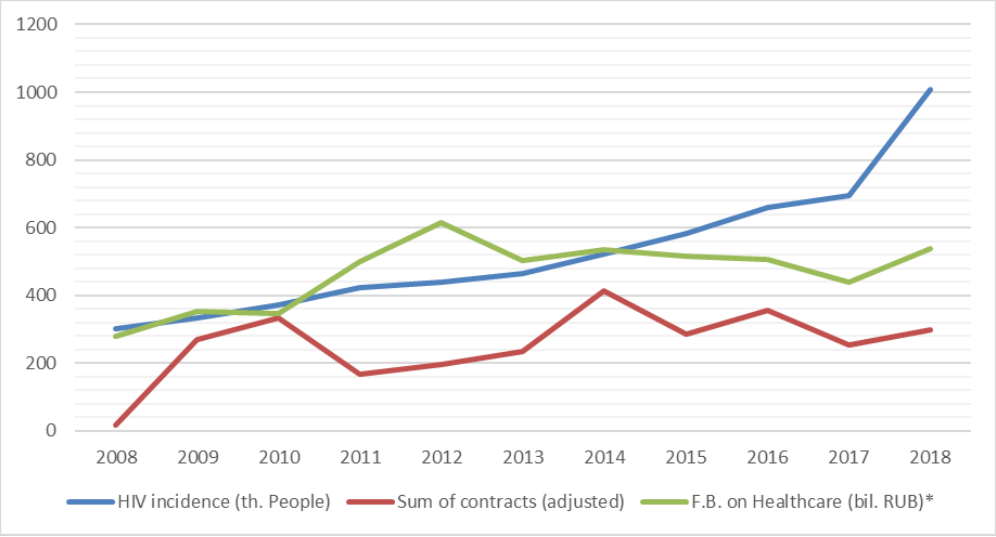
Unfortunately, this study does not aim at finding the causation of such drastic changes in figures. But this trend might affect the demand for the selected INNs and medical treatment, increasing government spending and thus inflating the number of concluded contracts and their prices per year (Gura et al., 2020).

Market overview: leading positions

This section of the study will cover the internal market data considering prices of concluded contracts between private or government owned suppliers and state clients and medical facilities, concerning 32 INN. It is worth noting, that the factor divisions, presented in this section, might play a role in the overall AHP for the established goal, mentioned earlier.

The sum of contract prices shows the clear increase since 2008 and especially in 2014 – 2018. This may indicate the general concern and subsequent response of the government officials on the rise of HIV incidence. Although on the figure 5, we can see that peaks in federal budget spending are different from the ones of contract prices. This is most possibly due to the fact that healthcare government spending has its own division of spending budgets per each subsequent region, medical organization and group of medical supplies.

Figure 5. The sum of contract prices of selected INNs for the time period of the study.



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The government spending on selected INNs is better visualized by the comparison of adjusted contract prices and amount of HIV infected people in figure 6. Nevertheless, the figures also indicate slight decrease in sum of contract prices after 2014. This phenomenon might be caused by several factors, including economic crisis, change in internal government policy or any other.

Via this graph we also can see that there is no definitive effect of unadjusted sum of contract prices on the dynamic of HIV spread. It is also may be confirmed by low correlation between these two dataset: Pearson correlation coefficient (PCC) = 0,4152. Taking this into consideration, we can say that current number of concluded contracts on selected set of HIV related medication does not represent the trend of HIV incidence in Russia, assuming data completeness and fairness of tender auctions. But it almost fits the dynamics of federal budget spending on healthcare overall.

Furthermore, the correlation coefficient of official government spending and sum of concluded contracts is 0,3847. Finally, the PCC of HIV incidence and federal budget on healthcare is 0,495. The results conclude that there is a lack of strong positive connection between these three control criteria. Nevertheless, the 2018 data point visually shows that government has started to react on the issue. We propose further increase in the government spending on these INNs and possible price reduction of tenders, lowering the market barriers for new participants. This should play an important role in increasing of accessibility of the medical care, but would possibly decrease profits of big private companies, as will be described further (Table 3).

Table 3. The comparison of HIV incidence, adjusted sum of contract prices and federal budget spending on healthcare in Russia. *F.B.S. – short for Federal Budget Spending.

Year	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
HIV incidence (th. People)	301,3	332,9	372,9	422,3	438,4	463,3	522,6	581,7	658,1	693,1	1007,37
Sum of contracts (bil. RUB)	1688,15	26955,6	33314,1	16589,3	19614,9	23549,9	41281,2	28683,8	35739,5	25498,3	29797,9
F.B.S.* on Healthcare (bil. RUB)	278,2	352,3	347,4	499,551	613,823	501,979	535,535	515,985	506,337	439,846	537,312

Source: Russian Federal State Statistic Service (Rosstat) https://www.gks.ru/

This study does not concentrate on the effects of INNs on the medical treatment of HIV, but we analyzed the total proportion of each active substance in terms of total contract prices for the whole observed time period.

These INNs might be widely used or have a high buying price or both. This effect might also indicate the popularity of the medical treatment strategies, which include these types of active substances. Unfortunately, our observations lack sufficient amount of timely data to make better, more definitive conclusions about this particular detail of the market.

Nevertheless, we also analyzed the suppliers, which won and, subsequently, completed the contract with one or multiple medical institutions and government agencies. According to the collected data, the R-Pharm group holds a leading position as a main winner of government tenders and supplier of medical substances in Russia for the duration of studying period. Yet, even in top 10 suppliers we can see in Table 4 some companies stopping their operations on the Russian market in the field of HIV medical treatment, during the same time frame. JSC Empire-Pharma has declared bankruptcy in 2015, also being brought into multiple juridical suits (www.dp.ru).

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Table 4. The statistics of contract winners for selected INNs in Russia (th. RUB).

Year/Company	R-Pharm Group	Pharmstandard	Multiple winners	Cosmopharm Ltd	Empire-Pharma	Pharmimex	Biotech Ltd	Irvin 2 Ltd	Rosta
2009	3186264	-	-	6555	3120023	-	1332964	1797456	1930895
2010	3030451	11289	-	6270	4710235	-	240036	2151872	1251674
2011	5919673	1764625	-	12693	0	-	109055	22524	345356
2012	7960662	2633948	-	-	1861	915945	-	-	-
2013	8733644	2290311	0	1643645	3	1897211	-	61783	1284
2014	9362010	2181228	3792204	1711123	11254	1448387	-	225383	1410346
2015	9414030	1382173	4151813	1728363	-	1467914	0	146518	128786
2016	10262806	2000997	5835953	2022340	-	866766	1013741	18903	-
2017	13747741	3548231	515135	2119840	-	751043	2064063	506833	-
2018	13226211	4501009	917360	612893	-	26860	1025436	335604	-
Total	84843492	20313811	15212464	9863722	7843375	7374126	5785296	5266876	5152605

Source: Russian Federal State Statistic Service (Rosstat) https://www.gks.ru/

If we look closely at the government contractors, who act on the side of the client – the biggest share possesses the Ministry of Healthcare of Russian Federation, closely followed by the Ministry of Healthcare of Moscow region and multiple customers. This definition may combine from several to hundreds of government and partially government controlled organizations. It is used in the official contract documentation, thus unable being avoided. Consequently, we can observe the trend of increasing dominance of the Ministry of Healthcare in the recent years, but a period of 2013 – 2015 is confirming the statement, mentioned above, about the short term change of the governmental policy to diversify some of the spending from big market players in this particular time period.

We also can say that the local healthcare institutions statistics is similar to the high level of reported HIV incidence in the region, especially in Rostov, Sverdlovskiy, Chelyabinsk and Krasnodar region (Beyrer et al., 2017).

For example, we can assume that the companies, which operate in the region with the highest incidence are receiving bigger portion of federal budget, thus able to spend more than other government institutions in other regions. The Table 6 clearly indicates a trend of the government response on the current situation. In addition to that, the spending of the central regions, such as Moscow is increased, because there are concentrated many health organizations, hospitals and AIDS hospices, working country-wise (Nie et al., 2020).

Finally, for this section we shall look at the vendors of the study selected INNs and give a small inquiry about the market situation. To our regret, the publicly available information, relating to the structure of import and export of medical supplies in Russia is mostly unavailable for the observed companies. But the existing data shows that one of the biggest pharmaceutical corporations in the world are playing a very important role on the medication market, concerning HIV treatment in Russia.

The findings in this paper are highly related to the field of MCDM and AHP. The study describes an empirical research, concerning the application of AHP in the sphere of medication market using the HIV incidence related

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statistics and demonstrates the improvement of AHP concept by applying the Random Forest regression model for forecasting of one of the factors. Thus showing the positive results for potential adaptation of such tool in future studies (Lopatin, 2020; Lopatin, 2019).

The paper developed the concepts of exploiting powerful multiple criteria decision-making approaches (Kucukaltan, 2016; Akyıldız, 2015, Onar, 2019; Gul, 2018; Mutalimov et al., 2020). It evaluate different alternatives in the presence of varying types of criteria such as: HIV spread rate, government spending, and the number of concluded contracts.

The paper also check the applicability of MCDM for Russian health care sector like foreign researchers (Sabaei et al., 2015). The paper did not develop the study about the applied strategy (Asadabadi et al., 2019; Schmidt et al., 2015). However, It used methods in application of AHP in the healthcare sector like Padilla-Garrido et al. (2014). We covered the healthcare infrastructure of Russian economy like the one It was done for Java region in Indonesia (Kharisma et al., 2019) and regions of Russia (Mitsek, 2015).

In addition, the paper developed the recent decision tree classifiers and regression models (Browne, 2000), which can be used for forecast future values of sum of contract prices (Litvishko and Litvishko, 2019; Litvishko et al., 2019a; Litvishko et al., 2019b).

The paper use new data sources and transforms the traditional approach focused on the hospital performance metrics (Kumar et al., 2019; Chang et al., 2015; Lee et al., 2019; Mikhaylov and Sokolinskaya, 2019; Mikhaylov et al., 2019; Mikhaylov, 2020) or regional statistics (Belton and Stewart, 2002; Edmonds et al., 2019; Kruger et al., 2019).

The research proved the ideas about the government spending (Beyrer et al., 2017; Haakenstad et al. 2019) and support position Stuikyte et al. (2019) about dangerous HIV situation in Russia and largest HIV epidemic in Europe (Alwaelya et al., 2020; Yumashev and Mikhaylov, 2020).

In the future research we recommend to understand the threat and regional situation and develop the direction of international researchers (Lebedev et al., 2019; Vetrova et al., 2018; King et al., 2019; Pape, 2018). We also contributed the analysis of the treatment of HIV in Russia by Tremblay et al. (2018).

5. Conclusion

The current spread of HIV incidence in Russia is increasing (Holt, 2019). The cause of the problem may lie in the field of economic problems and low rate of economic growth (Eberhardt, and Menkiszak, 2015). The recent years saw the decline in government budget spending on healthcare, thus affecting the situation in negative way. The identification of the specific factors, their influence and future trends, might help to develop new management decision making strategies, regarding the issue.

To evaluate these economic factors, we used the methods of MCDM model (AHP), graphical and regression analysis in the form of Random Forest models and correlation coefficients. We identified the possible alternative decision strategies for improving the healthcare budget spending, which should help to potentially bring to a halt or even reduce the HIV incidence in Russia. Furthermore, we made a prediction model to forecast future real market values for concluded contracts of the selected medication, used in the treatment of HIV.

The current studies show the potential for MCDM techniques in local regions, using public data (Schmidt et al., 2015). This paper proposes the same methods, bur at much bigger scale with additional tools, like Random Forest regression.

If we look at the data representing actual regional HIV incidence in Russia, it is clear that there is a partial similarity of affected regions between our results and conclusions of other authors (Beyrer et al., 2017;

Haakenstad et al. 2019). It was also discovered that there is no strong positive correlation between market data, federal budget spending and HIV spread rate, which, to our knowledge, was not reported in previous studies.

Methods of predicting factors for AHP models with wider data points could potentially lead to improved results in managerial decision making process and thus increase efficiency of government budget spending on healthcare.

Assuming data completeness and fairness of tender auctions, we can say that current number of concluded contracts on selected set of HIV related medication does not represent the trend of HIV incidence in Russia, as are other criteria, thus rendering them to be independent. The proposed concept, regarding AHP with existing data, has shown its effectiveness in developing of strategy for the potential improvement of HIV incidence dynamics, business activity and accessibility of medical care in Russian Federation (Shedenov et al, 2019; Veynberg and Titov, 2017; Veynberg and Popov, 2016; Veynberg et al., 2015; Mikhaylov and Tarakanov, 2020).

Overall situation indicates an increase in government expenses on the supply of the selected INNs in 2017-2018, boosting the activity of market participants in the field of medical tenders. The study concludes that it would be highly efficient to prolong this trend and diversify the amount of participants in the market of government tenders for the selected active substances (Yumashev et al., 2020).

The proposed approach and unique initial data has shown a substantial result of more than 82% average accuracy at predicting the sum of contract prices for the selected INNs at the 3-year time period. The received figures are effective in predicting the factors` behavior in future. It can be used for improved modulation of AHP and consequently, the overall accuracy of the model structure.

The Random Forest model was approved as an efficient tool at forecasting the sum of contract prices in the long-term time scales. This model may be used as a guideline for the suppliers, vendors, society decision makers and government companies, for forecasting of future business activities and reduction of HIV incidence relating to the market of INNs used in its medical treatment or any other group of active substances.

Further studies will concentrate on incorporating other factors into the similar models and development of new approaches of MCDM and Random Forest model combination at the medication market prediction.

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THE CONCEPT OF A TECHNOLOGY NEUTRAL PAYMENT INSTRUMENT IN CRIMINAL LAW

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Abstract: The development of electronic payment instruments and their online availability constitute important parts of the development of the EU payments market. Individual states adopt different approaches towards interpretation (legal aspects) and types of electronic payment instruments. To encourage sustainable payment services, minimize possible threats, and create favourable conditions for the development of new payment instruments, legislators adopt general legal acts stipulating the legal status of electronic payment instruments. However, the actual interpretation of payment instruments is often narrowed in legal practice, and does not cover payment instruments newly introduced to the market. A new insight into electronic payment instruments corresponding to the latest trends in the market is important in criminal law as well, because crimes related to the use of a payment instrument are common and difficult to investigate. In view of recent changes in payment services (the new Payment Services Directive in 2019), the norms of criminal law stipulating liability for the illegal disposal of electronic payment instruments must reflect circumstances predetermined by today's technological developments. In terms of criminal law, a technologically neutral conception of the payment instrument is necessary, to include a wider range of payment instruments that differ considerably from conventional personalized payment cards. The aim of this article is, therefore, to demonstrate that the current regulation of the Criminal Code of Lithuania lags behind the development of payment instruments, and in order to avoid excessive criminalization it is proposed to narrow the application of Article 214 of the Lithuanian Criminal Code.

Keywords: legal instruments for sustainable payments; payment instrument; criminal law; electronic payments

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1. Introduction

The first attempt to define an electronic payment instrument was made in 1988 by European Commission Recommendation 88/590/EEC concerning payment systems, and in particular the relationship between cardholder and card issuer. The recommendation aimed not only at defining, but also at legally regulating the new payment services provided in the electronic environment. The recommendation also associated electronic payment instruments with the Payment device, defined as "a card or some other means enabling its user to effect operations, such as:

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a) electronic payment involving the use of a card, in particular *at point of sale* [emphasis added],
b) the withdrawing of banknotes, the depositing of banknotes and cheques, and connected operations, at electronic devices, such as *cash dispensing machines and automated teller machines* [emphasis added]."

As the market for electronic payment was developing rapidly, the European Commission issued Recommendation 97/489/EC on 30 July 1997, concerning transactions by electronic payment instruments and in particular the relationship between the issuer and holder (hereafter – Commission Recommendation of 1997). The latter recommendation also included innovative electronic payment instruments that allowed the digital storage of the monetary value. This was the first attempt to legally regulate new payment instruments by distinguishing them from conventional remote access instruments (debit and credit cards) used to make electronic payment orders to the credit institution. The Commission Recommendation of 1997 defined an electronic payment instrument as: an instrument enabling its holder to effect transactions including cash withdrawals by means of an electronic payment instrument and the loading (and unloading) of an electronic money instrument, at devices such as cash dispensing machines and automated teller machines and at the premises of the issuer or an institution who is under contract to accept the payment instrument.

Gradually, the market has adopted new payment instruments that fall outside the limits of the present legal regulation because of the specific range of the services they grant (European Central Bank, 2002). The functioning of traditional payment instruments, including credit cards, credit transfer, debit instruments (direct debit and debit cards), and electronic vouchers, has been carefully regulated by legal acts. Meanwhile, modern technologies offer new payment instruments, including prepaid cards, mobile billing, and e-money.

Until 2007, when the Directive of the European Council 2007/64/EC (Payment Services Directive 2007/64/EC; hereafter – PSD 2007) was adopted, the concept of an electronic payment instrument was defined only by the Commission Recommendation of 1997. The amendment of the provisions of the EU Recommendations of 1997, transposed into the Payment Services Directive 2007/64/EC, led to a new definition of an electronic payment instrument that included both the existing and newly developed electronic payment products. A payment instrument was technologically neutrally defined in Article 4 paragraph 23 of the Directive 2007/64/EC (Directive 2007) as: "any personalised device(s) and/or set of procedures agreed between the payment service user and the payment service provider and used by the payment service user in order to initiate a payment order". This definition therefore comprises a wider range of electronic payment instruments. Prior to 2007, problems used to arise regarding the due identification and acknowledgment of electronic payment instruments stored in workstations (direct non-autonomous electronic payment instruments) as a means of payment, whereas the new concept of an electronic payment instrument extended the definition to include all electronic instruments (autonomous electronic payment instruments and direct non-autonomous electronic instruments). Lithuania first defined an electronic payment instrument in 2003 by amending its Payment Law as follows:

> Electronic payment instruments are remote access instruments of payment and electronic money. The user of an electronic payment instrument (hereinafter referred to as User) is a client of a credit institution granted an electronic payment instrument by the credit institution. Remote access instruments of payment are defined as a means enabling the user to give electronic instructions to the credit institution on the disposal of funds in their account in the credit institution (Law on Payments, 2003).

The new concept of the payment instrument specifies that the instrument may be personalized, i.e. linked to a person, and may be used for remote identity verification by the bank or electronic payment service provider. Another important aspect of the concept is that the payment instrument may entail certain procedures. No physical item (a card or an equivalent media) is needed to make a payment – a user name, a password, or a variable password may be enough for identity verification. Such extension of the meaning of payment instrument helped to deal with a previously unresolved problem – whereas formerly payment instruments were understood only as

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tangible media, such as credit cards and the like, now such instruments may well include biometric data or a mobile phone application subject to party agreement and the availability of relevant technologies. The best and most widely used example of successfully agreed procedures in electronic payment is e-banking, where the user name, the password or generated variable password, and special mobile phone applications or data stored in the phone constitute conventional procedures to initiate and complete payments.

The contemporary Law on Payments of the Republic of Lithuania defines a payment instrument in line with the principle of technological neutrality with no discrimination of issuers (including all financial institutions along with credit institutions). "'Payment instrument' means any personalised device(s) and/or set of procedures agreed between the payment service user and the payment service provider and used by the payment service user in order to initiate a payment order" (Law on Payments, 2003). This definition has been originally transposed from the new Payment Directive 2015/2366 (hereafter – PSD2). The preamble of Directive PSD2 states that the existing and prospective market players should be granted equal business conditions so as to extend opportunities for new players to enter the market and ensure high-level user security in the use of payment services within the entire European Union. Equal conditions are likely to contribute to the efficiency of the entire payment system, grant a better choice and transparency of payment services, and increase user trust in the payments market.

Personalized devices mentioned in the definition of payment instruments are closely linked to personalized safety features, which are understood as data to be used for user authentication and agreed to by the payment service provider and the user. These features may include a wide range of forms, such as PIN codes, biometric data, or variable algorithm generated values. The PSD2 Directive also specifies the importance of personalized safety features, stating that they have to meet the payment-associated risk level. It is also important to secure conditions for the development of available user-friendly payment instruments, including low risk payments (e.g. contactless payments) that are subject to standard security exceptions independently on whether the payment is done by card or by smart phone. The PSD2 Directive emphasizes the safe use of personalized safety features to reduce the risks of theft and malicious practice. In that sense, user trust in measures granting confidentiality and in the integrity of personalized safety features is essential. Such measures typically include encryption systems based on the use of personal devices, such as card readers or mobile phones, that may be used by the service provider to send encryption data, e.g. text messages or e-mail messages (PSD2 preamble). It is the personal user devices that have actually extended the conventional understanding of the payment instrument, as the user is free to choose the device to store personalized safety features on (data necessary for contactless payment, login code generators, and electronic signature certificates). It has to be presumed that the use of identity verification codes is compatible with the user's duties concerning their payment instruments and personalized safety features (PSD2 preamble). The fact that the Directive associates possession of personalized devices with certain duties of the user is of great importance. Apart from the requirement for the device holder to use their payment device in accordance with the terms and conditions regulating issuance and use of the payment device (which must be objective, non-discriminatory, and proportionate), the user has two major duties (Law on Payments, 2003):

a) The user must immediately report the loss, theft, unauthorized use, or misappropriation of the payment device to the issuer of the payment service provider or an authorized representative of the service provider.
b) On receipt of the payment device, the user must take all possible actions to protect their personalized safety data. The latter, however, constitutes the major challenge to the developer of payment instruments as the user typically prefers simplicity to safety (weak PIN codes, ignored safety requirements, sharing with other people).

Compliance with the latter requirement may protect against unauthorized use of the payment instrument. To meet the requirement, the EU's technological safety standards had to be changed. One of the key solutions was the introduction of the EMV standard in payment cards. EMV is an international technical standard developed by

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Europay, MasterCard, and VISA in 1999. The standard sets safety requirements for any operations performed by chip payment cards and chip card devices, including chip card readers, payment terminals, and automated teller machines. The goal of the EMV standard is to unify the requirements independently across the payment system. The standard is now managed by EMVCo consortium. The EU Single Euro Payments Area (SEPA) project set the requirement for all payment cards issued within the EU to have an EMV standard IC chip along with the magnetic strip on 1 January 2011. The goal of the SEPA initiative is to develop a single area for payments in euros, with no discrimination between national and international payments. Within the SEPA area, credit transfer and direct debit operations in euros are subject to standard payment schemes and the application of uniform terms, rights, and obligations. One of the instruments envisaged by SEPA includes payment cards with integrated EMV standard IC chips. The magnetic strip was deemed unsafe because of the risk of theft of the data necessary for payment initiation stored in the magnetic strip, which could be read without the holder's awareness (by means of various fraudulent schemes). The EMV standard requires a mandatory PIN code to approve payment operations, thus enforcing the user's duty to protect their data. The EMV standard also provides for the use of contactless NFC (near field communication) payment cards, where data necessary for payment initiation are transferred by a radio signal. To improve user convenience, small value payments may be performed with no PIN requirement. Individual countries and financial institutions are free to set limits on transaction sums in view of their customer behaviour and available statistics. The limits typically vary from €12 to €47 (Statista, 2019). NFC payments still retain certain risks, but the user is given the option to choose whether to activate such payments or not. The PSD2 Directive aims to extend the use of user-friendly payment instruments and encourage the development of easy-access user-friendly payment instruments made for low-risk transactions by means of smart phone applications. Generally speaking, a payment instrument is no longer just a payment card or a batch of personalized features necessary to log in to e-banking. In the modern world, payment instruments may already be found in a great deal of personal electronic gadgets. The use of smart phones as payment instruments has been rapidly growing, and they have already become commonplace as payment instruments. Europe has seen an upsurge in wearable payments (a wearable device, for example a ring, bracelet, or smart watch, that has Near-Field Communication (NFC) capabilities). Having linked these items to your debit or credit card, you can pay in the same contactless way (Wearable payments, 2019). Thus, payment instruments have already come to include bracelets, rings, smart watches, or key chains. Surveys reveal that sums paid by means of wearable payments are set to soar in the near future. According to market research and consulting firm Reports and Data, the global wearable device market is expected to grow from $312 billion in 2018 to over $1.1 trillion in 2026 (MasterCard, 2019).

Essentially, payment instruments may not be identified solely as conventional payment cards or remote access instruments, as there is a much wider range of personalized devices in the market that may have the attributes of payment instruments and may be used for payment initiation and completion. In terms of criminal law, it is very important to credibly identify such instruments and their use in order to duly qualify payment associated criminal offences.

Methodologically, this research focuses on the regulation of electronic payment instruments in the EU and Lithuania, and also on the understanding of payment instruments in Lithuanian criminal law. The authors use qualitative research methods, such as the method of textual analysis and the analysis of case law in the field of criminal cases.

2. The Concept of Payment Instruments in Criminal Law

The requirement of criminal law to clearly define the content of payment instruments should be primarily associated with the principles of protection of legitimate expectations, legal certainty, and legal security. It is the aspiration for legal certainty and clarity that implies certain mandatory requirements for legal regulation: "it has to

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be clear and cohesive, legal norms must be stated clearly and contain no ambiguities" (rulings of the Constitutional Court of the Republic of Lithuania of 13 May 2010, 22 June 2009, 25 December 2008, 26 January 2004 and 30 May 2003). However, in view of the progress and trends in technological development, criminal legal regulation also has to be timely, and the understanding of payment instruments has to correspond to changes in technologies. Having in mind the aforementioned, criminal law needs a concept of payment instruments that is sustainable and, at the same time, reflects modern trends in the financial sector. The harmonization of these two aspects is probably the major issue in safeguarding a cohesive interaction between law (including criminal law) and technologies, i.e. the enforcement of the key provisions of criminal liability alongside the dynamic interpretation of legal norms concerning technological development. Also, interaction between law and technologies at the legislative level should reflect an idea that "[l]aw develops in an evolutionary way, not in a revolutionary way" (Schellekens, 2006).

The need to decide which items contain elements of payment instruments in criminal law is attributable to the fact that Lithuania's Criminal Code imposes criminal liability for the illegal disposal of such instruments. For the sake of accuracy, is has to be mentioned that Lithuania's Criminal Code criminalizes the illegal disposal of: 1) an electronic payment instrument; 2) a misappropriated electronic payment instrument or the data of the identity verification device of the owner of such a payment instrument sufficient to initiate a financial transaction; and 3) an instrument (or instruments) of crime – technical equipment, software, or other means directly intended or tailored to fake or forge electronic payment instruments or their parts. Although the aforementioned elements of crime are included in Article 214 of the Criminal Code as alternatives, they are all, be they data or instruments (tools) of crime, directly related to an electronic payment instrument. An exact definition of the content of a payment instrument is only possible after the identification of what should be deemed an electronic payment instrument in criminal law. The earlier version of Article 214 of the Criminal Code imposed criminal liability for the illegal disposal of fake payment instruments. The provision was changed in 2007 to entrench a much wider concept of an electronic payment instrument, as for a long time the concept of an electronic payment instrument pivoted on Council Framework Decision 2001/413/JHA of 28 May 2001 combating fraud and counterfeiting of non-cash means of payment (hereafter – Decision 2001/413/JHA). Scientific sources used to maintain that payment instruments had certain features: "a material expression and a special purpose – non-cash payments, transfer of money or monetary sums" (Piesliakas & Dvilaitis, 2008). Obviously, this interpretation was similar to the definition provided by Decision 2001/413/JHA, defining a payment instrument as "a corporeal instrument, … enabling, by its specific nature, alone or in conjunction with another (payment) instrument, the holder or user to transfer money or monetary value …, which is protected against imitation or fraudulent use …" (Article 1, paragraph (a)). However, today's interpretation of a payment instrument in terms of criminal law has to be made in view of the fact that the EU adopted Directive (EU) 2019/713 of the European Parliament and of the Council on 17 April 2019, on combating fraud and the counterfeiting of non-cash means of payment, and replacing Council Framework Decision 2001/413/JHA (hereafter – Directive 2019/713). As the scope of application of the directive also includes non-corporeal payment instruments (paragraph 15 of the Preamble), the issue of the content of the electronic payment instrument becomes of key importance.

As Directive 2019/713 states, "[r]ecent years have brought not only an exponential increase in the digital economy, but also a proliferation of innovation in many areas, including payment technologies" (Preamble paragraph 6). New payment technologies are closely related to new payment devices, which become more and more accessible to a massive number of users, grant new opportunities for financial operations, and make the process of payment less complex. As a wide range of activities move into the electronic environment, the impact of new technologies becomes inevitable. However, the rapid development of payment technologies is inseparable from risks emerging in the electronic environment. As "crime follows opportunity" (Clough, 2011), the electronic environment faces a variety of types of fraud involving the use of modern payment instruments. One of the ways to combat fraud is by inflicting criminal liability for the illegal disposal of electronic payment instruments. However, in view of constant technological development, it is essential to regularly reassess whether the present

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criminalization of illicit acts is up-to-date, and whether the existing legal norms can still be applied to the types of fraud newly emerging in the electronic environment. This issue may also be found in Directive 2019/713 which, *inter alia*, states that "[n]ew payment technologies involve the use of new types of payment instruments, which, while creating new opportunities for consumers and businesses, also increase opportunities for fraud. Consequently, the legal framework must remain relevant and up-to-date against the background of those technological developments" (Preamble paragraph 6). Also, a further insight may be made by assessing the prospects of the development of payment instruments and producing estimations as to whether the notions used in Lithuania's Criminal Code will be applicable to future payment opportunities, which may be forecast in view of trends in the development of payment technologies. Specifically, the question concerns notions describing the content of criminal acts defined in Article 214 of Lithuania's Criminal Code in terms of their applicability to electronic payment instruments emerging in the financial sector.

Presumably, the widespread criminalization of the illegal disposal of electronic payment instruments in Lithuania is predetermined, *inter alia*, by the fact that – implied already in the title of Chapter XXXII of the Criminal Code – such disposal is deemed a serious threat to the national financial system. Specifically, as the judicial practice shows, this threat is to the regulation of the use and disposal of electronic payment instruments intended for non-cash payments (Lithuanian Supreme Court ruling of 24 March 2020 in criminal case No. 2K-77-1073/2020). Justification for the gravity of the crime of illegal disposal of electronic payment instruments may also be based on the provisions of Directive 2019/713, which states that "[f]raud and counterfeiting of non-cash means of payment are threats to security, as they represent a source of income for organised crime and are therefore enablers for other criminal activities such as terrorism, drug trafficking and trafficking in human beings" (Preamble paragraph 1). Since the financial system, as an intermediate link to access and invest in funds, involves financial intermediaries, it is equally important to ensure that "[f]raud and counterfeiting of non-cash means of payment also represent obstacles to the digital single market, as they erode consumers' trust and cause direct economic loss" (Preamble, paragraph 2). In describing the threats posed by the illegal disposal of electronic payment instruments, it is also important to consider a wider range of institutions involved in the functioning of financial markets, instead of associating financial intermediaries merely with financial institutions, i.e. banks. For example, Gai and Kapadia (2019) stated in their analysis of networks and systemic risk in the financial system that "it is likely to become increasingly important to examine network effects across the wider financial system, encompassing insurance companies, investment funds, and other non-bank financial intermediaries". The wider interpretation of the notion of a financial intermediary can also be seen in the judicial practice of Lithuania's courts. For example, in one of the reviewed criminal cases the court stated that the accused illegally disposed of a misappropriated filling station credit card along with the PIN number required to carry out financial operations. As the court identified the illegal disposal of a misappropriated electronic payment instrument along with data of the owner's identity verification, the act was qualified as a crime as described in Article 214 of the Criminal Code (Order of District Court of Klaipėda, Chamber of Klaipėda City of 21 September 2018 in criminal case No. 1-937-795/2018). Lithuania's judicial practice includes cases where an act was qualified as a crime, as described in Article 214 of the Criminal Code, as the accused illegally disposed of a payment card issued by an electronic payment institution licenced by Lithuania's bank along with login data sufficient to initiate a financial transaction (Ruling of District Court of Tauragė, Chamber of Šilutė of 4 October 2018 in criminal case No. 1-512-733/2018). The judicial practice also includes cases where reference to the same article of the Criminal Code was made to qualify the illegal disposal of payment instrument verification data, i.e. login data of an illegally opened account in an electronic payment service company, sufficient to initiate a financial transaction (Ruling of District Court of Vilnius City of 11 January 2018 in criminal case No. 1-371-1034/2018).

In defining the concept of a payment instrument in criminal law, an important factor is the principle of technological neutrality. The implementation of the principle, including in criminal law, may help to avoid the limitations that may arise in the application of legal norms due to certain technological aspects involved: "[t]he benefit of technological neutrality based on the rationale of sustainability would be that it makes regulation 'time-

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proof'" (van der Haar, 2007, p. 23). Having analysed various aspects of the aforementioned principle, it becomes obvious that the requirement to maintain technological neutrality can only be met by properly stating the content of the notion. As I. M. van der Haar states, "lawmakers would need to adhere to a more functional definition, meaning a definition solely relying on functional concepts, thereby leaving out all references to technologies" (2007, p. 23). The importance of functions and the most common features – not the specific types of technologies – have also been emphasized by P. Ohm: "[t]ech-neutral provisions refer to technology in general, vague, open-textured terms that specify purposes, effects, functions, and other general characteristics" (2010). In interpreting electronic payment instruments in criminal cases of the illegal disposal of electronic payment instruments, in line with the principle of technological neutrality, the priority should be given to the intent of the instrument and the functions of the technology chosen for financial operations instead of the technology itself. Such a priority would allow safeguarding a sufficiently sustainable understanding of an electronic payment instrument and help to avoid possible loopholes in criminal law caused by changes in technology. The importance of technological neutrality in view of the development and dissemination of technologies is also hinted at in Directive 2019/713. This Directive notes that modern payment instruments granting the user new opportunities may be used for fraudulent purposes; therefore "the legal framework must remain relevant and up-to-date against the background of those technological developments, on the basis of a technology-neutral approach" (Preamble, paragraph 6). The provisions of the preamble of the Directive reflect, *inter alia*, the notions included in Directive 2019/713. For instance, a non-cash payment instrument is defined as "a non-corporeal or corporeal protected device, object or record, or a combination thereof, other than legal tender, and which, alone or in conjunction with a procedure or a set of procedures, enables the holder or user to transfer money or monetary value, including through digital means of exchange" (Article 2, paragraph (a)). As can be seen from Directive 2019/713, a non-cash payment instrument is described by means of abstract, technologically neutral notions such as *device, object, or record*, primarily focusing on the features' indication of their intent and functions – the instrument has to *enable the holder or user to transfer money or monetary value.* As digital economics rapidly develops and introduces more and more innovations, the definition of payment instruments given in Directive 2019/713 has envisaged opportunities to apply it not only to existing payment technologies, but to prospective ones as well.

The concept of an electronic payment instrument is not explicitly specified in the Lithuanian Criminal Code, leaving the interpretation of its content at the discretion of the courts tasked with the responsibility of deciding in their hearings whether an illegally disposed instrument contains features of an electronic payment instrument. Having reviewed the judicial practice of the Lithuanian Supreme Court, it becomes clear that one of the sources helping to identify the content of a payment instrument in criminal hearings is Lithuania's Law on Payments. For example, the Lithuanian Supreme Court ruling of 24 March 2020 in criminal case No. 2K-77-1073/2020 notes that "'payment instrument' means any personalised device(s) and/or set of procedures agreed between the payment service user and the payment service provider and used by the payment service user in order to initiate a payment order", which is fully compliant with the frequently referred to provisions of the Law on Payments. It is equally important that such an understanding of a payment instrument in criminal law fully complies with the requirements of the principle of neutrality, applicable, *inter alia*, to the terminology used in legal acts. Here, it is necessary that "[technologically] neutral regulation appears to have three main aims: futureproofing, online and offline equivalence, and encouraging the development and uptake of the regulated technology" (Reed, 2007).

To decide if the aforementioned technologically neutral concept of a payment instrument and its data helps to deal with practical problems likely to arise in the qualification of crimes, a survey of Lithuania's judicial practice has been conducted. The survey summarized 158 rulings of district courts in the period of 2018–2020, which stated that the accused committed, *inter alia*, a criminal act as described in Article 214 of the Criminal Code, besides other crimes (see Table 1).

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Table 1. Object of the crime as described in Article 214 of the Criminal Code in Lithuania's judicial practice

Object of the crime	Identified cases	Percentage (%)
A misappropriated genuine corporeal electronic payment instrument	106	67
Misappropriated non-corporeal payment instrument verification data, sufficient to initiate a financial operation	41	26
Data of a misappropriated genuine electronic payment instrument, sufficient to initiate a financial operation	7	4
A fake corporeal electronic payment instrument	3	2
Possession of technical equipment and software intended or tailored to fake electronic payment instruments.	1	1

Source: the authors' research

The results of the survey reveal that the vast majority of cases of illegal disposal of electronic payment instruments are attributable to misappropriation and possession of a genuine electronic payment instrument (67%). The disposal of misappropriated bank cards (including contactless) was probably most typical However, when considering whether an electronic payment instrument as specified in Article 214 of the Criminal Code may be of a non-corporeal nature, it has to be noted that the survey revealed several cases of the illegal disposal of payment instrument verification data of the owner of a misappropriated non-corporeal electronic payment instrument, sufficient to initiate a financial operation (26%). Such cases were mostly associated with the illegal acquisition of data sufficient to perform a financial operation in e-banking. As Lithuania's Supreme Court states, such data constitute personal electronic identity data, provided by the bank under a bank account contract stipulating the terms and conditions of the use of the account (Lithuania's Supreme Court ruling of 10 October 2013 in criminal case No. 2K-389/2013). Since the initiation of financial operations in e-banking is of a specific nature, criminal cases of the latter category relate to the illegal disposal of identity verification codes and login passwords (for example: the ruling of District Court of Kaunas, Chamber of Kaunas of 6 February 2019 in criminal case No. 1-576-573/2019; the ruling of District Court of Vilnius City of 5 March 2018 in criminal case No. 1-184-270/2018; and the ruling of District Court of Alytus, Chamber of Druskininkai of 6 September 2018 in criminal case No. 1-982-182/2018). It also has to be noted that the provisions of Article 214 of the Criminal Code state that payment instrument verification data (including e-banking data) are deemed to be objects of the crime described in the same article of the code only in cases where they are sufficient to initiate a financial operation. Another aspect of the aforementioned criminal cases that is important for our analysis is that courts allow a wider approach to the concept of an electronic payment instrument by attributing to it the potential to have more than merely material characteristics. Lithuania's Supreme Court notes in its judicial practice that "all monetary operations are carried out in e-banking by means of human-written computer programs. Instead of direct liaison, the client communicates with the bank via an electronic system. The system is designed to receive instructions and perform operations only when correct user identification codes are submitted" (Ruling of Lithuania's Supreme Court of 9 October 2001 in criminal case No. 2K-682/2001). The way financial operations are performed predetermines the absence of any links between the use of electronic channels (e.g. the internet of e-bank) and the corporeal payment instrument. In such cases, the notion of an electronic payment instrument also entails "an electronic system of rendering bank services via the Internet along with certain procedures applicable for payment initiation and agreed between by the payment service provider and the payment service user" (Marcinauskaitė, 2019). As Laurinaitis notes, the best example "illustrating procedures agreed in electronic payment and widely used in Lithuania is e-banking, where a user name, a password and password cards constitute conventional procedures of payment initiation and completion" (2015). A similar interpretation may also be observed in the judicial practice that has been reviewed. For example, in one criminal case the court arrived at the conclusion that, apart from other punishable acts, the accused illegally acquired and kept electronic payment instrument verification data, namely e-banking login data. Such data were considered by the court to be payment instrument verification data attributable to an electronic payment instrument – the e-banking system of the specific bank – and therefore sufficient to initiate a financial operation (ruling of District Court of Kaunas, Chamber of Kaunas of 2 August 2018 in criminal case No. 1-2663-917/2018).

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Analysis of the judicial practice demonstrates that amendments to the Criminal Code made in 2007 which identify electronic payment instruments as possible objects of crime provided opportunities for their wider interpretation, extending the notion of an electronic payment instrument to include both corporeal and non-corporeal means of payment. This aspect is of particular importance in view of the fact that Directive 2019/713 aims at entrenching the non-corporeal nature of payment instruments in criminal law. In view of the fact that today's judicial practice interprets the notion of payment instruments in accordance with the comparatively broad and technologically neutral definition laid down in the Law on Payments, Article 214 of the Criminal Code will continue to be applicable to future technologies as the payment instrument remains identifiable not by its form, but by its functioning as a means of payment (i.e. it provides the possibility to transfer money or monetary value or to initiate a payment operation).

Having analysed the provisions of Directive 2019/713, one can note several relevant aspects in the context of criminal responsibility for the illegal disposal of electronic payment instruments. For instance, criminal responsibility should be primarily provided for the illegal disposal of payment instruments subject to special protection against counterfeiting and misappropriation. In view of this, the issuance of specially protected payment instruments should be encouraged (Preamble, paragraph 12). Since an instrument is only deemed as a payment instrument on the condition that it actually ensures the possibility of initiating and completing a payment operation, "unlawfully obtaining a mobile payment application without the necessary authorisation should not be considered as an unlawful obtainment of a non-cash payment instrument as it does not actually enable the user to transfer money or monetary value" (Preamble, paragraph 8). Such conditions are relevant in regard to criminal law as an *ultima ratio* remedy. Criminal acts involving the illegal disposal of specially protected payment instruments that can actually initiate and complete a financial operation may be qualified in accordance with the objective criteria as gravely dangerous, and seriously threatening the financial system. Consequently, criminal penalties may be inflicted upon individuals for such acts. Finally, as Directive 2019/713 lays down, sanctions should not be imposed for the legal use of the payment instrument (Preamble, paragraph 13). The judicial practice of Lithuania's Supreme Court maintains that criminal responsibility, provided for in Article 214 of the Criminal Code, can only be inflicted for the

> unlawful acquisition, storage, transfer or handling of payment instrument verification data sufficient to initiate a financial operation. It is also important in this respect that in the presence of consent by the owner or an authorized user of the payment instrument to specific acts of a third party (e.g. to the use of the payment instrument for the purpose of a limited sum financial operation), such acts of the third party are not usually deemed illegal under Article 214 of the Criminal Code (Lithuania's Supreme Court ruling of 24 March 2020 in criminal case No. 2K-77-1073/2020).

Conclusions

It can be concluded that Lithuania's legal acts define a payment instrument in line with the principle of neutrality, with no discrimination between issuers – comprising all possible financial institutions and including a wide range of payment instruments. However, the problem of identifying specific payment instruments is still frequently encountered in practice. As a result, the concept of an electronic payment instrument as an object of a crime is not strictly defined in Lithuania's Criminal Code, leaving enough space for its wide interpretation. The technologically neutral nature of Lithuania's legislation has ensured the opportunity for an electronic payment instrument to be identified in criminal law not by its form, but according to the functions it performs.

During recent decades, conventional payment instruments have transformed considerably to become completely different from their former equivalents in terms of their form and their system. Today's instant electronic payments are done by means of completely novel payment instruments, where personalized safety data are no longer stored in IC cards as they have been replaced by smart devices such as mobile phones, smart watches, and bracelets. In the context of criminal law, these new types of instruments may be acknowledged as electronic

payment systems, and as the object of a crime where the act in question indicates the intentional illegal disposal of a specially protected payment instrument that can initiate and complete a financial operation. At the same time, it is essential to prove that the culprit had the direct intention to misappropriate the item specifically as a means of payment.

Directive PDS2 aims to extend the use of user-friendly payment instruments and encourages the development of easy-access, user-friendly payment instruments integrated into mobile or wearable devices. Despite this, Lithuania's judicial practice, particularly in criminal law, is often faced with the specific practical problem of the identification of such instruments, as they are often mistaken for ordinary items because of a failure to identify the elements of their integrated payment functions.

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THE LATEST TRANSITION OF MANUFACTURING AGRICULTURAL PRODUCTION AS A RESULT OF A UNIQUE GENERATION OF HUMAN CAPITAL IN NEW ECONOMIC CONDITIONS

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Abstract. This paper studies problems in human capital formation at the present stage of World economic development. The authors conduct a correlation and regression analysis of the dependence of financial indicators of agricultural organizations and enterprises with workers' qualifications. The results suggest that the qualifications of workers significantly affect the financial stability of agricultural enterprises, and that state authorities and businesses often fail to place sufficient emphasis on improving the qualification level of employees. The study shows that the degree of acceleration of human capital of employees affects cost efficiency, net profit, gross revenue, and other resulting indicators. The following methods were used in the research: monographic, statistical-economic, and correlation and regression analysis.

Keywords: human capital; resulting indicator; cost efficiency; net profit; revenue; profitability

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JEL Classifications: O15, O47, Q13.

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1. Introduction

Agriculture is a strategic sector of the economy, and its successful functioning ensures the solution of an important national economic problem, food security for the entire country. Therefore, it is crucial to determine the most important factors on which the level of development of agriculture for the present and future depend. According to classical political economics, the fundamental factors of production are natural resources, capital, labor, and entrepreneurial ability (Bykanova and Akhmadeev, 2019). The concept of human capital has been one of the most debated over the past century in the economic, psychological and philosophical fields, and in scientific and popular science literature (Mullakhmetov et al., 2018; Sharafutdinov et al., 2017; Dmitrieva et al., 2017; Latyshev, 2015; Klochko et al., 2016; Bernardi, 2019, Laužikas, Miliūtė, 2020). The consideration of the essence, structure, and specific features of human capital, the potential of its state and development, as well as the possibilities of its improvement require the identification of such factors or indicators and a logical justification that would ensure their validity for analysis. However, the complexity and multifaceted nature of the concepts under study sometimes make it impossible to identify even the limits of such a study. The purpose of this paper is to analyze the uses of labor resources and study their impacts on production indicators. Given the organizational positive outcomes of human resource development (HRD) practices like organizational effectiveness, sustainable competitive advantage, and organizational commitment, the current study was designed to detect the impact of HRD practices (employee training, employee empowerment, employee promotion) as independent variables on employee engagement and employee performance as dependent variables and to notify those who are interested. A quantitative descriptive-analytical method was adopted for the current research paper (Rumman, 2020; Gapsalamov et al., 2020; Voronkova et al., 2020). Social capital expresses the social relationship between people in an organization. A good relationship between employers and employees can enhance commitment and productivity. It also makes a positive contribution to organizational performance. Universities and other higher education institutions are the main entities that create, innovate and develop social capital in a country (Gladilina et al., 2018; Kazmina et al., 2020; Rahman, 2018; Rahman and Bobkova, 2017; Girdzijauskaite et al., 2019). The development of social capital effectively allows higher education institutions to advance the economic, social and political development of a country. Institutions of higher learning in Ghana should innovate and develop human resources via social capital for the sake of the country's socioeconomic advancement. Innovation in organizations is more likely to happen if social relations are taken into due account (Akpey-Mensah, 2020; Akhmetshin et al., 2018).

2. Methodology

The main methods used for this study are general scientific methods of cognition - system analysis, dialectics, methods of scientific abstraction, analysis and synthesis, economic and statistical methods, comparative analysis, and correlation and regression analysis.

The research focuses on the key factors and conditions contributing to human capital within the region's agricultural industries as well as the relationships that arise through the process of forming human capital. The theoretical and methodological framework of the study was the work of Russian and foreign scientists in the field of personnel management, personnel work, statistical collections, regulatory acts of the legislative and executive authorities of Russia, and the constituent entities of the Russian Federation; sectoral statistical reporting of the Ministry of Agriculture of the Russian Federation and regional governing bodies of the agro-industrial complex.
The object of observation is the labor resources of agricultural organizations in the Novosibirsk region. The object of the research is organizational and economic relations that arise in the process of forming the labor resources of agriculture in conditions. The subject of the research is mechanisms and trends that affect the formation of agricultural labor resources.

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3. Results

The starting point for analyzing the problem of human capital is the realization that any single individual has a dual nature. (Hereinafter "individual" and "human" will be used interchangeably). Humans are both biological and social beings. This dual nature determines the development of an individual's personality as well as his potential as a set of vital economic resources (Minakhmetova et al., 2020; Yemelyanov et al., 2018). The individual develops his personal human capital through the process of socialization. This transformation is carried out through a complex system of interactions between an individual and society, which have an integrated character (both in a horizontal and a vertical form). Therefore, any holistic approach (or close to it) which explains the essence and meaning of human capital depends on recognizing the individual as the carrier of human capital. In this respect we can speak of individual or of collective human capital. "Collective" can refer to any community of people, both hierarchical (i.e., relying on formal social institutions) and non-hierarchical (for example, a spontaneous rally) but exhibiting a meaningful activity. These definitions relate to the predicate "human." On the other hand, in the formula of "human capital" the position of a subject is taken by a certain reality denoted by the concept "capital." In this discourse, the defining characteristics of the entire volume of the concept of a "human capital" include everything that brings income initiated by human activities (Popok et al., 2020; Panfilova et al., 2020). The main indicator (measuring factor) characterizing human capital is the number of employees with higher professional education. In 2018, the number of employees with a specialized education made up 2071 people including 913 with higher education and 1158 with secondary vocational education. At the same time, 25.3% of employees did not have any specialized education (Kusnetzova, 2020; Oteshova et al., 2020). See table 1 below.

Table 1. Human Resources of the Agricultural Sector in the Novosibirsk

Categories of Employees	Employees with a professional agricultural education						having no specialized education		demand	% of sufficiency
	higher		vocational		Total, having a specialized education					
	number	%	number	%	number	%	number	%		
Specialists, total (except senior specialists)	**913**	**32,9**	**1158**	**41,7**	**2071**	**74,7**	**703**	**25,3**	**257**	**91,5**
Agronomists of all specialties	79	69,9	24	21,2	103	91,2	10	8,8	12	90,4
Livestock specialists of all specialties including stock breeders, breeding technicians, breeding record keepers	71	48,0	49	33,1	120	81,1	28	18,9	20	88,1
Veterinarians, veterinary assistants, veterinary officer	85	25,0	165	48,5	250	73,5	90	26,5	51	87,0
Herd reproduction specialists	8	3,7	84	38,7	92	42,4	125	57,6	39	84,8
Engineers and technicians of all specialties (mechanics, technologists, etc.)	104	38,5	100	37,0	204	75,6	66	24,4	15	94,7
Power engineers and electricians	67	27,0	111	44,8	178	71,8	70	28,2	18	93,2
Land reclamation engineers and hydraulic technicians	0	0,0	1	100,0	1	100,0	0	0,0	3	25,0
Economists of all specialties	69	71,6	2	26,9	66	98,5	1	1,5	2	97,1
Accountants of all specialties	997	37,7	65	48,6	804	86,3	128	13,7	65	93,5
Environmentalists	8	100,0	3	0,0	5	100,0	0	0,0	3	62,5
Other professional staff	462	21,9	29	35,3	248	57,3	185	42,7	29	93,7

Source: based on the data obtained from (Form 1-KMP).

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It is worth noting that in the current conditions, the agricultural sector is provided with workers by 91.5%, while in 2015, the human resourcing made up 78%.

In our opinion, the fundamental factor contributing to the increase in the main financial results of the agricultural sector is the formed human capital of workers expressed in the qualifications of employees. To determine the degree of influence of the qualifications of specialists on the main performance indicators, we use the correlation and regression analysis. The correlation-regression analysis represents a statistical method for studying the influence of one or more variables on the final result. Independent variables are called regressors, and dependent variables are called criteria variables. Before assessing the dependence of these indicators, it is necessary to clarify which particular indicators should be used for the economic efficiency of agricultural enterprises. The main resulting financial indicators include profit before tax, net profit, losses, and the number of profitable and unprofitable enterprises and their share. These indicators give an integrated assessment of production activities which subsequently serves as the basis for calculating the cost efficiency index. In order to further determine the needs of the agricultural industry in qualified personnel, the authors set the goal of this study to identify the availability and forms of dependence of the number of profitable enterprises, profitability, net profit, and the gross agricultural output on the number of employees with higher agricultural education. This method relies on the processing of statistical information provided by state statistics authorities and the consolidated balance sheet of agricultural enterprises in the Novosibirsk Region. To analyze the dependence of the financial results of agricultural production on the qualifications of workers, a sample of t = 18 was selected for the period from 2000 to 2018, the results of which are presented in Table 2.

Table 2. Dynamics of the resulting performance indicators of agricultural enterprises in the Novosibirsk Region

	Indicators								
Years	The number of profitable agricultural enterprises	In% of the total number	Profit before tax	Sales revenue, thousand rubles	Net profit, thousand rubles	Gross output of agriculture presented in actual current prices, million rubles	Crop production	Livestock	Cost efficiency,%
t	**Y1**	**Y2**	**Y3**	**Y4**	**Y5**	**Y6**	**Y7**	**Y8**	**Y9**
2000	872	75,4	1343571	6502949	830359	9509,7	5278,5	4231,2	4,8
2001	798	73,2	1866933	9264982	1364635	12626,2	6386,0	6140,2	6,1
2002	538	52,8	780169	9073836	3678971	10529,5	3855,7	6673,8	5,4
2003	578	60	1158617	10431863	344908	11873,3	4553,0	7320,3	7,8
2004	615	68,8	1772350	12053834	1052933	15712,0	7135,7	8576,3	6,5
2005	410	54,0	1256800	12467449	3331891	15612,7	6054,4	9558,3	7,7
2006	610	82	2714872	12655273	3465878	16340,8	6574,9	9765,9	9,0
2007	580	89,0	4046595	15277460	3678992	22517,9	10826,9	11691,0	14,3
2008	580	89,9	2715720	20555739	2294580	28638,7	13298,7	15339,8	10,8
2009	518	83,8	2744345	20273148	2160094	30233,7	13888,4	16345,3	8,4
2010	631	85,6	2793302	20651296	2934738	26051,2	9638,4	16412,8	10,3
2011	578	85,3	3383023	22841950	2758271	35106,3	13923,4	21182,9	10,3
2012	557	75,5	3703660	28967662	3086480	31742,8	9171,9	22570,9	11,7
2013	760	78,5	4622834	30683221	5020158	39928,2	14412,2	23516,0	6,3
2014	702	78,9	5938927	37438483	5829786	40260,4	13421,3	26839,1	18,4
2015	757	81,1	6645871	41350377	5759234	47929,4	18339,6	29589,8	21,3
2016	773	80,2	6485959	45790350	4359234	51113,4	19896,2	31217,2	16,8
2017	888	75,4	6020951	46839963	4356110	54254,5	20706,5	33548,0	11,2
2018	814	74,7	5321704	49684975	3629529	52655,8	19249,9	33405,6	7,1

Source: based on the data obtained from (Financial and economic activities of enterprises and organizations of the Novosibirsk region).

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Explanatory variable X_1 is the number of employees with higher education, a person (Figure 1).

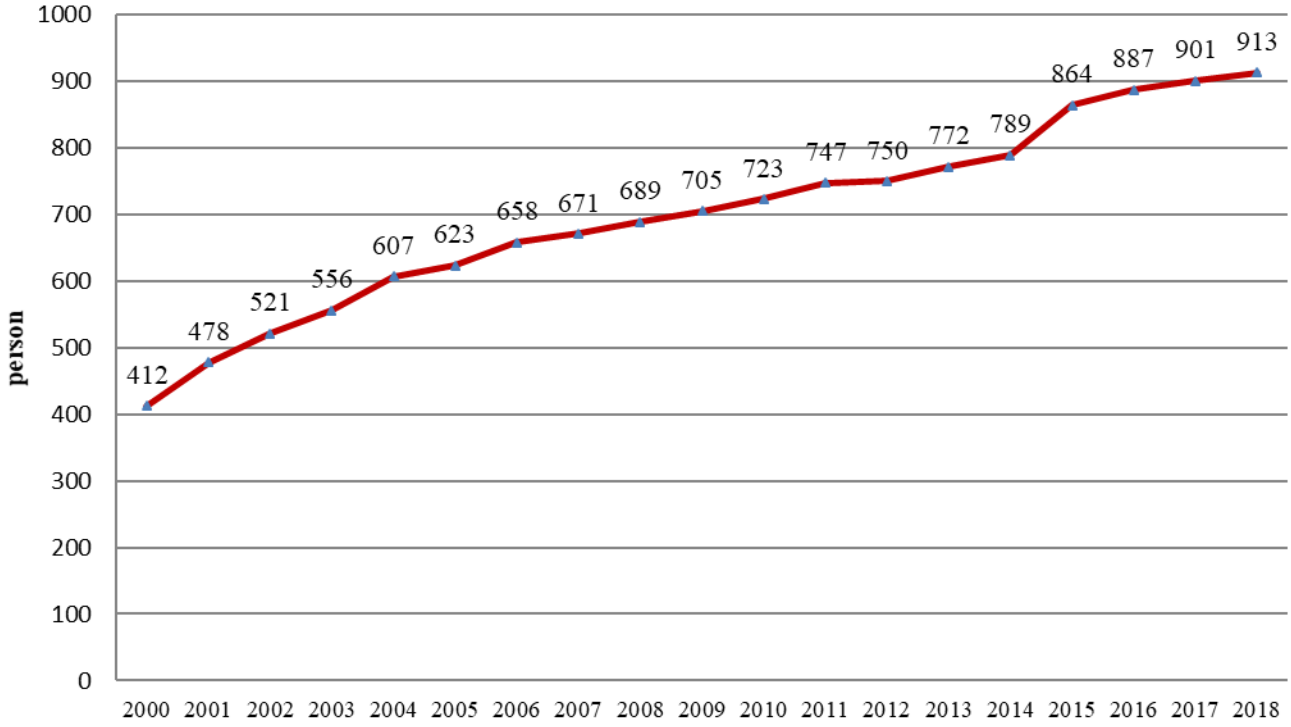

Figure 1. Dynamics of explanatory variable X_1
Source: based on the data obtained from (Agriculture of the Novosibirsk Region, 2019).

According to Figure 1, we will conduct a graphical analysis of factor X_1 according to its data from 2000 to 2018. The dynamics of factor X_1 has a pronounced upward trend. We draw the first hypothesis: there is an increase in the number of employees with higher education. The growth rate of factor X_1 decreases in time, except for 2003, 2005, 2010, and 2016. In 2003, 2005 and 2010 there was a slight increase in growth rates that did not affect the overall dynamics of factor X_1, and in 2016 there was a noticeable increase in the growth rate. We draw the second hypothesis on the change in factor X_1. The general trend of changes in the growth rate of factor X_1: there is a decrease in the growth rate of factor values. Thus, in terms of the number of employees with higher education from 2001 to 2018, the following hypotheses are true: there is an increase in the number of employees and a decrease in the growth rate of the number of employees with higher education.

Preliminary statistical analysis of production factors. To study the relationship between the number of employees with higher education and production in agriculture, we will determine the production factors which we will consider as effective indicators. As such indicator, we take the following: the gross income of enterprises, the profit of enterprises before tax, their net profit, revenue from sales presented in actual prices, cost efficiency, as well as the number of profitable and unprofitable enterprises. As indicators of profitable and unprofitable enterprises, it is possible to use their share in the total number of enterprises. These indicators will be connected with absolute values, so their study is auxiliary.

Our analysis will be based on the statistical information provided by the state statistics authorities and the consolidated balance sheet of the agricultural organizations of the Novosibirsk Region, and the sources.
As with independent variable X_1, we will sequentially conduct a graphical analysis of changes in production factors.

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These factors are indicated as variable Y:
Y_1 – gross income of enterprises;
Y_2 – profit before tax;
Y_3 – net profit;
Y_4 – sales revenue;
Y_5 – cost efficiency.

Since the profit indicator is the main indicator characterizing the result of the entrepreneurial activity, we consider it reasonable to analyze the dynamics of the number of profitable agricultural enterprises (Figure 2).

Table 3. The number and proportion of profitable and unprofitable agricultural enterprises in the Novosibirsk Region

Years	The number of profitable agricultural enterprises	In % of the total number	Profit before tax	The number of unprofitable agricultural enterprises	In % of the total number	Negative profit
2000	872	75,4	1343571	285	24,6	300742
2001	798	73,2	1866933	292	26,8	470117
2002	538	52,8	780169	480	47,2	654804
2003	578	60	1158617	578	40	860380
2004	615	68,8	1772350	615	31,2	446340
2005	410	54,0	1256800	410	46	395856
2006	610	82	2714872	198	18	446340
2007	580	89,0	4046595	125	11	395856
2008	580	89,9	2715720	65	10,1	284994
2009	518	83,8	2744345	100	16,2	381739
2010	631	85,6	2793302	106	14,4	582818
2011	578	85,3	3383023	100	14,7	376932
2012	557	75,5	3703660	181	24,5	809068
2013	760	78,5	4622834	208	21,5	1462152
2014	702	78,9	5938927	188	21,1	809657
2015	757	81,1	6645871	176	18,9	738003
2016	773	80,2	6485959	191	19,8	595470
2017	888	75,4	6020951	289	24,6	1542755
2018	814	74,7	5321704	275	25,3	1570263

Source: based on the data obtained from (Agriculture of the Novosibirsk Region, 2019)

Over the past ten years, the proportion of profitable agricultural enterprises has been stable; the number of profitable organizations exceeds the number of the unprofitable ones. So, in 2018, the share of profitable enterprises made up 74%, the unprofitable ones - 26%. The amount of profit of agricultural enterprises of the Novosibirsk Region before tax made up 5 321 704 thousand rubles; the net profit made up 3 629 529 thousand rubles.

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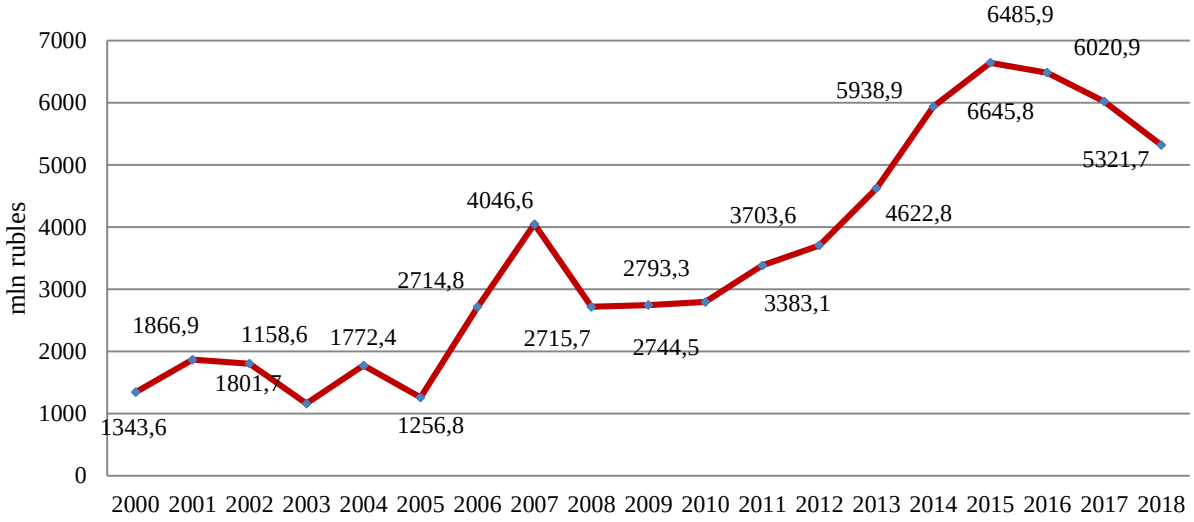

Figure 2. Profit before taxation of agricultural enterprises of the Novosibirsk Region
Source: based on the data obtained from (Agriculture of the Novosibirsk Region, 2019)

The result of the correlation and regression analysis showed that the qualifications of agricultural workers have a strong impact on profits. The value of the correlation coefficient is 0.89 (Table 4). There is a direct weak link between the number of profitable enterprises and the level of education of employees which confirms a correlation coefficient of 0.25. From an economic point of view, the growth of profitable agricultural enterprises can be explained by the imports phase-out program, the imposition of sanctions on a number of food products, the depreciation of the ruble, and the food price increase.

Table 4. The results of the correlation analysis of the dependence of the number of employees with higher education on the number of profitable and unprofitable agricultural enterprises in the Novosibirsk Region

	t	*X1*	*X2*	*X3*	*X4*	*X5*	*X6*	*X7*	*X8*	*X9*	*X10*	*X11*	*X12*	*X13*	*X14*	*X15*	*X16*	*X17*	*X18*
t	1,0																		
X1	0,3	1,0																	
X2	0,4	0,2	1,0																
X3	0,9	0,5	0,5	1,0															
X4	- 0,5	- 0,1	- 0,9	- 0,5	1,0														
X5	- 0,4	- 0,2	- 1,0	- 0,5	0,9	1,0													
X6	0,6	0,5	- 0,1	0,5	0,1	0,1	1,0												
X7	1,0	0,5	0,3	0,9	- 0,3	- 0,3	0,7	1,0											
X8	0,7	0,2	0,2	0,8	- 0,4	- 0,2	0,4	0,7	1,0										
X9	1,0	0,5	0,4	0,9	- 0,5	- 0,4	0,6	1,0	0,7	1,0									
X10	0,9	0,5	0,5	0,9	- 0,5	- 0,5	0,5	0,9	0,6	1,0	1,0								
X11	1,0	0,4	0,4	0,9	- 0,4	- 0,4	0,7	1,0	0,7	1,0	0,9	1,0							
X12	0,6	0,1	0,4	0,8	- 0,5	- 0,4	- 0,0	0,6	0,7	0,6	0,6	0,6	1,0						
X13	- 1,0	- 0,3	- 0,6	- 0,9	0,6	0,6	- 0,5	- 0,9	- 0,7	- 0,9	- 0,9	- 0,9	- 0,6	1,0					
X14	1,0	0,5	0,3	0,9	- 0,4	- 0,3	0,7	1,0	0,7	1,0	0,9	1,0	0,5	- 0,9	1,0				
X15	1,0	0,3	0,4	0,9	- 0,5	- 0,4	0,6	1,0	0,7	1,0	0,9	1,0	0,6	- 1,0	1,0	1,0			
X17	1,0	0,3	0,5	0,9	- 0,5	- 0,5	0,6	0,9	0,8	0,9	0,9	0,9	0,7	- 1,0	0,9	1,0	1,0		
X18	1,0	0,3	0,4	0,9	- 0,4	- 0,4	0,6	0,9	0,7	1,0	0,9	1,0	0,6	- 1,0	0,9	1,0	1,0	1,0	1,0

Source: based on the data obtained from (Financial and economic activities, 2019)

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Graphical analysis of gross income of agricultural enterprises in the Novosibirsk Region.
Let us analyze the change in the gross income of agricultural enterprises in the Novosibirsk Region. The information for the analysis is presented in Figure 3. In addition, Figure 3 presents the data on the components of the gross output of agricultural enterprises by sectors of livestock and crop production.

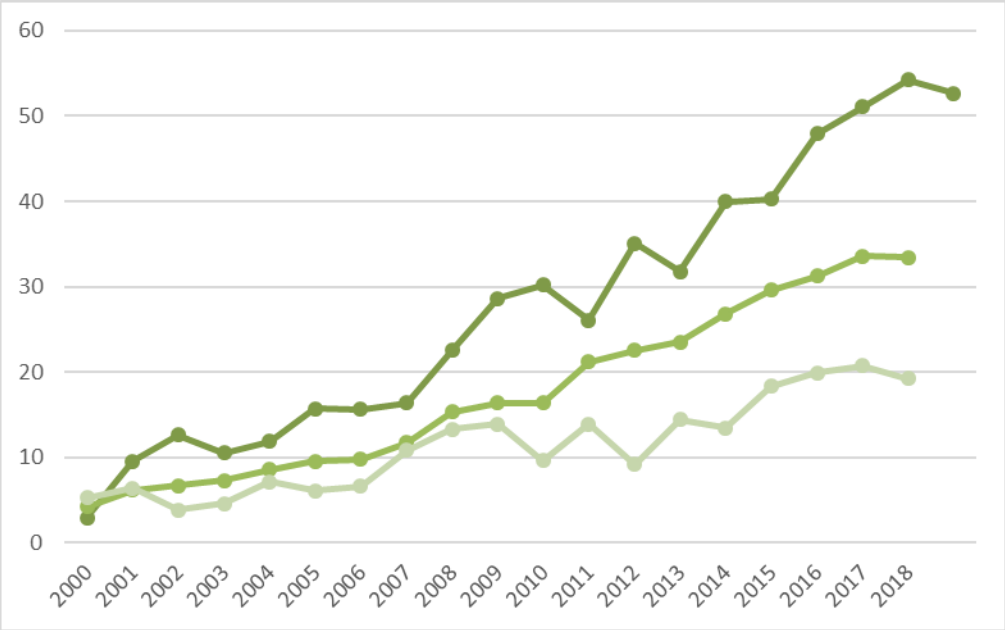

Figure 3. Dynamics of gross output of enterprises and livestock and crop production industries, Y_1.
Source: based on the data obtained from (Agriculture of the Novosibirsk Region, 2019)

The dynamics of Y_1 has a tendency to increase. We formulate the first hypothesis: there is an increase in the gross output of agricultural enterprises in the Novosibirsk Region. The growth rate of indicator Y_1 does not have a pronounced tendency and is subject to a random nature. In terms of the gross output from 2001 to 2018, we draw the following hypothesis: there is an increase in the gross output. Comparing the graphs of the values of X_1 and Y_1, we can say that there is no obvious similarity of the graphs; a change in indicator X_1 is less susceptible to random influences than indicator Y_1.

Let us consider in more detail the gross agricultural output of enterprises in the Novosibirsk Region. The components of indicator Y_1 are the following: the gross output of the livestock industry and the crop industry. The information on these indicators is presented in Table 3.

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Table 3. Gross agricultural output in actual prices, million rubles

Years	Indicators		
	Total	Crop farming	Livestock
2000	9509,7	5278,5	4231,2
2001	12626,2	6386,0	6140,2
2002	10529,5	3855,7	6673,8
2003	11873,3	4553,0	7320,3
2004	15712,0	7135,7	8576,3
2005	15612,7	6054,4	9558,3
2006	16340,8	6574,9	9765,9
2007	22517,9	10826,9	11691,0
2008	28638,7	13298,7	15339,8
2009	30233,7	13888,4	16345,3
2010	26051,2	9638,4	16412,8
2011	35106,3	13923,4	21182,9
2012	31742,8	9171,9	22570,9
2013	39928,2	14412,2	23516,0
2014	40260,4	13421,3	26839,1
2015	47929,4	18339,6	29589,8
2016	51113,4	19896,2	31217,2
2017	54254,5	20706,5	33548,0
2018	52655,8	19249,9	33405,6

Source: based on the data obtained from (Financial and economic activities, 2019)

Considering the graph of variance in the gross output of the livestock industry, we can also assume that this indicator has a tendency to increase. We draw the first hypothesis: there is an increase in the livestock production in the Novosibirsk Region.

In contrast to indicator Y_1, the livestock production growth rates have a more stable tendency to change; it can be considered fluctuating with a positive trend. We draw the second hypothesis: there is a steady trend of positive growth rates in the livestock production.

Let us analyze the change in the gross output of the crop industry. The growth trend is noticeable for this indicator, but we will be critical of it. So, in the period from 2007 to 2014 there was no such a trend. The indicator increased and decreased; its value in 2014 did not change much compared to 2007. The growth trend of the indicator was observed from 2002 to 2007 and from 2014 to 2017 which influenced the final growth of the indicator from 2000 to 2018. Accordingly, there can be no talk of any trend in the rate of increase in growth. We underline the possibility of studying the dependence of the indicator on other factors.

It is worth noting that the gross output in agriculture is the sum of the gross output of livestock, crop production, and other indicators. This relationship is noticeable on the graph: there is a growth trend connected with the growth trend of the livestock industry and the absence of a growth trend connected with the absence of such a trend in the livestock industry.

Graphical analysis of profit before tax. The information for the analysis of changes in the indicator - profit before tax, is presented in Figure 4.

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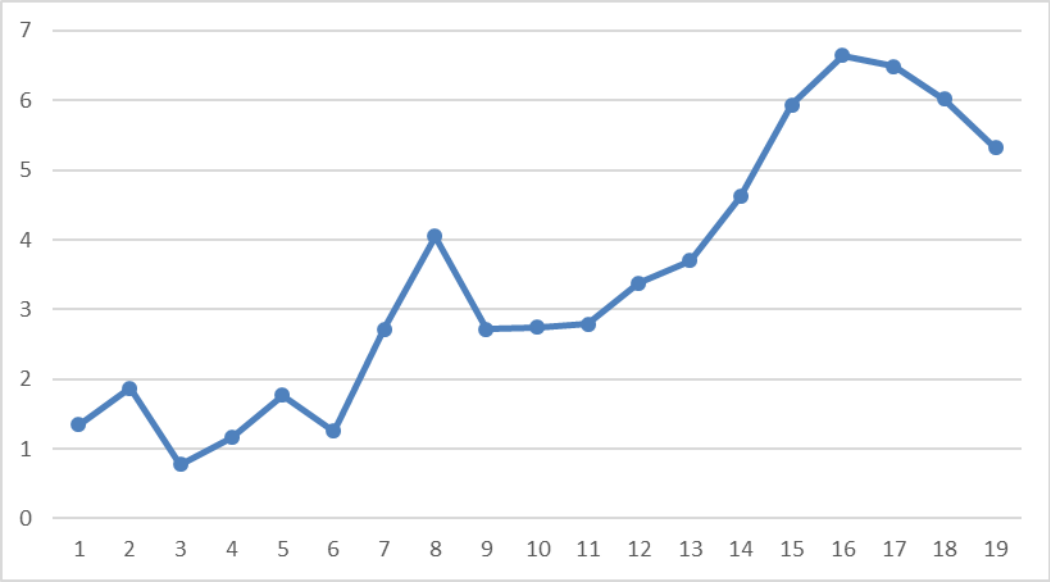

Figure 4. Change in profit before tax in the period from 2000 to 2019, Y_2.
Source: based on the data obtained from (Kuznetsova et al., 2020)

Profit before tax, Y_2, tends to increase, but with reservations. From 2001 to 2006, no trend was noticeable, after which, from 2006 to 2008, there was a significant increase in the indicator. Further, the growth trend manifests itself from 2011 to 2016, after which there is a decrease, and, notably, up to 2018. Therefore, a close relationship with indicator X_1 is also not relevant. We will not formulate the hypothesis.

Graphical analysis of net profit. We consider the analysis of the net profit of agricultural enterprises in the Novosibirsk Region of the Y_3 indicator. Data on this indicator is presented in Figure 5.

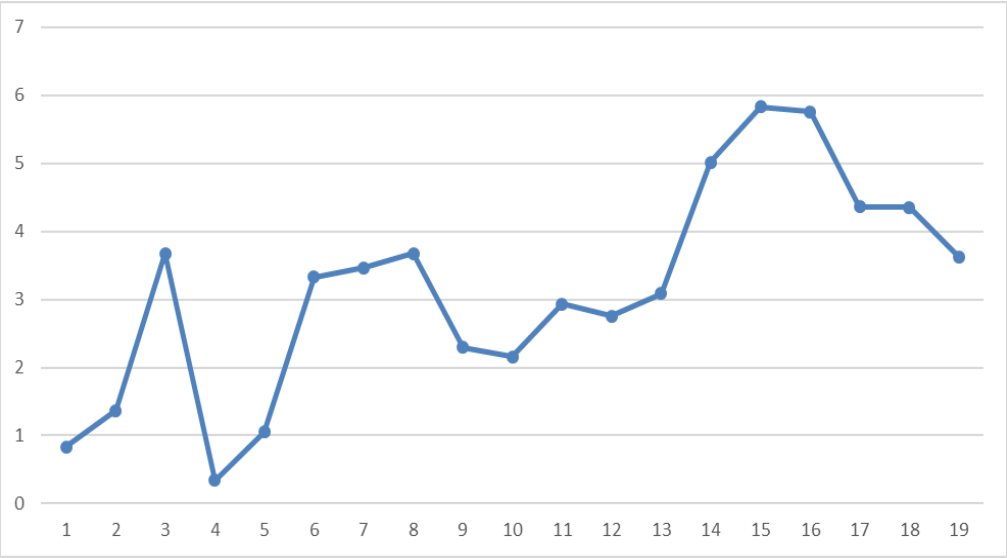

Figure 5. Net profit change of agricultural enterprises of the Novosibirsk region from 2001 to 2019, Y_3.
Source: based on the data obtained from (Financial and economic activities, 2019)

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The net profit graph (Fig. 4) is similar to the pre-tax profit graph (Fig. 3). They vary in detail. The net income fell sharply in 2004 declining from 2008 to 2010 as well as from 2015 to 2019. Therefore, it does not make sense to talk about a tendency to change the indicator. If there are any trends or unaccounted effects, in this case it is the goal of other studies.

Graphical analysis of revenue from sales of agricultural organizations in the Novosibirsk Region. We turn to the analysis of indicator Y_4 - sales revenue. The information on this indicator is presented in Figure 6.

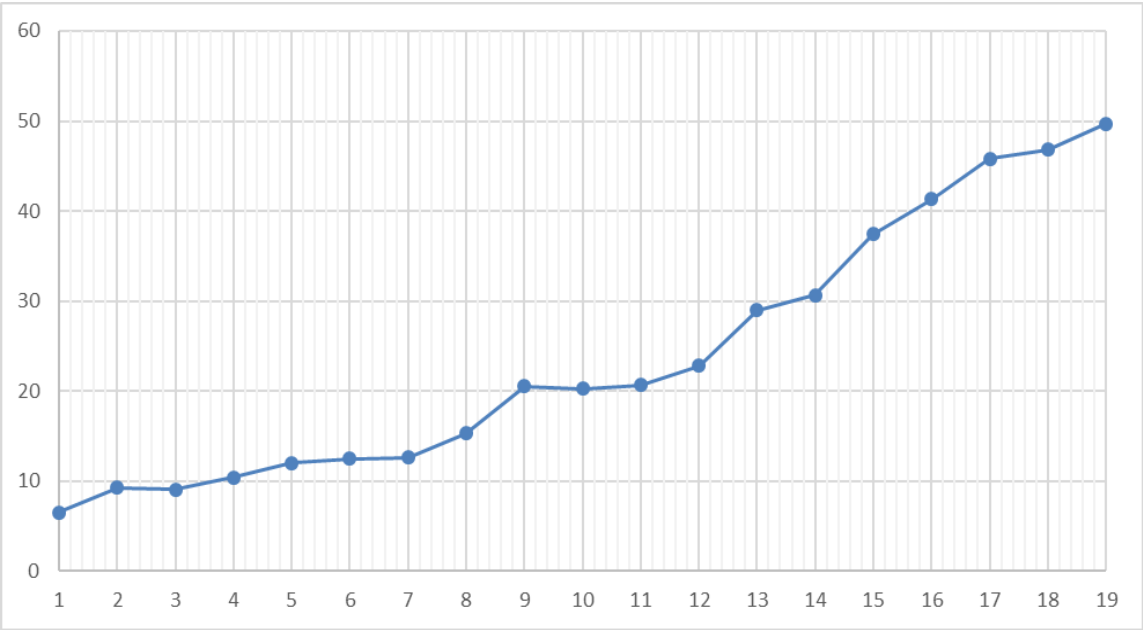

Figure 6. Dynamics of revenue from sales of agricultural enterprises of the Novosibirsk Region, Y_4.
Source: based on the data obtained from (Financial and economic activities, 2019)

The dynamics of Y_4 has a tendency to increase. The exceptions are the years of 2002 and 2009. But even there the decrease in the indicator is hardly noticeable. We draw the following hypothesis: there is an increase in revenue from sales of products of the agricultural enterprises in the Novosibirsk Region.

The growth rate of Y_4 does not have a pronounced trend, neither does Y_1. The growth rates are subject to randomness. Comparing the graphs of the values of X_1 and Y_4, we can say that there is a similarity of the graphs according to the growth trend, but the growth rates are not noticeable, since for X_1 there is a tendency to decrease in growth rates, but not for Y_4. We can talk about a possible strong or even close relationship between indicators X_1 and Y_4.

Graphical analysis of the profitability of agricultural enterprises in the Novosibirsk Region. Let us analyze the changes in the profitability of agricultural enterprises in the Novosibirsk Region. The data for the analysis are presented in Figure 7.

It is worth noting that the above indicators do not fully reflect the efficiency of production. They determine effectiveness in absolute terms. The relative indicators are equally important. One of these indicators is the profitability of production.

The indicator of cost efficiency is designated as Y_5.

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Figure 7. Dynamics of profitability of the agricultural industry of the Novosibirsk Region, indicator Y_5, presented in %.
Source: based on the data obtained from (Novosibirsk Region, 2019)

According to Figure 8, there is no single trend for Y_5. It is appropriate to break the dynamics of changes in profitability into several periods. The first one is from 2000 to 2007. During this period, an increase is observed from 4.8 to 14.3. However, even in this period, a constant growth trend is not observed. The second period is 2008 to 2013. In this period, there is, first, a decrease in profitability, then an increase in the indicator. The period ends with a sharp drop in profitability comparable to the figures for 2000-2004. From 2014 to 2018, there is a sharp increase in the indicator, from 6.7 to 21.3 in 2013-2015, and then a sharp decrease from 21.3 to 7.1 in 20015-2018. As a result, the profitability of 2018 fell below the indicator of 2005.
The net effect is a change in the profitability indicator, independent of X_1. It is irrelevant to talk about a close relationship between these two indicators. The result of the correlation and regression analysis shows that the qualifications of agricultural employees have a strong impact on profits. The value of the correlation coefficient is 0.89.

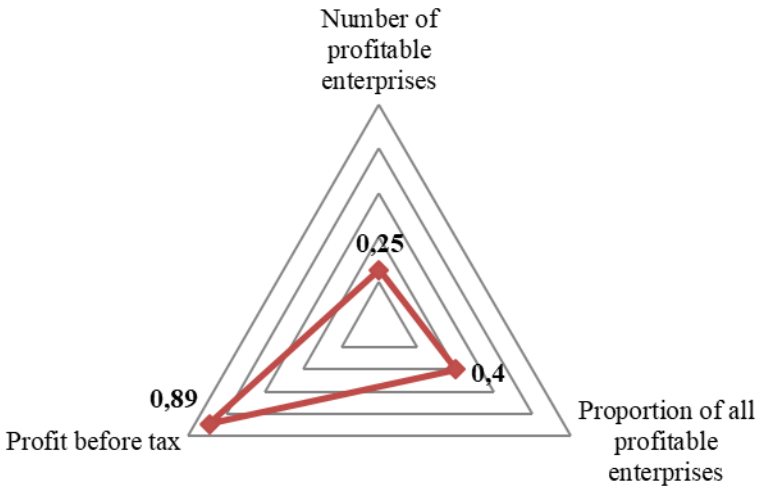

Figure 8. Correlation coefficients between the number of employees with higher specialized education and the number of profitable agricultural enterprises
Source: results, obtained by the authors

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To sum up, it is necessary to underline the fact that the indicators characterizing the economic results of production activities are the main factors which show the financial well-being of enterprises. There is a direct weak link between the number of profitable enterprises and the level of education of employees which is confirmed by a correlation coefficient of 0.25. From an economic point of view, the growth of profitable agricultural enterprises can be explained by the imports phase-out program, the imposition of sanctions on a number of food products, the depreciation of the ruble, and a food price increase. The development of agricultural production is significantly affected by the number of employees with higher specialized education, especially on the growth in profit before tax (0.9), net profit (0.7), sales revenue (0.9), agricultural output (0.9), and cost efficiency (0.6).

4. Discussion

The research shows that labor resources play a significant role in shaping the final results (Taylor, 1996). Endlessly changing business and economic landscapes urge organizations to become resilient to ensure business survival and growth. Yet, in many cases, business world is becoming turbulent faster than organizations are becoming resilient. Relevant research indicates the ways through which organizations could respond to unforeseen events, mainly through suggesting that individual and group resilience could lead to an organizational one. However, research is nascent on how particularly human resource development (HRD) resilience could be built, and thus to contribute to organizational resilience as well (Mitsakis, 2020). Studies have established that science and technology applications have culminated in the discovery of new products, new processes, improved and faster services, and better ways of solving human and environmental challenges as well as opportunities for new jobs. Therefore, understanding and use of scientific knowledge is critical in responding to national development needs and challenges (Tetteh, 2020; Prodanova et al., 2018). At the same time, along with the significant impact of human capital on the final financial results, the state does not take enough measures to support employees involved in the industry (Lordan, 2017). In order to implement measures for the socio-economic development of rural areas, a comprehensive interaction between the state and business is necessary (Bernal, 2011).

5. Conclusion

The analysis enables development of the classification of human capital according to its affiliation with social institutions, which fulfills the function of reproduction of individual human capital. The functional analysis makes it possible to qualify human capital according to the types of substantive work (objective activities); in this case we determine its content and classify it using predicates added to the concept of "capital." As a result, we get the following types of capital: economic, human, social, physical, and others (Rudoy, 2016).
The structural analysis of types of capital is often determined through the consideration of specific types of capital in the discourse of their functioning in social institutions (Kuznetzova, 2020). In this case, human capital, a generic concept with a maximum content, is interpreted as alienable or inalienable from the individual. Thus, physical capital is considered as personal good, in all its manifestations, and educational, such as academic or intellectual, as public good. An active approach unites all types of capital and interprets them through the possibility of their integrated reproduction. It is the activity approach that allows us to consider human capital as an integral socio-economic formation through the identification of individual diversity of people as carriers of capital.

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PROBLEMS OF BUSINESS PROCESSES TRANSFORMATION IN THE CONTEXT OF BUILDING DIGITAL ECONOMY

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Abstract. The article explores the main problems and features of one of the most relevant phenomena today - digital transformation, which implies fundamental changes in the activities of organizations based on the use of digital technologies. The paper reviews sources on the problems of building a digital economy and moving a business to the digital level. The purpose of this study is to identify the main difficulties for the restructuring of organizations' processes on a digital format, as well as the formation of the theoretical and conceptual foundations of digital business transformation in the face of uncertainty and variability of the modern business environment. Using the methods of analysis, generalization, comparison, synthesis, deduction, induction, the essence of digital transformation is studied, Russia's positions among other countries in terms of readiness for the digital economy are analyzed, problems and barriers that impede the process of digital transformation for Russian and foreign companies are formulated. Based on the use of a systematic approach, methods of scientific abstraction, economic modelling, the work identifies the main functional areas of change, presents a loop of digital business transformation that reflects its main stages, necessary components and changes, and describes key segments of new digital business models of companies. The results can be used to conduct further theoretical and methodological and practice-oriented research in the field of digital business transformation, and can also be used by design teams of organizations to analyze the problems of switching to a digital format, develop a digital transformation strategy and rebuild a business model.

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1. Introduction

Digitalization leads to large-scale changes in business and society, which are becoming permanent. Markets are gradually being filled with digital products and services, necessitating a change in traditional business models (Belk, 2013; Prause, 2015; Petrenko et al., 2019). Transformation provides organizations with opportunities for business development, setting and achieving new goals, moving to a new level of implementing routine functions. The future of the economy of any country depends on the ability of enterprises and companies of all forms to successfully transform into a digital business environment. This determines the relevance and importance of researching issues related to the nature and categorical apparatus of the digital economy, as well as the difficulties and possibilities of moving to the digital level.

Currently, one of the most significant phenomena in the scientific and business environment is the digital transformation, reflecting the changes in society and economy due to the development of digital technologies (Gapsalamov et al., 2020; Minakhmetova et al., 2020). However, the results of numerous studies (McKeown & Philip, 2003; Svahnetal, 2017; Avdeyeva et al., 2019; Laužikas, Miliūtė, 2020) show that technology is only a component of transformation that ensures the organization's continued competitiveness in the digital economy. To move to the digital level, it is also necessary to create and develop an appropriate strategy, culture, infrastructure, and outline a new business model. Based on this, the purpose of this study is to identify barriers to the restructuring of companies' processes for a digital format, as well as the formation of the theoretical and conceptual foundations of digital business transformation in the face of uncertainty, mobility and complexity of the modern business environment.

2. Literature review

It should be noted that digitalization is not a completely innovative phenomenon, since the digitally-oriented activity aimed at collection, processing, analysis and use of data has been ongoing since the 1960s. However, the innovative aspect of digitalization is the speed and content of changes caused by the use of new technologies (Babkin, Chistyakova, 2017; Dokka et al., 2020; Savina, 2019; Bykanova and Akhmadeev, 2019).

For some time, studies of digital transformation have been conducted to a greater extent by practitioners, and only in the latest decade many foreign and Russian scientists have paid attention to this category, studying its content, problems and implementation possibilities.

The essence, features, key elements and prospects of building a digital economy has been the object of studies of such scientists as Amelin S.V. and Schetinina I. V. (2018), Asadullina S.V. (2018), Babkin A.V. et al., (2017), Dobrynin A.P. et al., (2016), Morrar, R. (2017), Manyika J. (2016), Mousa S. (2017), Korableva O.N. et al., (2019), Lettl C. (2018), Ritter T. (2018), Ross J.W. (2017), etc.

A universal and generally accepted definition of digital transformation does not currently exist, however, based on an analysis of the interpretations developed by various scientists, it is safe to conclude that digital transformation is a more complex type of technology-based business transformation than, for example, restructuring or reorganization, which requires rethinking the strategic roles of new digital technologies and the opportunities for successful implementation of digital innovation policy (Ismail et al., 2018; Parviainen et al., 2017; Voronkova et al., 2020; Samusenko et al., 2020). According to Russian scientists S.V. Amelin, I.V. Shchetinina (2018), digital transformation involves revolutionary changes in the business models of organizations based on the use of digital platforms in order to ensure significant growth in market volumes by increasing the competitiveness of products (Amelin, Schetinina, 2018). A group of German scientists (Bloching et. Al., 2015) understands by digital transformation the continuous interaction of all business sectors, providing for adaptation to the requirements of

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the digital economy. According to a number of scientists (Berman, 2012; Vial, 2019; Boston Consulting Group: Digital transformation over view), the transformation reflects a process in which companies converge many new technologies to significantly improve operational activities and achieve sustainable competitiveness by changing various business functions.

It should be noted that during a review of sources devoted to digital transformation, it was revealed that many organizations do not appreciate the benefits of digital transformation and are not ready to switch to a digital format of activity (Galimova, 2019; Asadullina, 2018; Popok et al., 2020; Kazmina et al., 2020a,b; Lenka et al., 2017; Working Paper: Digital Economy – Facts & Figures). Many issues relating directly to the digital transformation process, the development of a digital culture, changing the business model and actually building a business based on digital technologies in general, remain insufficiently covered in the scientific and business literature, which confirms the relevance and need for further research in this area.

3. Methodology

The methodological system of the study is based on the application of a systematic approach, methods of scientific abstraction, economic modeling in the analysis and construction of the conceptual foundations of digital business transformation. The reliability of the research results is ensured by the use of appropriate methods of scientific research: generalization, analysis, synthesis, induction and deduction, analogy.

The information and analytical base of the study is compiled by official statistics from the Russian Federation and international organizations, as well as results reported in research papers, articles by foreign and Russian scientists, and materials from periodicals. Russia's positions in the field of digitalization were estimated using statistical methods based on a comparison of various indicators of readiness for the digital economy with the indicators of other countries. Among the evaluation criteria, the following were used:
- the use of modern systems to automate the planning, management and implementation of business processes in Russian organizations;
- the number of people with any digital skills;
- use of the Internet to make online purchases;
- digitalization index, an aggregate indicator of digital competencies of personnel of organizations, the use of digital technologies and the level of cybersecurity.

For analysis, comparison and generalization of information, data was sampled from reports, statistical digests and scientific papers on the following key issues and topics:
- experience of foreign and Russian companies in the development and use of strategies for implementing digital transformation;
- the reasons that motivate the decision to take the business to the digital level;
- digitalization of organizations levels (degrees);
- basic difficulties that companies faced during the digital transformation of business.

The use of logical, analytical and integrated methods enabled us to identify key functional areas in a company that need to be changed in the process of digital transformation, including management, operations, production sphere, customer interaction, organizational issues and information management elements. The analysis of the data arrays on the issues of the effectiveness of digital transformations in various organizations revealed the main barriers preventing companies from effectively transferring business activity to the digital level, features and aspects of company activities during digital development.

Using inductive and synthetic methods of scientific research, the key segments of the new business model were formed in the study, taking into account the changes necessary for the digital transformation. The traditional

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blocks of the analog business model are replaced by modern elements of the digital business. Based on the analysis using the methods of analogy, abstraction, and a systematic approach, a loop of digital transformation was modeled as a continuous process reflecting the main stages of the transition, the necessary resources, and changes. The results obtained using the above scientific approaches and methods allow us to trace the process of digital transformation of a company and determine the direction of change of business models in the digital environment.

4. Results

The analysis of the content of digital transformation allows us to identify it as a continuous process of changes in the company, carried out using digital and other technologies, as well as organizational techniques for building a digital culture and achieving "digital maturity", which as a result will contribute to the creation and implementation of better and more competitive products (or services) for consumers, gaining competitive advantages and responding effectively to changes in the business environment. In accordance with the results of the analysis of a number of sources (Mitchell et al., 2003; Ivančić et al., 2019; Plaskova et al., 2019; Yemelyanov et al., 2018), it is safe to conclude that companies successfully operating in the digital environment objectively receive higher profits. In the near future, with a high probability, the digital economy will dictate the terms for the implementation of business processes of companies, which brings about the growing need of transferring business to digital platforms.

It should be noted that the main digital technologies that support the process of transforming companies around the world are: Big Data, Internet of Things, mobile robots, cloud computing, 3D scanning, 3D printing, smart devices, virtual and augmented reality, autonomous vehicles, handling complex events, prescriptive and in-depth analytics, gamification, machine-to-machine communication, biochips, programming emotions, social networks (Digital transformation for 2020 and beyond: a global telecommunications study, 2017; Digital transformation of the economy and industry, 2019; Dobrynin et al., 2016; Morrar et al, 2017; Polyakova et al, 2019; Rahman, 2018). The development of these and other innovative technologies is aimed at building a digital economy based on the ecosystem of integration of smart cyberphysical systems with society, provided by improved information and communication technologies.

According to a Ponemon Institute study (Bridging the digital transformation divide: leaders must balance risk & growth, 2018), approximately 45% of foreign companies begin the digital transformation process without first developing an appropriate strategy, and 14% of organizations are not sure whether they are following some kind of strategy in the course of the digital transformation. At the same time, 41% of the respondents say that they are acting in accordance with a developed strategy, of which 57% note that their strategy includes integration with suppliers, intermediaries and other partners. In addition, respondents point out the importance of including in the transformation strategy issues related to data protection, as well as marketing policies aimed at retaining consumers and ensuring their loyalty.

The main reason motivating organizations to digital transformation is the desire to survive in a changing economic environment (Ismail et al., 2018; Dolganova et al., 2019; Zozulya, 2018). In general, the reasons motivating a business to transform can be classified into internal and external. Internal reasons include a decrease in sales, financial pressure from investors, the desire to expand the business and increase organizational flexibility, increase labor productivity, obtain long-term competitive advantages, etc. External triggers may consist in market changes, changes in consumer preferences, changes in the industry, emergence of new competitors, etc.

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The digital economy development level of a company (the so-called digital maturity) can be determined as follows:
- high level (all key business processes and company functions have been transferred to digital platforms);
- late middle level (most of the business processes and functions of the company are transferred to digital platforms);
- early middle level (planning and analysis of all the main digital processes and functions are carried out, but only a part of them is implemented);
- entry level (only a few business processes of the company have been digitized).

Based on the results of the analysis, six main functional areas of a company are formulated that require digital transformation (Figure 1).

Figure 1. Functional areas of digital business transformation
Source: compiled by the authors

The transformation areas shown in Figure 1 suggest the following changes for the company:
1. Entering a new level of interaction with the consumer: managing consumer experience, studying consumer preferences, a multi-channel marketing system. Digitalization significantly changes the behavior and preferences of consumers, which determines the need for constant market monitoring and communication with customers.
2. Active work with data: integration, analytics, protection of personal data, cybersecurity, etc.
3. The sphere of production and services: offering smart products and services, customization and personification of products, digital ecosystems.
4. Organizational transformation, providing increased flexibility, future job creation, digital thinking. Structural changes affect external and internal relations, and a change in the operation rate.
5. Changes in operating activities based on the use of digital technologies: the use of integrated information technologies, ensuring adaptability, building digital production, a smart logistics chain and a digital network of suppliers.
6. Management transformation based on changes in corporate development strategies, taking into account digital transformation and change management.

Transformation levels imply internal integration of organizational units, redesigning business processes, changing the corporate network, expanding the scope of activities, building an information security system, transforming

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the customer service process, transforming the business model (Berman, 2012; Rachinger et al., 2019; Oleinikova, 2019; Klochko et al., 2019). It is important to specify that the underdeveloped level of cybersecurity is a critical barrier to the successful process of digital transformation of companies (Tvaronavičienė 2018; Plėta et al., 2020). Data leakage can lead to negative consequences for the business, including damage to company software, reduced productivity, loss of intellectual property, loss of customer confidence, additional costs for investigation of violations and litigation, loss of reputation.

Analyzing the position of Russia among other countries in terms of readiness for the digital economy (Table 1), it should be noted that the level of digital development in the country is significantly inferior to the indicators of leaders (Digital Economy: 2019: a brief statistical digest, 2019).

Table 1 presents information on the use of the Internet in Russia for ordering goods, ERP-systems and CRM-systems in the work of organizations, as well as on the digital skills of the population (file transfer, the use of photo and video editing programs, text editors) in comparison with other countries. The data refer to 2017 or close periods for which information is available. As can be seen from the data given in Table 1, Russia is inferior to the UK, Germany, Finland, Sweden, France, the Czech Republic and Estonia in almost all the indicators. In Russia, the level of development of digital skills is by about 15 to 18% lower than in the above countries, and by 25 to 50% lower in using the Internet to order goods. A similar situation is observed in the application of ERP and CRM systems in the activities of organizations in the country, with the exception of the equally low level of use of ERP systems in Great Britain (19%).

Table 1. Indicators of the use of digital technologies in Russia and worldwide

Country	Indicator			
	Digital skills of the population in % of the total population aged 15 to 74 years (average value for all skills)	Using the Internet to order goods in % of the total population aged 15 to 74 years	The use of ERP and CRM systems in organizations in % of the total number of organizations	
			ERP-systems	CRM-systems
Russia	30	29	19	13
Great Britain	58	82	19	32
Germany	58	75	38	47
Finland	63	71	39	39
France	49	67	38	28
Czech Republic	50	56	28	19
Sweden	57	81	31	35
Estonia	48	58	28	24

Source: compiled by the author based on the Digital Economy: 2019 statistical digest

The aggregator of indicators of the country's readiness for digital transformation is the digitalization index, which combines the data set on the development of digital competencies among management and employees of companies, the use of digital technologies in the implementation of business processes, the use of data transmission and storage tools, Internet tools for advertising and product promotion, level of information security. The digitalization index, calculated for 2017, shows that Russia is in 31st place, lagging behind the leader (Finland) by 22 points. Besides Finland, Belgium, Denmark, the Republic of Korea, Holland, Sweden, Norway, Japan and Spain occupy leading positions. At a level with Russia scorring 28 points, are Bulgaria, Hungary and Romania (Digital Economy: Express Information. Business Digitalization Index). The values of the country's readiness indicators for the digital economy indicate the lack of efficiency and performance in the implementation of the government program for the development of the digital economy in Russia (Digital Economy of the Russian Federation Program).

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According to various scholars (Babkin et al., 2017; Zozulya, 2018; Digital Economy and Industry 4.0: Problems and Prospects, 2017), the problems of the development of the digital economy in Russia include the lack of a regulatory framework, infrastructure, a gap in the level of technological development in various industries, insufficient level of data cybersecurity development, lack of qualified personnel, and imperfect system of their training (Glotko et al., 2020). Among the main barriers to the development of digitalization, one can also single out the disinterest of top management of companies in the digital transformation of business, the lack of necessary IT skills among the staff, the use of outdated technologies, the lack of a digital culture and budget restrictions on the development and implementation of digital technologies (Oleinikova, 2019; Avdeyeva, 2019). At the same time, digital transformation implies objective advantages for the business: quick and affordable control over the business processes being implemented, increasing the speed of their execution, increasing productivity, the emergence of new sales markets, attracting investments, etc. However, the above-mentioned positive consequences of moving to the digital level do not currently serve as drivers for the transformation of many companies due to their inability and / or unwillingness to overcome the existing barriers.

The study shows that digital transformation involves not so much the use of digital technologies to achieve the goals of the company, but rather, complex changes in the business processes in the companies based on the use of digital technologies. Each company needs to develop a digital transformation strategy in accordance with its own goals and opportunities. A number of companies integrate the digital aspects of operations into the existing strategy; others tend to work on a separate strategy for digital development (Lerch & Gotsch, 2015). Large organizations may need to make changes or develop three levels of strategies: corporate strategy, general business strategy and operational strategy (Ivančić et al., 2019).

The digital transformation of a company is based on the continuous improvement of business processes, standardization, internal and external integration using digital technologies. In the course of the transformation, companies offer consumers new products and services, consumers participate in the design, testing, production and distribution of new products, which requires a regular evaluation of customer satisfaction. In addition, any company striving for transformation needs appropriate human resources with the knowledge and skills to work effectively in the digital environment and able to quickly implement digital projects.

The digital ecosystem of a company is based on internal and external communications, as well as on digital platforms. Figure 2 shows the loop of the digital transformation of a business as a continuous process including certain stages and a cycle of changes. It is possible to return to the starting stages of the loop, and one can also see a cycle of changes in business processes at the stages from the development of a new business model to the adjustment of the strategy. The development and design of new products and services is carried out in the process of integration with partners, consumers and suppliers. Integration with educational institutions is also required to ensure the links between science and practice in the digital society, as well as the formation of a talent pool. All key business processes should be transferred to the digital level: robotics, communication, big data processing, etc. Cycling of the testing stages, expanding integration with partners, evaluating the effectiveness and adjusting the strategy is necessary at the initial stage to transfer all key business processes to the digital level, and then for the development of the company in the digital environment, the development, testing and implementation of improvement measures. It seems effective for the top management of the company to encourage initiative, innovative activity and staff creativity. The process of evaluating the innovativeness and effectiveness of the proposed projects and solutions based on the achievement of key performance indicators will allow for appropriate monitoring of the impact of changes, and to adjust the business model and development strategy.

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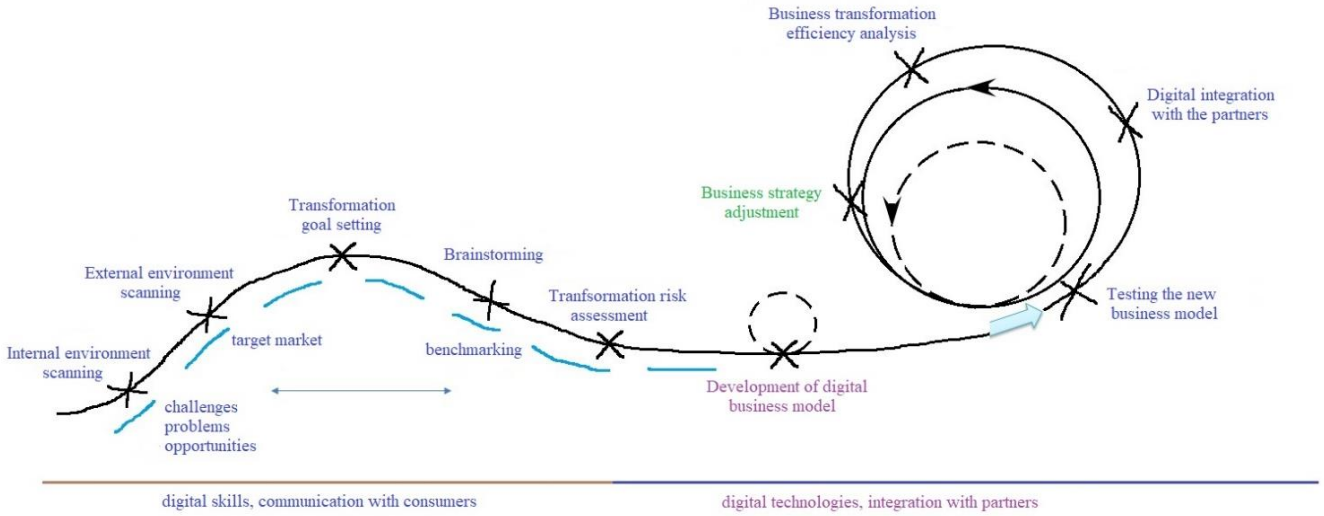

Figure 2. Digital business transformation loop
Source: compiled by the authors

As can be seen from Figure 2, the transformation process involves the formation of new business models for the development of organizations. The main drivers of digital transformation need to be fixed in the business models of companies to provide a strategic vision of business transformation, implementation and evaluation of changes.

As a result of the study, the following key segments of business models of companies moving to the digital level were compiled:
1. Consumers (segmentation, customer relationships, customer involvement in the production chain, customer experience management, CRM, customer databases, social networks, digital profiles, etc.).
2. The company's offer (new or improved products and services, differentiation, customization of products, personification in accordance with the needs of customers, self-service and other advantages).
3. Resources and possibilities (digital technology, information, intellectual property, fixed assets, human and financial resources, organizational capabilities).
4. Partnerships and relations (interaction with industry partners and competitors, with the state, joint projects, joint services, alliances with suppliers, venture funds, banks, insurance companies, intermediaries, universities and outsourcing companies).
5. Channels of interaction with the external and internal environment (information and communication technologies: applications, augmented and virtual reality, logistics, intranet, video broadcasting in streamer mode, blogs, information retrieval systems, etc.).
6. Planning and analytics (information and analytical programs that provide planning, control and analysis of cash flows, including pricing processes, asset transactions, balance sheet management, cash and non-cash money flows, credit resources, discount systems, making payments, etc.).
7. Functions and business processes (the implementation of all the basic functions and business processes of the organization (functions of personnel, assets, knowledge, processes and innovations management, development, design, production, marketing, sales, services, logistics, accounting) at the digital instead of analog level: automation of production, automatic production control systems such as SCADA, ERP, electronic payments, lean manufacturing, robotics, cloud technology, blockchain technology, digital marketing, etc.) (Rosa et al., 2019).

The complexity of the digital restructuring of analog business models lies not only in the need to switch to the company functioning with the dominant use of digital technologies in solving everyday problems, but also in the

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importance of effective management and coordination of this process. The formation of new business models based on the key elements proposed in the work will allow companies to provide their main business processes with the required information, communication and technological component, as well as manage resources and functions in the new digital environment. It also seems appropriate to carry out further developments to determine the path of changes in the company's management area that are necessary for effective digital business transformation.

5. Discussion

Among the barriers that prevent foreign and domestic companies from successfully transforming, according to a number of scientists (Parviainen et al., 2017; Rachinger et. Al., 2019; Manyika J. Digital Economy: Trends, Opportunities and Challenges: extracts from McKinsey Global Institute Research ; Babkin, Chistyakova, 2017; Oleinikova, 2019), the following can be distinguished:
- undeveloped system for ensuring cybersecurity, protecting data and the company's business environment;
- underdeveloped information and communication system, IT-infrastructure, providing external and internal communication processes of the company, as well as maintaining databases;
- lack of experience and skills of top management of companies to carry out the necessary changes;
- lack of financial funding and required resources;
- Lack of a well-developed partnership system for working with suppliers, transport companies, financial and insurance organizations, as well as other partners;
- the complexity and intricacy of the business processes;
- lack of highly qualified personnel;
- insufficient competitiveness of the applied digital technologies;
- underestimation of potential risks (in particular, marketing and cybersecurity risks).

Overcoming the above barriers in a particular business must begin with effective planning and management. Many researchers (Babkin et al., 2017; Berman, 2012; Ismail et al., 2018) indicate that the main elements in the definition of a digital system are the exchange of knowledge and technologies, the company's ability to change and adapt to the external conditions. The main factors of successful digital transformation of a company include the presence of a competent leader, constant leadership support, the absolute concentration of business on the consumer, all kinds of new partnerships with key contractors, the use of effective personnel management techniques in a digital company, continuous work with data, and the use of digital technologies.

Adapting the approaches of a number of foreign researchers (Ritter & Lettl, 2018; Ross et al., 2017); Business models of the digital economy (EFI Report), one can assume that an appropriate strategy is drawn up at the digital transformation planning level, a business model that determines the mechanisms, methods and necessary elements of the company's functioning is developed at the architectural level, and specific processes are described at the implementation level.

The digital business transformation loop presented in this work gives a conceptual idea of the main stages necessary for the transformation of elements and organizational changes, while the proposed segments of the digital business model provide the basic tools for doing business at the digital level, with the customized combination of the segments ensuring the gradual transition of the company business processes from analog to digital. The digitalization process insight and a strategic vision of the company's development path in the digital economy will allow top management to develop individual strategies and business models of the transformation.

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6. Conclusion

Modern business conditions offer and promote the idea of moving organizations to a digital format of activity for survival and optimization of key indicators in the context of the developing digital economy. The increased attention of scientists and practitioners to this research topic is determined by the main features of the digital economy, including the following:
- business productivity growth;
- high rate and pace of development;
- new competitive advantages due to the introduction of innovations;
- reduction of costs for the implementation of business processes;
- the emergence of new “smart” products and new markets;
- changes in the structure of professions in demand;
- the growing role of digital technologies providing businesses with an unlimited number of opportunities;
- development of digital platforms, electronic payment systems and tools, and social media.

The uniqueness of digitalization lies in its inherent properties, including globality, the significance of changes, rate, stimulation of increased competition, and technological influence on all spheres of society. However, the research has shown a number of problems that prevent companies from taking business processes to the digital level. These barriers in Russia include the following:
- the lack of an appropriate legal framework for doing business in the digital environment;
- the problem of limited budget and resource allocation;
- insufficient flexibility of organizations (especially large ones);
- lack of necessary partnerships;
- lack of innovation activity;
- insufficient level of interaction in the internal and external environment of the company;
- management problems (unwillingness to transform, lack of skills to manage changes and personnel in difficult conditions, etc.);
- the need to train personnel in new knowledge and skills required to implement the company's business processes at the digital level;
- undeveloped information security system.

The problems formulated are interdependent and negatively affect companies' attempts to build a model of effective functioning in the digital economy. Their study and analysis within the framework of a separately considered business will provide an opportunity to identify less costly and more effective digital transformation tools. The research investigates the content of digital transformation, visualizes the process of its implementation at a schematic level, and describes the key elements of the digital business models of companies based on the analysis of foreign and domestic scientific literature on the subject. Building a system of scientific knowledge and forming practical mechanisms for digitalizing a business require further studies of its economic aspects, including the impact of digital transformation on changing the competitiveness of a company, on personnel and business management, the problems of strategizing and roadmapping for digital transformation and business development in digital economy.

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BASIC DIRECTIONS FOR FORMING PERSPECTIVE FORMS OF AGRICULTURAL INTEGRATION

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Abstract. The article discusses the formation of regional food sub-complexes at the present stage. The continuity of the processes of expanded reproduction along the entire technological chain "production - processing - sales of final products" is justified in order to stabilize agro-industrial production and increase its competitiveness. The agro-industrial complex in developing countries does not yet ensure food independence, full competition in the food market with manufacturers from more developed countries, and the satisfaction of consumer demand in domestic products, which indicates its low efficiency and the need to increase competitiveness based on its structural adjustment. The global financial crisis creates the prerequisites and creates an objective need to develop priority areas for overcoming it based on the formation of effective market structures and mechanisms with effective state management of the economy through economic leverage. To do this, we should use the internal factors of stabilization and growth in the agro-industrial complex itself: they fully include structural transformations within the framework of integrating agro-industrial sectors into a single reproductive cycle. At the same time, the purpose of agro-industrial specialization of production is to create conditions for increasing the competitiveness of industries on the basis of increasing production volumes, reducing costs, increasing labor productivity, product quality, solving social problems, which has recently been reflected in the implementation of the priority national project "Development of the agro-industrial complex".

Keywords: food subcomplex, integration, cooperation, competitiveness, efficiency, economic growth.

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1. Introduction

The country's agro-industrial complex is a holistic socio-economic system consisting of organically interconnected structure-forming elements, the functioning of which is mutually dependent on the development of both individual elements and the entire system as a whole. The openness of such a system manifests itself, first of all, in the fact that its functioning is significantly influenced not only by the internal (micro), but also the external (macro) environment in relation to it (Colleran, 2020; Samusenko et al., 2020).

Currently, agro-industrial integration is a multifaceted multi-level process, where firms, corporations, regional groups for the production of agricultural raw materials, processing and sales of products, which are called transnational corporations (TNCs), participate in a wide variety of forms. Their essence consists in the presence of large-scale associations of credit and financial, production, scientific, technical, trade and service structures in the agro-industrial complex, which carry out their operations not only in the host country of the parent company, but also in many other regions and foreign countries. A distinctive feature of the functioning of TNCs in the agricultural sector is the presence of direct foreign investment and the production of goods and services of an agricultural profile, moreover, efficiently operating medium and small farms and cooperatives are increasingly being included in their business sphere (Gapsalamov et al., 2020; Rahman and Bobkova, 2017).

The development of agricultural cooperation provides for its formation in four main areas: cooperation at the enterprise level, inter-farm cooperation, territorial cooperation at the district and regional levels, and inter-regional cooperation (German et al., 2020; Kazmina et al., 2020; Minakhmetova et al., 2020). For this purpose, within the framework of a specific regional product sub-complex (sugar beet), in parallel with the cooperation of agricultural enterprises, it is necessary to create associative formations of processing enterprises to combine material and financial resources, master rational technologies, etc (Prokhorova et al., 2016; Bykanova and Akhmadeev, 2019). However, in order to link the interests of participants, the need to create agro-industrial groups that promote vertical integration, combining agricultural production with processing, marketing, supply and agro-service. The development of these areas is due to the objective economic process, associated, on the one hand, with the social division of labor and its specialization, scientific and technological progress, natural and economic conditions, and on the other, with the need for interaction between specialized sectors and types of agricultural and industrial production (Coluccia et al., 2020; Voronkova et al., 2020a,b; Plaskova et al., 2020; Fomin, 2018; Polyakova et. al., 2019).

The structure of the agro-industrial complex that developed in stagnant years does not fit into market conditions, and especially in conditions of cyclical economic development, accompanied by impressive local, regional and world crises. The difference in production conditions by region, the level of development of productive forces, national and local traditions determines the multivariate approaches to the formation and effective functioning of regional agro-industrial subcomplexes, which are components of the agro-industrial complex. Regional agro-industrial complex is a set of technologically, organizationally and economically related agro-industrial sectors of the region, the purpose of which is to satisfy the needs of the country's population in food products and commodities from agricultural raw materials.

The final products of the regional agribusiness are represented by various food products and products of other industrial sectors-consumers of non-food agricultural raw materials. However, the enterprises of each branch of the agro-industrial complex are guided by their own interests, which are isolated from each other as business entities. And yet they are forced to constantly renew economic ties, because each of them performs only one technological stage of a single reproductive process of the final products (Osadchy and Akhmetshin, 2015; Yemelyanov et al., 2018). They are interconnected sequentially: each is a consumer of resources produced at the previous stage of the reproductive cycle, and at the same time, is a producer of resources intended for consumption at the subsequent stage.

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Owing to the increased demands of the population for high-quality, affordable and well-packaged products, a separate agricultural or processing enterprise is not able to create a market niche for itself and successfully compete with suppliers of imported food. This is hindered by the traditional uncoordinated actions of various sectors of the agro-industrial complex and the contradiction of their interests. Even in individual interindustry and inter-farm processes, a lack of proportionality, consistency and rhythm in work is often manifested, which leads to losses in the entire agricultural sector, and in the most vulnerable link - agriculture (harvesting, storage, processing and marketing of products).

2. Methods

In the absence of centralized planning in order to improve management, forecasting, planning, there is an objective need to create an integrated system of market relations, where each of its elements works for a common end result - satisfying the needs of the population in food products and maximizing profits. Such an integrated system is regional food sub-complexes, which allow combining agro-industrial sectors in a single reproduction cycle "production - processing - sales" on the basis of specialization in the production of final food products. At the same time, the aim of the regional agro-industrial specialization of production is to create conditions for increasing the competitiveness of industries on the basis of increasing production volumes, reducing costs, increasing labor productivity, product quality, and solving social problems. The criterion for identifying each specific product subcomplex in the regional agribusiness system as independent planning objects is the technological connection in the movement of the product from its initial raw material stage to the final product necessary to satisfy consumer demand (Nechaev et al. 2009).

The following subcomplexes can be distinguished in the agricultural sector of the region (Fig. 1).

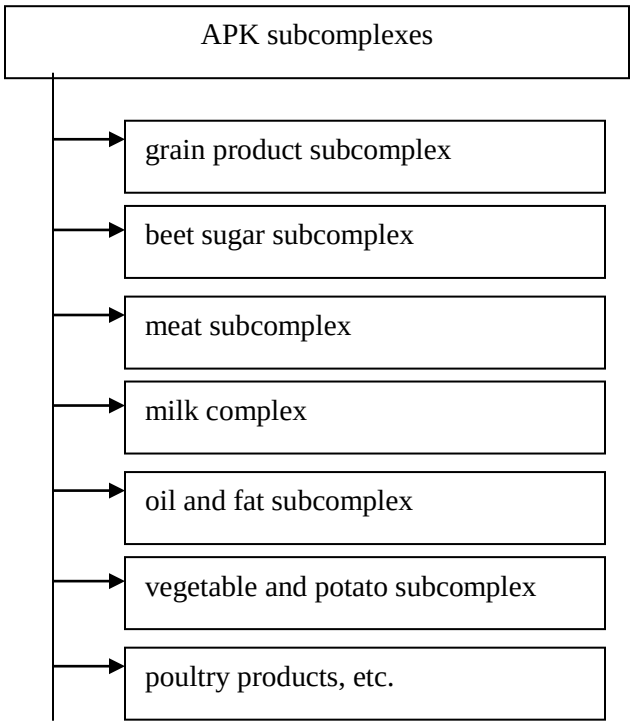

Figure 1. Subcomplexes of the agro-industrial complex

Source: own research

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The feasibility and necessity of considering the regional agro-industrial complex by product sub-complexes is important from the point of view of establishing rational proportions at different reproductive stages, each of which belongs to different industries. For example, the production of raw materials is agriculture; storage - both agriculture and specialized storage facilities in the processing industries; processing - processing industry; sales of finished products - trade. Table 1 presents the rating of world exporters of agricultural products in 2018.

Table 1. Rating of world agribusiness exporters in 2018

Rating	Country	Revenues from export of agricultural products, $ billion	The average price per kg. export products, $
1	USA	105,7	0,6
2	Netherlands	73,2	1,7
3	Brazil	65,1	0,5
4	Germany	64,0	1,4
5	France	53,6	1,0
6	China	52,5	1,8
7	Spain	43,1	1,7
8	Canada	36,6	0,7
9	Italy	35,3	2,0
10	Belgium	34,3	1,3
…	…	…	…
20	Russia	17,6	0,3

Source: Data from NEO, 2019

However, the regional agro-industrial complex cannot develop without the production of means of production for agriculture, the processing industry, and other branches of the subcomplex. Therefore, it is advisable to distinguish the following areas according to the functions performed, the role in food production and providing them with the population in the regional agro-industrial complex:

- production of means of production for agriculture, processing industry and other industries of sub-complexes;

- agriculture - agricultural production, storage of agricultural raw materials;

- processing - the processing industry, specialized storage facilities in the processing sectors of agricultural raw materials;

- production and market infrastructure - agricultural service, procurement of raw materials and finished products, storage, transportation and sale of raw materials and finished products.

The structure of the product subcomplex is characterized by the contribution (specific gravity) of each sphere to the cost of the final product. With a rational structure of the subcomplex, the bulk of the cost of the final product is made in the third and fourth areas, since agricultural raw materials are processed, stored, packaged and packaged. However, in fact, in most grocery sub-complexes in these areas less than half of the retail cost of the product is created. The existing imbalances between sectors in food sub-complexes can also be judged by the structure of labor resources and fixed production assets. So, if in developed countries the share of workers in the processing, storage, transportation and marketing of products is about 70%, and directly in agriculture is about 30%, then in our country this ratio is diametrically opposite (Melnikov, 2019).

A rationally formed structure of food subcomplexes provides: obtaining the maximum number of final products and profit with minimal labor and funds per unit of production, combining in a single technical process of

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production, storage, processing and sale of products, uniform loading of production capacities of processing enterprises, high competitiveness of semi-finished and finished products products.

3. Results

The formation of regional food subcomplexes should be carried out on the basis of a program-targeted approach, linking production processes in the agro-industrial sectors within the framework of a single reproduction process. The criterion for classifying enterprises and industries as a food subcomplex can be the degree to which industries interact with agriculture, which is part of the food subcomplex on a territorial basis. An indicator in which this criterion finds quantitative certainty at the regional level is the ratio of the optimal capacity of enterprises of the industry in this region to the real need for their services. If the indicated ratio is less than unity (or equal to it), then it is included in the composition of this food subcomplex (Kosenchuk, 2019). With this approach to determining the composition of regional food subcomplexes, enterprises of the group of capital-forming industries — tractor and agricultural engineering, equipment for the food and light industry, the production of mineral fertilizers, and a number of processing industries involved in the primary processing of agricultural raw materials remain outside. Consequently, capital-forming industries must provide their products to the entire regional agro-industrial complex, and a regional beet-sugar subcomplex, for example, may include agricultural enterprises engaged in the production of sugar beets, including seed production; processing enterprises of the sugar industry (production of sugar from sugar beets, raw sugar and bringing it to the consumer); production and market infrastructure (system of procurement, transportation, sale of sugar beets, sugar); social infrastructure (Fig. 2).

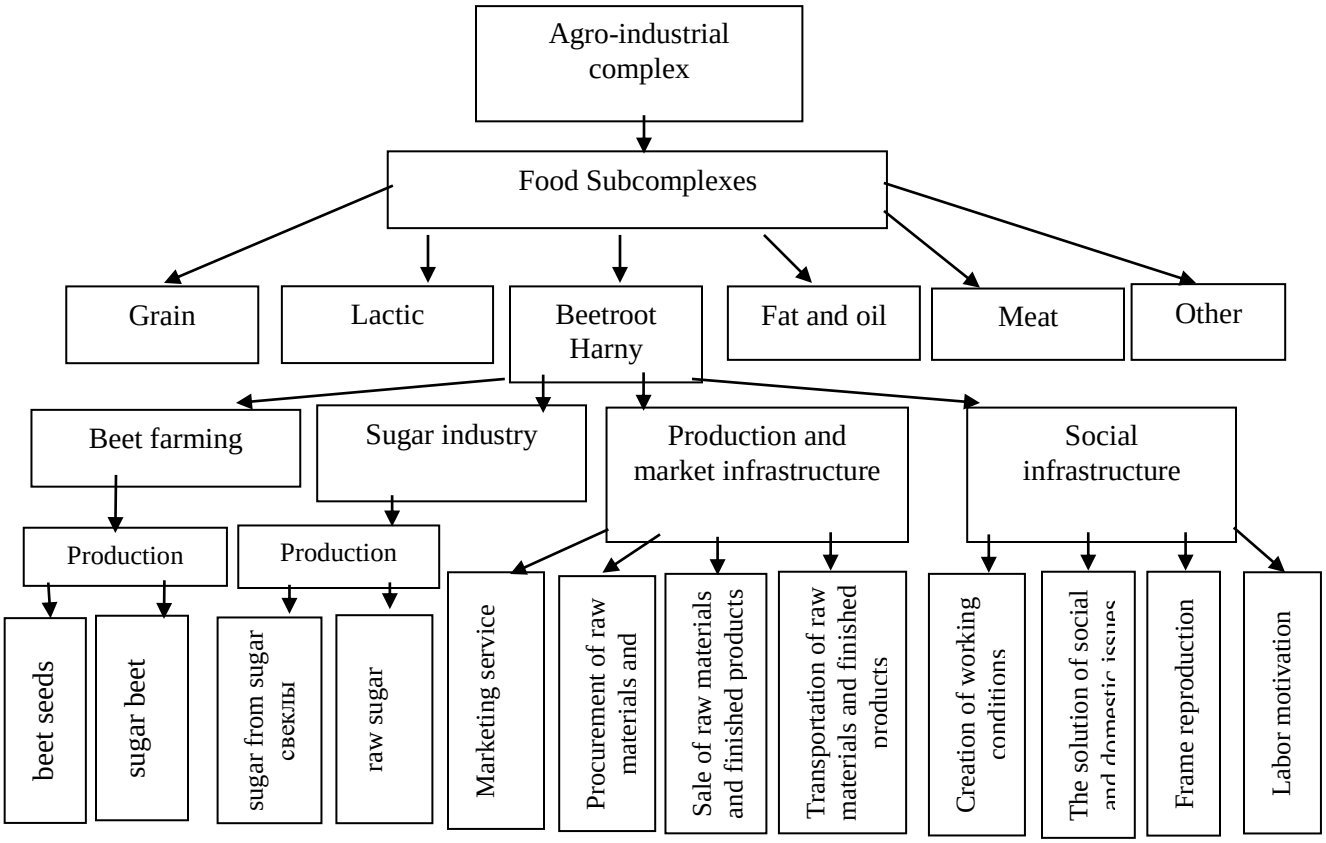

Figure 2. The product structure of the agricultural sector

Source: Authors' research

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The product structure of the regional agro-industrial complex, unlike the industrial one, provides orientation of each sub-complex to the final result with the aim of improving production technologies, its organization, marketing of finished products, and regulation of economic relations between its participants. Product sub-complexes have greater reliability. Cooperative agroindustrial and other organizational and economic formations contribute to improving the location of agricultural production, deepening its specialization, the rational use of raw materials and production potential, increasing the efficiency of agricultural sectors. At the same time, the close interconnection and dependence of agricultural cooperation, specialization, concentration and agro-industrial integration is manifested, which creates conditions for the growth of the efficiency of agricultural production. In practice, the mismatch between the location of processing enterprises and the raw material base within the region, the breakdown of intersectoral ties in food subcomplexes are the reasons for the reduction in food production, the presence of large imbalances between industries, large production and commercial risks (Kozlov, 2019).

Based on the foregoing, the formation of regional food sub-complexes is influenced by the territorial specialization of agricultural production, which is manifested in the differentiation of the distribution of agricultural sectors, that is, concentration in certain territories with relatively more favorable production conditions for certain types of agricultural products and processing enterprises. The concentration and specialization of agriculture within a certain territory determines the development of the processing of agricultural products and infrastructure sectors. At the same time, the opposite effect is also observed, that is, the development of processing industries actively affects the specialization of agriculture in a particular region. The result of these processes is the establishment of sustainable intersectoral relations between producers of agricultural raw materials, processing enterprises and infrastructure.

The main economic task in improving the efficiency of production processes is the production of competitive products that provide the necessary income to producers. Therefore, it is important to methodologically correctly evaluate the competitiveness of individual sectors and industries in agro-industrial formations.

Competitiveness is understood as a complex of consumer and price characteristics of a product (product) that determine the possibility of its profitable sale, obtaining the largest amount of profit (per 1 ha, unit of capacity, raw materials, labor, invested capital, etc.). At the regional level, the assessment of product competitiveness can be determined by the formula:

$$K_n = P / S$$

where K_n - is the level of regional competitiveness of the product, rubles. ha;

P - the amount of profit (loss) from its sale;

S - sown area or arable land used for its production.

Regional competitiveness of agricultural products (food) is a combination of climatic, socio-economic characteristics that determine the receipt of a relatively greater profit per 1 ha of arable land and agricultural land. It is determined by the ratio of the amount of profit from the sale of manufactured products to the number of land that was used for its production in a particular year.

Studies have shown that a low concentration of agricultural crops in the raw material zones of the processing industry does not contribute to the deepening of specialization, and as a result of high transportation costs, its production becomes uncompetitive. For example, the production of sugar beets at a distance of more than 50 km from the sugar factory is unprofitable. Therefore, we propose, within the framework of regional food sub-complexes, to concentrate the production of agricultural raw materials in the most favorable natural and economic zones where there are processing capacities, and it is advisable to deepen the specialization of agricultural producers on the basis of the introduction of

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scientifically-based crop rotation, that is, the creation of specialized farms of that direction, to the subcomplex of which they relate.

An important aspect of the problem of increasing the efficiency of agricultural production is the identification and classification of growth factors. We believe that in a market economy they can be divided into three groups: demand and exchange, supply, economic interaction of enterprises with the state (Fig. 3).

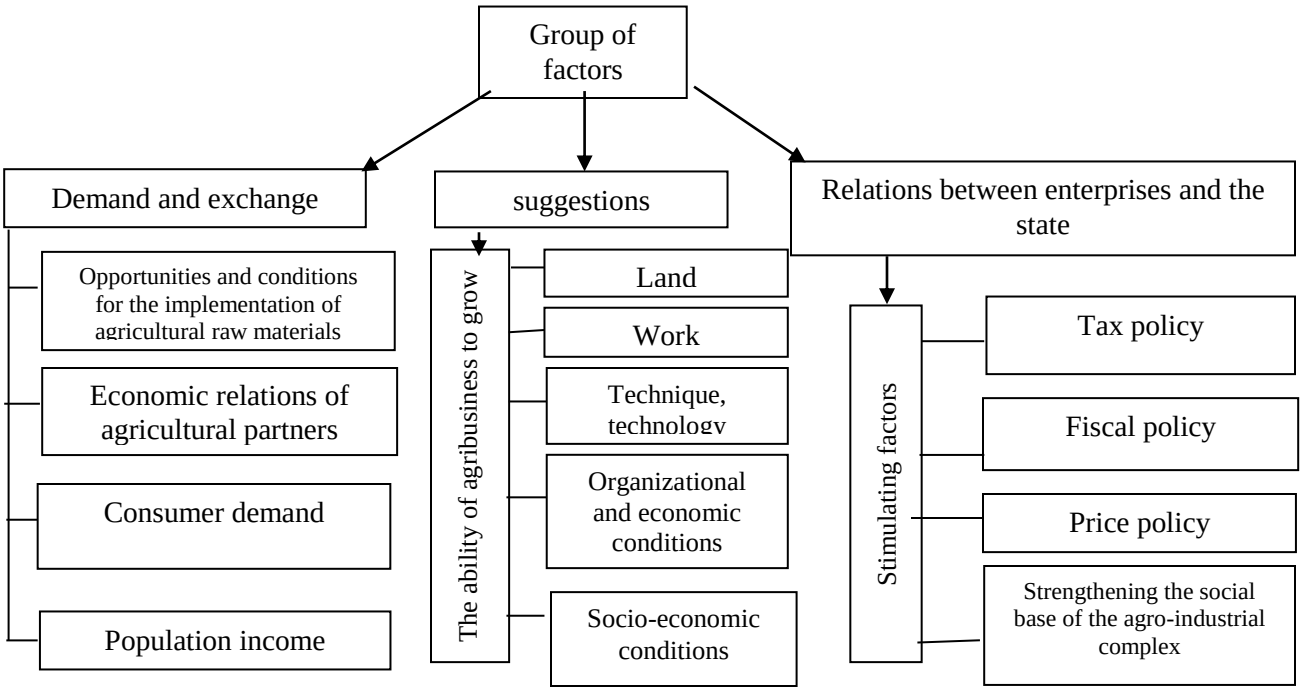

Figure 3. Classification of growth factors for the efficiency of agricultural production

Source: Authors' research

The first group of factors (demand and exchange) determines the possibilities and conditions for the sale of agricultural raw materials, the economic relations of agricultural partners, the purchasing demand of the population for food.

The second group includes land, labor, technical and technological, organizational and economic, socio-economic and other factors (Herningsih et al., 2019). They determine the physical ability of agricultural production to grow.

The third group of factors reveals the conditions of relations between enterprises and the state. It is about improving the tax, credit and financial, social policy of the state, aimed at stimulating agricultural production.

Thus, the use of such an approach to increasing the efficiency of agricultural production necessitates the justification of new (innovative) approaches to the formation and effectiveness of the functioning of regional food subcomplexes, taking into account the influence of the above internal and external economic factors.

It should be noted that the legal forms of large product groups created and can be varied, depending on the capital structure, partnership and economic goals - mixed public-private companies, private firms and corporations, joint ventures with foreign capital, financial and industrial groups , production and sales unions, associations, etc. The head of such companies and corporations can be both head integrator companies (processing enterprise, livestock complex, trading company, etc.), and a specialized management company with its own brand (Vasilev et al., 2019). At the same time, practice shows that food sub-complexes can and should be both highly specialized (for example, dairy, meat, grain, beet sugar, etc.) and multidisciplinary when they are involved in the production and

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marketing of many diverse types of food. Their effective activity largely depends on due consideration of the characteristics of individual industries, due to a fairly close relationship, and sometimes interdependence. Thus, a close relationship is observed in the production of grain, sugar beets, milk and meat, and the products of these industries are included in four food subcomplexes: grain, sugar beet, dairy and meat. Waste and by-products of some sub-complexes are often used in others. For example, straw, oilcake, beet pulp, stream, bard obtained from the processing of agricultural raw materials (grain crops, sugar beets) are effectively used for livestock feed in dairy and meat sub-complexes (Poltarykhin, 2020).

Thus, the food subcomplex is a combination of horizontal agricultural cooperation, specialization, concentration and agro-industrial vertical integration of enterprises and organizations that successively carry out the stages of the reproduction cycle - "production of raw materials - processing - sale of finished products".

Based on the definition of a regional food subcomplex, it is important to justify a system of indicators for its economic assessment in order to conduct a comprehensive analysis and draw conclusions about the main directions of increasing the efficiency of agricultural production throughout the reproduction chain. Indicators should be objective, proceed from its essence, reflect the pace and effectiveness of this process. Today, large discrepancies exist in determining indicators of the level of intensity of links in a regional food subcomplex. Some authors believe that the level of intensity can most justifiably be measured by one complex integral indicator, while others - by a system of indicators. Some believe that the level of this process can be determined by the gross output. Most economists measure the intensity of the concentration of investment of means of production and labor per unit of land. At the same time, some authors attach paramount importance to one type of cost, and others to another (Nechaev et al. 2009).

Agro-industrial integration as the basis of expanded reproduction, when the costs of social labor and its results appear and change in organic dependence, allow expressing it in a specific causal system of indicators. The measuring system of the degree of integration within the framework of production processes should be based on a set of indicators in terms of value and in kind and money terms, which allows more accurate and comprehensive measurement of this complex economic process. At the same time, since many individual indicators do not allow obtaining reasonable data on the level and dynamics in individual industries, regions and making unambiguous conclusions, there is a need to improve the methodology for determining generalizing indicators.

Currently, there are no contradictions among economists in comparing the effect with resources; the need to take into account all the resources or costs used in production and acting as growth factors. In scientific research and in practice, basically two methods are used to determine the effectiveness of agricultural production, corresponding to two forms of measuring effect and resources. According to the first of them, the efficiency of agroindustrial production is expressed in a fraction, in the numerator of which the effect (revenue) is indicated, in the denominator - resources (costs). This calculation is widely used in the analysis of criteria and intensity indicators of various levels and meets the requirement of measuring the effect with all resources. This method provides comparability of the results of individual links (with a reasonable assessment of products and resources) in time and space. However, it does not reflect the scale of production, and, consequently, the volume of contribution to the final results. The second method boils down to subtracting the cost effect of its creation from the magnitude. This is how volume indicators are formed: profit, net production (gross income), etc. However, they only reflect part of the resources consumed in the valuation (material costs, wages, depreciation). Created inventories are not taken into account, living labor costs are estimated by wages, which does not meet the requirement of commensurate homogeneous resources. If you use the estimated profit, from which the payment for production assets and fixed (rental) payments are deducted, and adjust the amount of retained earnings depending on the quantity and quality of labor resources (in the form of payment for these resources), then subject to the above requirements, a reasonable assessment of the products and resources, the mass of estimated profit will characterize the intensity (efficiency). In addition to profit, net production is also assumed as an indicator of efficiency (to characterize the activities of a particular enterprise). In practice, the level of profitability is used as a general indicator of production efficiency (Poltarykhin, 2020).

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The emerging need for in-depth studies of the effectiveness of integration of agricultural production necessitates the establishment of not only a general indicator, which is somewhat limited, not complete, but also a system of private indicators. Integration is such a multifaceted and multifactorial category that a full reflection of all its aspects is possible with the help of a system of indicators.

4. Discussion

Having determined the regional competitiveness of all types of agricultural products produced in the region, it is possible to plan a promising structure for the production of agricultural products, as well as the structure of crops, marketable products, etc.

An important aspect of the problem of increasing the efficiency of agricultural production is the identification and classification of growth factors.

The first group of factors (demand and exchange) determines the possibilities and conditions for the sale of agricultural raw materials, the economic relations of agricultural partners, and the consumer demand for food.

The second group includes land, labor, technical and technological, organizational and economic, socio-economic and other factors. They determine the physical ability of agricultural production to grow.

The third group of factors reveals the conditions of relations between enterprises and the state. It is about improving the tax, credit and financial, social policy of the state, aimed at stimulating agricultural production.

Thus, the use of such an approach to increasing the efficiency of agricultural production necessitates the justification of new (innovative) approaches to the formation and effectiveness of the functioning of regional food subcomplexes, taking into account the influence of the above internal and external economic factors.

Conclusion

Agrarian enterprises enter this unifying movement, striving to reduce the risk associated with production, its dependence on climatic conditions, the spontaneity of the agricultural product market, the dictates of processing enterprises, and the need to increase the competitiveness of production. Processing and servicing enterprises also strive to secure stable incomes due to the availability of a reliable raw material base, better use of raw materials, improving the quality of their products, reducing their cost and conquering sales markets. The choice of this or that form of integration depends on the production and economic situation in the region, the state of the food market, forms of pooling capital and their participation in management, the capabilities of the parent enterprise, but regardless of the form chosen for all agro-industrial groups, the main thing is that they unite the entire reproductive the process, from the agricultural producer to the consumer of the finished product.

Thus, the formation of regional product sub-complexes at the present stage is closely connected with the processes of cooperation and integration, due to the need to ensure technical, technological, organizational and managerial, economic unity and continuity of the expanded reproduction processes along the entire production chain “production - processing - implementation of final products” with the goal of stabilizing agricultural production and increasing its competitiveness.

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SOCIOLOGICAL FACTORS INFLUENCING THE SUCCESS OF AFRICAN IMMIGRANT-OWNED MICRO BUSINESSES IN SOUTH AFRICA

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Abstract. The sociological imbalance of African immigrant-entrepreneur hampers the growth and progress of their businesses. Therefore, the need to investigate the sociological factors influencing the success of African immigrant-owned micro businesses in Durban, South Africa. The research approach adopted was a cross-sectional field survey with a total of 364 questionnaires distributed to African immigrant-entrepreneurs in Durban with the use of cluster sampling technique. The results of the study revealed that there was a significant strong positive relationship between sociological factors and the success of foreign-owned micro-businesses in Durban. It is therefore recommended that the government should creating an enabling business environment for African Immigrant-Owned Businesses, including the protection of the lives and property of the African immigrants and their micro businesses in Durban and country wide.

Keywords: African immigrant; sociological factors; micro business; entrepreneurship; xenophobia; Durban.

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1. Introduction

Entrepreneurship implies the pursuit of perceived opportunities culminate into producing new products, viable processes and services for benefits, which, in order words, include economic and non-economic benefits to individuals, the economy and the society (Hosseininia and Ramezani, 2016). This definition goes without saying that foreigners that engage in entrepreneurship require some sort of support, autonomy and space to operate. African immigrant-owned micro business assumes a welfare enhancing business activity that takes place under good institutions that play important roles in channelling entrepreneurial imagination and initiatives into productive activities, that enables consumers to maximise their utility at a lower cost (March, Martin and Redford,

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2016), these activities benefit both the entrepreneur and the society at large (Hosseininia and Ramezani, 2016; Kowo et al., 2019). In addition, they generate economic wealth informed by innovativeness and ability to adapt, filling the gaps in the market (Herman and Szabo, 2014).

In the South Africa context, micro business is defined, according to National Small Business Act 102 of 1996 as amended in 2019, as those entrepreneurial ventures that employ between zero to ten (0-10) employees and generate an annual turnover of not more than 7.5 million rand. However, the sociological imbalance of the entrepreneur in the field of his/her business operations or activities hampers the growth and progress of such venture. Therefore, it became imperative to investigate the sociological factors that influence the success of African immigrant-owned businesses in Durban, South Africa.

2. Background

After the past global financial crisis that befell most economies of the world, plunging South African economy into recession. South Africa domestic economic policies changed and new political administration came into being. The instabilities impacted on the economy, especially the Small, Medium and Micro Enterprises (SMMEs) landscape in South Africa (The Bureau for Economic Research, 2016). In other to cushion these factors brought about by the economic difficulties and other challenges faced in the economy, freedom of trade, occupation and profession were guaranteed in section 22 of the constitution of South Africa. As a direct consequence of the above changes, micro businesses became a critical component of the economy and also major contributor to the strength of the domestic economy (Brown, 2018).

That notwithstanding, retrospectively, The Herald online (2015) reported that one traditional ruler submitted that foreigners (African Immigrants) should go back to their home countries because they are changing the nature of the South African society with their *amanikiniki* (rags) and enjoying wealth that should have been for local people. The traditional ruler further stated that it is unacceptable for South Africans to compete with people from other countries for few available economic opportunities. He also mentioned that when you walk in the streets you cannot recognise a shop you used to know because it has been taken over by foreigners, who mess it up by hanging *amanikiniki* (rags).

Additionally, xenophobic attacks on foreign nationals reared its ugly head again in April 2019 resulting in the loss of two lives in KwaZulu-Natal, which created a tensed atmosphere that gripped the entire resident foreign nationals in and around Durban. Some people call these attacks xenophobic; others brush it away as just mere crime, while others argue that South Africans are not xenophobic (News24 2019). African Ambassadors to South Africa met with the South Africa government representatives (Minister of International Relations and Co-operation Lindiwe Sisulu; Minister of Police Bheki Cele; and Minister of Home Affairs Siyabonga Cwele) to obtain government's response on the alleged xenophobic attacks against their citizens in South Africa on April 2019. The Ministers chose to present a litany of crimes being committed by foreign nationals in South Africa instead of addressing issues squarely (Fabricius, 2019).

3. Problem statement

There has been the presumption that African immigrants cause up-swing of unemployment in South Africa, instead of acclaimed job creators and employment providers through micro businesses. The failure to acknowledge the relevance of African immigrant-owned micro businesses feeds the locals with negative sentiments towards foreign nationals which affects their ability to prosper. Again, the hostility and unsympathetic treatment of foreign nationals generated by these sentiments in South Africa had resulted in the xenophobic outbreaks towards African immigrants. As indicated by Alfreds and Phakgadi (2019) it was said by the President

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of South Africa, Mr Cyril Ramaphosa that people come into the townships and rural areas set-up businesses without licences and permits and that the government will bring an end to this. The statement appeared to have threatened the foreign-owned micro businesses. As a result of this and other comments, especially from the government and politicians, African immigrant-owned businesses continue to suffer while facing many challenges, such as victimisation. The fears created by actions of the local populace coupled with other criminal activities and corruption meted-out on African immigrants causes setbacks on their business development and sustainability, thereby affecting their sociological status (Ngota, Mang'unyi and Rajkaran, 2018).

4. Literature review

In South Africa's new democracy, following the former apartheid regime, several initiatives have been implemented to boost the economy, especially entrepreneurship. Local initiatives that focus on equipping and financing entrepreneurs, especially those who, historically, marginalised (Black people and women), were created (Brière, Tremblay and Daou, 2014). Nevertheless, the report shows that South Africa's rate of Total early-stage Entrepreneurial Activity (TEA) declined by 34 per cent from 2013 to 2014, with only 7 per cent of the country's adult population engaging in entrepreneurship (Illingworth, 2015). The 2014 TEA rate showed that South Africa backslid three times lower than its expected entrepreneurial activity rate, given its *per capita* income (Illingworth, 2015). According to a World Bank Group study, more than half of South Africa's population are found in townships and informal settlements (38 per cent of working population) but this has not translated into widespread interest in entrepreneurial activity (Mulligan, 2015).

However, the current Global Entrepreneurship Monitor's (GEM) (2016) report on entrepreneurial activity in South Africa affirmed that, although very low, has increased marginally over the last 10 years, but in 2014 dropped by a staggering 34 per cent (from 10.6 per cent to 7 per cent). There has been an increase in women's entrepreneurship primarily due to government support, but the perception of opportunities to start a business, and confidence in one's own abilities to do so, remains alarmingly low compared to other sub-Saharan African countries (GEM, 2016). At the current stage of economic development in South Africa today one would expect the entrepreneurial activity rate to be higher than it was, this in turn would contribute to a broader rebound among commodity exporters, emerging markets and developing economies, and overall global growth (World bank, 2018).

Moreover, the rate with which extant business terminates exceeds the rate of business start-ups, consequently causing a loss of business activity and possible job losses (GEM, 2016). However, according to Global Entrepreneurship Monitor's report that, there exist two categories of entrepreneurship motivation; 'opportunity entrepreneurship' in which the entrepreneur discovers exploitative opportunity and 'necessity entrepreneurship' where there is no other choice to making a living. The latter has been reported to be more prevalent in low-income countries.

4.1 Foreign national-entrepreneurs in South Africa

According to Lin (2014), getting to hear about the success of foreign national-entrepreneurs in South Africa boosts the conviction of other economically minded foreign nationals to move to South Africa, not only for profit-making but also inclusion in the social class and being one's own boss. Fatoki (2014) notes that foreign nationals may be a significant catalyst in the creation of new businesses, and that foreign national entrepreneurship can positively impact the economy of South Africa, which (foreign national entrepreneurship) have proved to be key engines of growth in their host countries. According to Fatoki (2014), the failure of the private and public sectors to absorb the growing number of job seekers in South Africa has led to an increase in attention paid to entrepreneurship and its potential to economic growth, job creation, and poverty alleviation. Hence, South Africa's economy readiness for foreign national entrepreneurs' investment in economy.

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Notwithstanding the above, South Africa were so deeply entrenched, the inequities of apartheid continued to reproduce themselves even after 1994. In order to significantly transform South African society, the government focused on programmes that address income, human capital (education, skills and health) and asset poverty and inequality. New policies and programmes were introduced to address the needs and vulnerability of children, people with disabilities and the aged, through social assistance grants and other developmental social services. Labour market interventions were also introduced to address inequality (affirmative action policies) and poverty (such as public works programmes). Further, measures were again put in place to address asset poverty, such as land reform and the provision of housing and basic services (United Nations Conference on Trade and Development (UNCTAD), 2018).

The transformation of South Africa's socio-political structure that brought about a massive change in the country and made it a financially attractive destination, which invited not only the investors and entrepreneurs but also the skilled and educated workers from within the continent and beyond. South Africa offers a remarkable focal point to explore legacies of liberation, because of the enormity of the task of transforming society to address the legacies of apartheid because of the substantial legal, institutional and financial resources available to the government, to foster significant change. However, other countries independence in the region such as Mozambique and Angola were shaped by civil war and military intervention by the apartheid regime and the superpowers. South Africa's transition was strongly supported by regional and international actors. As a result of the above, the resources available to the government and the long history of workers and community participation in the country's mass democratic movement gave high hopes and expectations that the new South African government would introduce policies and governing practices that would foster inclusion and address the deep levels of inequality, poverty and violence that characterised the society (Clarke and Bassett, 2016).

The rise in foreign-owned entrepreneurships, which has proved an international trend, is also being experienced in South Africa, because of the country's economic and political leverage that is beyond Africa. South Africa has become a common destination, as well as, home for many African immigrants, and has enhanced the growth of African foreign-owned entrepreneurship in South Africa. African foreign nationals believe that South Africa offers a great opportunity for both personal growth and economic advancement, and venturing is worth the risks (Moyo, 2014). This entrepreneurship provides foreign nationals (immigrants) work and income imminently, as it is very difficult to enter into the labour market to find jobs. Hence, African foreign nationals can become a vital force in the creation of new businesses because of their high self-employment level, instinct and entrepreneurship, and this can influence the rate of employment in South Africa positively (Fatoki, 2014).

4.2 Contributions of foreign-owned micro businesses towards South Africa economy

Chimucheka and Mandipaka (2015) claim the researchers in the field of entrepreneurship have also confirmed that the SMME sector plays a key role in economic growth, job creation, poverty alleviation, and addressing inequality. According to NCR (2011), the South African government is fully aware of the major contribution of the SMME sector towards the socio-economic development of South Africa. The White Paper on the National Strategy for the Development and Promotion of Small Business in South Africa also recognises the numerous contributions of the SMME sector in South Africa. Fatoki and Smit (2014) assert that due to the numerous contributions of the SMME sector, the South African government has called for the support of these businesses and for novice entrepreneurs, particularly those in disadvantaged areas. Below are the major contributions of foreign-owned micro businesses towards the South African economy.

4.2.1 Job Creation

Small, micro and medium enterprises are the hope of an ailing South African economy with low growth prospects and high unemployment. Aigbavboa Tshikhudo and Thwala (2014), in their study, strongly believe that SMMEs have the potential to reduce South Africa's unemployment rate. They are positioned to provide job opportunities

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and to contribute significantly to the Gross domestic product (GDP), create jobs and also globally known to be the mechanism to generate new jobs in society. Globally, over 95% of enterprises are SMMEs, which employ 60-70% of the working population. Additionally, there are only about 250 000 SMMEs in South Africa, accounting for just 28% of formal jobs in the economy (Vuba, 2019). As reported by Statistics South Africa, SMMEs are a vital tool in the creation of sustainable jobs.

4.2.2 Poverty Alleviation

According to Chimucheka and Mandipaka (2015), the SMME sector in South Africa has been playing a critical role in alleviating poverty in the country. Creating entrepreneurship and nurturing entrepreneurs is perceived as one of the key aspects of revitalising the economy of South Africa. Youths and other unemployed people are often encouraged to start-up their own businesses and become successful entrepreneurs. These initiatives are being driven by development agencies, successful entrepreneurs (under apprenticeship scheme) and business schools at universities, as well as other tertiary institutions. In as much as these efforts are vital toward the growth of the economy, they equally eradicate poverty by empowering ordinary people on the street who remain important to the economy. In so far to say, without meaningful participation in economic growth, the cycle of poverty is never broken (The Mail and Guardian, 2019).

4.2.3 Reduction in the levels of inequality

The number of South Africa's poor could be reduced by more than half by 2030 through various policy interventions that will reduce inequality by creating skilled jobs for the poor, igniting growth by increasing competition and promoting skill migration. Projecting the South African economy through 2030, the 11th edition of the South Africa economic update focused on Jobs and Inequality, assessing the potential impact of a combination of various policy interventions on jobs, poverty and inequality. The report presents a scenario in which the number of the poor could be reduced by more than half (dropping to 4.1 million by 2030 from 10.5 million in 2017). Further, the report showed that reducing South Africa's high inequality will require improving education and spatial integration to provide the poor with skills that are required to meaningfully participate in a capital and skills intensive economy (The world bank, 2019).

4.3 Sociological Entrepreneurial Factors

There are some fundamental factors associated with the social sphere that determine entrepreneurship. These factors, as Ikeije and Onuba (2015) posit, emanate from the attributes of ethnic affiliation, race, social interconnectivity, and cultures. Arguably, however, elements such as, "personal traits (risk-taking attitude, personal performance, inner control, target orientation), motives, and incentives" of an entrepreneur are environmental factors that confront the successes of the entrepreneurship (Ikeije and Onuba, 2015). Hence, since the nature presents the society with assorted ambiance, better relevant business oriented behavioural ways of achieving successes should be encouraged and acquired.

Further, culture is one of the main pillars of development and sustenance of many communities and there is no society that can progress in absence of this. Culture is the identity where common values, attitudes, preferences, knowledge are attributed to the behaviour in a particular social group and has a positive influence on social development in any given economy. For instance, traditional celebrations are some of the core aspects of any culture (weddings, harvest festivals, religious holidays or national observance). The celebrations are interwoven with the overall cultural identity. These celebrations offer excellent opportunity for intercultural exchange and understanding. The undertakings contribute to an increase in the intellectual potential and build conscious, open and tolerant society (Kimanuka, 2016).

However, another school of thought views culture in another different light; that "culture does not exist in a tangible sense. It is a product of our imagination and only useful as much as it helps us understand and predict

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phenomena in the real world. National and organizational cultures are quite different phenomena: national cultures belong to anthropology, organizational cultures to sociology. Management can never change a national culture; it can only understand and use it. It can create and sometimes change an organizational culture. The concept of culture does not apply at the level of individuals. Individuals have personalities, only partly influenced by the culture in which they grew up" (Hofstede, 2019).

5. Methodology

The study site was Durban Central Business District in KwaZulu-Natal province, South Africa. The target population was the informal micro businesses with a population of 6,238 (Economic Development and Growth in eThekwini 2013). A cross-sectional research design was adopted to investigate the research phenomenon. The questionnaire consists of two parts, the first part comprises of the biographical information of the participants while the second part consist of questions which intent to measure the sociological factors influencing the success of African-immigrant owned micro businesses using 5-point Likert scale of 1 (strongly disagree) to 5 (strongly agree). A total of 364 questionnaires was distributed using cluster sampling technique to select participants for the study, only 364 were returned.

5.1 Data Analysis

Descriptive statistics shows that (84.91%) of the participants were males, whilst 15.1% were females. Majority of the participants, a total of 153 (45.3%) were between the ages of 31-40, followed by the participants in-between the ages of 41-50 years which were 132 (39.1%). Most of the participants that made 25.4% of the population sample have lived in South Africa for a 10-12year period. This group was followed by the group of participants that have lived in South Africa for 13years and above who made 21.6% and also followed by another group that have stayed for 4-6 years making 21.3% of the participants.

The least groups in the distribution are the group of participants that have lived in South Africa for 7-9year period making 18.9% of the participants and finally, the 0-3year period group that made 12.7% of the participants that formed the sample of the population. 32.3% of the participants have done business in Durban for lesser years (0-3 years). This group was followed by the participants that have survived the business storm for 7-9years which made 26.7% of the sample and those that have done business for 10-12 years that made 16% of the sample. 14.2% of the participants managed to scale through the first three years of having done business in Durban, which got them in the bracket of 4-6years, whilst 10.7% of the entire population sample have managed to survive doing business in Durban for 13 years and above.

Accordingly, it was revealed that most businesses owned and run by African immigrants in Durban were under the categories of African food and groceries (28.1%) and household items and services (28.4%). These groups are followed by those that deal in ICT (Information and Communication Technology) and Innovation, which made 19.2% of the population sample, whilst the category of wearables and cosmetics made 16.9% of the sample. The least of the categories is the ungrouped items that made only 7.4% of the entire population sample. The percentage distribution above revealed that most of the businesses established by African immigrants in Durban South Africa fall under the categories of African food and groceries, household items and services, ICT and Innovation.

5.2 Factor Analysis

The validity of the self-developed research instrument was evaluated using Factor Analysis. In extracting the factors, only items with loadings > 0.4 were significant. Two factors were identified, and they account for 77.964% of the variance in the data (Table 1).

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Table 1: Pattern Matrix

	Factor	
	1	2
1. I can communicate (with customers, suppliers, etc) in my business	.935	
3. I understand when customers ask questions or highlight their needs	.826	
5. I understand how customers make decisions and negotiate	.659	
2. I understand the importance of time and deadlines	.648	
10. I can enter into the local market		.877
9. I can negotiate successful business deals		.877

Extraction Method: Principal Axis Factoring.
Rotation Method: Promax with Kaiser Normalization.
a. Rotation converged in 3 iterations.

Source: From the study

Factor 1 includes four items and labelled Internal because it seems to be about dealings with people inside the business, while factor 2 includes two items and labelled External because it indicates dealings with people outside of the business.

The reliability of the measuring instrument was evaluated using Cronbach's Coefficient Alpha to test the reliability of these factors. Accordingly, Sekaran and Bougie (2016) recommend that a Cronbach's coefficient alpha score of 0.07 and beyond is considered reliable. The findings reveal that the research instruments employed in the study was highly reliable and has a very high level of inter-item consistency ($\alpha = 0.857$ and $\alpha = 0.839$) respectively (Table 2).

Table 2. KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		.742
Bartlett's Test of Sphericity	Approx. Chi-Square	1029.375
	df	15
	Sig.	.000

Source: From the study

Accordingly, KMO and Bartlett's test was further employed, to determine the validity of the research instrument. Madanchian, Hussein, Noordin and Taherdoost (2018) suggest that the, KMO measure of sampling adequacy index ranges from 0 to 1, reaching 1 when each variable is perfectly predicted without any error by other variables. A KMO value of 0.742 indicates adequacy of the data for data extraction; while the significant result of Bartlett's test ($p<.0005$) indicates that the items do not correlate either too highly or too lowly with each other (Table 3 and Table 4).

Table 3. One-Sample Statistics

N	Mean	Std. Deviation	Std. Error Mean
338	4.5621	.47706	.02595
338	4.6908	.60645	.03299

Source: From the study

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Table 4. One-Sample Test

	Test Value = 3					
					95% Confidence Interval of the Difference	
	t	df	Sig. (2-tailed)	Mean Difference	Lower	Upper
INT	60.201	337	.000	1.56213	1.5111	1.6132
EXT	51.258	337	.000	1.69083	1.6259	1.7557

Source: From the study

One-sample test with an average mean score (M=4.56), t (337) = 60.20, p<.0005 for Internal and (M=4.69), t (337) = 51.26, p<.0005 for External shows that both factors boost success of African immigrant owned micro business. Further paired samples t-test was conducted to see if they are equally important to performance showed that External factors has a bigger influence on the success of the business than Internal factor.

Table 5. Sociological factors measured

S/N	Items	Mean	SD	T
1.	I can communicate (with customers, suppliers, etc) in my business	4.51	.650	42.578
2.	I understand the importance of time and deadlines	4.55	.549	51.897
3.	I understand when customers ask questions or highlight their needs	4.65	.507	60.015
4.	I know how people respond to management and authority	4.48	.744	36.573
5.	I understand how customers make decisions and negotiate	4.54	.566	49.963
6.	I can manage employees and projects	4.56	.709	40.441
7.	I have the tendency to take business risks	4.59	.649	44.912
8.	I can develop and maintain business relationships	4.67	.471	65.157
9.	I can negotiate successful business deals	4.75	.564	57.113
10.	I can enter into the local market	4.63	.732	40.921

Source: From the study

From table 5 we can infer that the mean scores when compared to a maximum attainable score of 5, on a 1 to 5-point Likert scale, suggests that there was a significant strong positive relationship between sociological factors and foreign-owned micro-businesses in Durban.

6. Conclusion

Findings from the study showed that there was a significant positive relationship between sociological factors and the success of African immigrant-owned business in Durban. Thus, sociological characteristics positively influenced African immigrant-owned businesses in Durban. It was also established that language is an important factor which affects foreign-owned businesses in South Africa. Summarily, lack of knowledge of the local language remains very vital to the smooth running of the business, in order words, in absence of the knowledge of the indigenous language, effective communication, information gathering and evaluation are hampered (Ngota, Mang'unyi and Rajkaran, 2018). Therefore, an entrepreneur and his team can only survive if only they have a full command of the language in the country in which the business is being conducted.

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7. Recommendation

Recognising the fact that creating an enabling business environment for African immigrant-owned micro businesses has been lacking and very difficult in nature. The study, therefore, recommends that the government should, as a matter of importance, create a conducive and opportunity-driven, enabling business environment, including the protection of the lives and property of the African immigrants and their micro businesses in Durban and country wide. It is mostly an undeniable fact that many foreign-owned micro businesses, especially African immigrant-owned micro businesses in Durban and South Africa, are faced with diverse challenges, including; rigid regulatory framework, crime, xenophobia, and culture issues.

Scholarly literature (Khosa and Kalitanyi, 2015) shows that South Africa is considered as an economic powerhouse of Africa that attracts many investors and entrepreneurs. Asongu and Odhiambo (2019) also confirm that the conducive business environment in Africa has been attracting foreign migrants from diverse parts of the world of which South Africa in inclusive. However, in recent times many African immigrant-owned micro businesses have expressed the view that the above challenges are affecting them and their various businesses. Though most of the participants report that South Africa has an enabling business environment, others believe that the business environment is not conducive for their business operations.

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TOURIST SPENDING AND PRODUCTIVITY OF ECONOMY IN OECD COUNTRIES – RESEARCH ON PERSPECTIVES OF SUSTAINABLE TOURISM*

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Abstract. Tourism represents the sector of services which is developing the most considerably and dynamically. However, its development is influenced by: trends in globalization, process of demographic aging, economic parameters, geographical conditions of a country, consumers, and other aspects. The following aspects contribute to its development: new destinations, markets, innovative activities in service sector, and also technological development. Tourism plays a significant economic role in a process of sustainable regional development, where it helps to develop low-growth regions. Monitoring and quantification of tourism outputs is a very complicated process. There also absents a quality database, which complicates a quantification of sector's efficiency and a creation of national and international benchmarking indicators that inform of sustainable tourism level. These aspects demand a realization of multi-dimensional analyses, which would examine causal relations between tourism factors and economic parameters of a country. The study's motivation was driven by all of the above-mentioned facts. It aims at researching an influence of tourism spending on OECD countries' productivity. Consequently, it evaluates their potential of the sector's sustainability. Multiple analytical procedures, which were determined by database availability, were performed in order to achieve the, research aim. The following analyses were performed besides the descriptive statistics: variance analysis of researched variables between individual years and OECD countries, context analysis, regression and cluster analyses. There were analysed 5 variables that characterize individual types of tourist spending: Business Tourism Spending, Domestic Tourism Spending, Leisure Tourism Spending, Outbound Travel & Tourism Expenditure , Visitor Exports (Foreign Spending) and one variable that characterizes productivity during 2010 – 2018 for all OECD countries. Spending variables were standardized per 1,000 inhabitants of a given country and productivity was measured by GDP per capita, while both groups of variables were provided in USD (fair value). The analyses' results provided interesting findings. The regression models' outputs confirmed an influence of tourist spending on a country's productivity. All variables that indicate spending are significant. The cluster analysis's results allowed a selection of countries into four groups. There is two huge clusters and other two clusters represent only one countries in specific cluster. Luxemburg and Iceland give us different values than countries in other clusters. The countries with higher rank are as follows: Australia (AUS), Austria (AUT), Belgium (BEL), Canada (CAN), Germany (DEU), Denmark (DNK), Finland (FIN), France (FRA), Unites Kingdom (GBR), Switzerland (CHE), Ireland (IRL), Italy (ITA), Netherland (NLD), Norway (NOR), New Zealand (NZL), Sweden (SWE), United States (USA), Island (ISL) and Luxembourg (LUX). On the other hand, the countries with lower rank are as follows: Czech Republic CZE, Spain (ESP), Estonia (EST), Greece (GRC), Hungary (HUN), Chile (CHL), Israel (ISR), Japan (JPN), Korea (KOR), Lithuania (LTU), Latvia (LVA), Mexico (MEX), Poland (POL), Portugal (PRT), Slovak Republic (SVK), Slovenia (SVN) and Turkey (TUR). These findings provide a space for a deeper research of effect between determinants of tourism development and economic indicators, while they enable to reveal a space for a growth of countries' productivity that would provide a sustainability in tourism sector.

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Keywords: tourist spending; sustainable tourism; sustainable development; productivity; expenditures; tourism; OECD

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1. Introduction

At present, tourism is characteristic of a quantitative growth of domestic and foreign visitors' number, significant (predominantly non-controlled) growth of tourism infrastructure, travelling for long distances and geographical expansion. Tourism represents such activities that are linked to place of origin, i.e. region, or destination. Thus, it is considered as one of the key engines of a region's economic growth.

Stimulating the growth of the productivity by the development of the tourism industry has frequently been taken as an important economic development strategy for the majority of developing countries (Seghir et al., 2015). As a result of the increasing importance of the tourism sector for the country's economy, the matter to explore the relationship between tourism spending and the productivity of the country has drawn more recent attention. It is also because the understanding of the causal relationship between them is highly important in the design and implementation of tourism policies. According to Oh (2005) the causal relationship between tourism spending and economic performance has been synthesized into three assumptions within the literature: 1) the hypothesis of tourism-led economic growth; 2) the hypothesis of economic-driven tourism growth; and 3) the reciprocal causal hypothesis. The present study examines separately and focuses on the understanding of the causality outlined in the first assumption, but fully accepts the reciprocal effect that can be present. Tourism is a sector of the economy, and thus, without any doubt, belongs to the sphere of business, with its various subdivisions. The importance of the issue in association to the fields of management is underlined by Stefko and Nowak (2014). It is also a branch of science, although on account of its interdisciplinary composition, it is not an independent field of science (Sawicki, 2016). The impact of tourism in the global economy is significant. Being a worldwide phenomenon, tourism has become one of the fastest growing sectors of the global economy (Kasim, 2006). Further, Ritchie and Crouch (2003) argue that the development of tourism in a destination or country should be sustainable from an economic, ecological, socio-cultural perspective, to be competitive (Dibra, 2015). Being competitive, tourism can contribute successful to the development (UNWTO, 2013).

The facts given in the following sections of the study point to heterogeneous structure of tourism, real limitation of its individual categories, as well as correlation among them. Consequently, it is very important to explicitly and accurately define chosen categories, their procedural trajectories and relations among them.

The main motivation to realize this research was a very current issue of a research of economic relations in tourism. The study's aim was to examine causal relations between determinants of tourism development and economic indicators, and to reveal a space for a growth of OECD countries' productivity and a sustainability of tourism sector, as well as entire economy. The results represent a valuable platform for creators of regional, national policies, as well as creators of strategic-development plans and concepts.

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2. Theoretical background

Indicators, such as internal tourism consumption and spending on internal tourism represent tourism influence on a state's economy on the demand side. The indicator, spending on internal tourism, is a part of internal tourism consumption.
The tourism is exanimated through the following perspectives in this study: Business Tourism, Domestic Tourism, Leisure Tourism, Outbound Tourism (Outbound Travel), Inbound Tourism (Visitor Exports).

Business tourism corresponds to very different domains, its field enrolling alike: global diplomatic meetings and meetings between representatives of different countries, economic and trade negotiations meetings, meetings for the exchange of scientific and technical information and communication of the results of certain research and development projects, cultural and educational meetings, as well as events specific to various forms of cultural manifestation, sports competitions, etc. (Nicula, Popsa, 2014). Despite attempts by individual authors to define business tourism, most of them adopt the criteria of the "business trip" (Sawicki, 2016). Swarbrooke and Horner (2001, p.21) distinguish the following business trip or event categories: conferences and meetings (organisations and companies), congresses, training, fairs and exhibitions, incentive travel, promotional events, short-term work-related relocation (contract, secondment), lecturer or student exchange programmes, commuting to work outside the residential area, individual business trips, diplomatic missions, tasks performed by the military away from their permanent base, delivery of goods to customers, charity assistance to Non-Government Organisations. Taking into account the approaches of different authors we can conclude and being inspired by Nicula and Popsa (2014) we can understand a business tourism as a form of tourism for commercial, governmental or educational purposes, with the recreational (leisure) part as a secondary motivation. There are many kinds of business tourism: individual trips, group trips, displacements at events (Meetings, Incentives, Conventions, Exhibitions (MICE), team building and training trips.

Leisure tourism is considered as very important in terms of mental, physical and emotional health, but our understanding of how this works remains limited, its practices can be significant in friendship, community-building, empowerment and identity as enjoyment (Crouch, 2013). We have to distinguish between the following terms 'leisure' and 'leisure tourism'. Leisure, as 'free time' (and not as a specific activity), might be a necessary precondition for modern leisure tourism. Travel is the distinguishing mark, which tends to make it into an extraordinary activity (Graburn 1989), in contrast to other, more ordinary, everyday leisure activities, which do not involve travel (Cohen, 2010). Consequence that may stem from leisure tourism and recreation development is that price inflation and property prices may rise, making it increasingly difficult for those not participating in the development and thus benefiting from rising wages and profits to remain in the area – the economic displacement can occur (Tribe, 2015).

In most countries the domestic tourism is dominant with respect to international flows in terms of both size and economic contribution (Massidda, Etzo, 2012). It is stated that a vibrant domestic tourism sector can "cushion the industry from fluctuations of the international tourism market and bring stability and predictability in the industry" (Okello et al, 2012, p.79). The domestic tourism represents the largest part of worldwide travel spend (71.2% in 2018) and had the strongest growth in developing nations, continues to support opportunities by spreading development and regional economic benefits and building national pride (using the last available data from WTTC, 2019). The continued growth in domestic tourism is linked to the trend for shorter holidays closer to home, a phenomenon referred to as „staycation" (Papatheodorou et al., 2010) and global trends indicate that tourism is becoming a regional/national rather than a global phenomenon (Kruger, Douglas, 2015). Domestic tourists with limited incomes generate numerous economic benefits, for example (Scheyvens, 2002, Samy, 2016): bringing economic benefits to areas not frequented by other tourists; less subject to seasonality than international tourism; spending more on locally produced goods with cheaper prices compared to imported luxury items; requiring small accommodation services with basic infrastructure therefore ensuring lower overhead costs and

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minimizing the need for imported goods; significant multiplier effect from relying on local skills and resources. Domestic and international tourism demand are often characterised by different patterns in terms of economic impacts and therefore should be analysed separately to capture their relationship with economic growth (Pulina, 2010). Outbound tourism is another indicator taken into account within the study in this paper. As Lin et al. (2015) states, studies published on outbound tourism demand are relatively small in number compared with the inbound tourism demand studies. Based on the importance of tourism and its contributions, it is important to determine the factors affecting tourism demand behaviour (Dragouni et al., 2016). Possible determinants of outbound tourism expenditures can be analysed both within a macro framework as well as micro framework. Macro-based studies use macroeconomic time series data in order to construct aggregate expenditure models of international tourism expenditures (Gozgor, Demir, 2018). By using surveys, micro-based studies try to examine "why", "how" and "on what" the tourists spend their money (Sheldon, 1990). From the macroeconomic point of view (Horvathova, 2014), to underline the connection between the GDP and outbound travel expenditure, we can use for example the findings of various authors (e.g. Gozgor, Demir, 2018, Vietze 2011), who show that economic factors (such as the gross domestic product per capita and trade openness), institutional quality (such as civil rights, political stability, effective governance, the level of corruption and freedom to speak), sociological factors (such as literacy rate and life expectancy), and tourism information affect the outbound tourism expenditures.

Inbound tourism, as an opposite of outbound tourism, is represented in the research within this paper by the Visitor Exports (taking into account the economic impact by foreign spending within the country by international tourists). The successful and sustainable development of inbound tourism necessitates a long-term commitment, balancing between tourism supply and tourist demands (Chen et al., 2018). Many studies in the literature analyse macroeconomic and non-economic determinants of inbound tourism. For instance, conflicts, political instability, security, and terrorism are also used as potential uncertainty sources affecting tourism development (Ghaderi et al., 2017; Saha and Yap 2014; Saha et al., 2017). Secondly, tourism economists consider an "economic framework" (known as market demand theory) to analyse tourism demand and expenditure (Demir, Gozgor, Paramati, 2019). The findings of several authors (e.g. Gholipour et al. 2016; Demir and Gozgor 2018) are also in parallel with the implications based on the conclusions of other papers listed in this study: the gross domestic product positively affects inbound tourism as expected. The expenditure behaviour of tourists from an inbound perspective also generates deeper insights from the interactions between spenders and service providers in the global tourism market (Mehran, Olya, 2019). The term 'visitor expenditure' has been clearly defined by the World Tourism Organization in 1991 as the total consumption expenditure made by a visitor or on behalf of visitors for and during his or her trip and stay at the destination (Syakir et al., 2015). Many studies have been conducted on visitor expenditure (Ashley, 2006; Meyer, 2007; Anyango et al., 2013). Visitor expenditure usually comprises of six main components such as transportation, lodging, food and beverage, gifts and souvenirs, entertainment and recreation (Syakir et al., 2015). The World Travel & Tourism Council (VTTC) uses for the visitor expenditure the term Visitor Exports (Foreign spending). As it was mentioned above based on the data from WTTC (2019) the domestic travel spending generated 72.2% of direct travel and tourism GDP in 2019, which can be compared with the 27.7% for visitor exports (e.g. foreign visitor spending or international tourism receipts). Thus, the visitor exports in the inbound tourism still represents a very important part of the tourism from the economic point of view also.

Across many industries, productivity remains one of most comprehensive and reliable benchmark (Coelli et al., 2005, Carnicky et al., 2017). Productivity is a complex phenomenon and involves several components and using simple metrics to reflect the overall tourism productivity can be misleading for policy implications (Barros, Botti, Peypoch, Robinot, and Solonandrasana, 2011). Productivity is usually measured based on multiple inputs and outputs and, as mentioned, it provides a more comprehensive benchmark and reduces the subjectivity in comparing between different industry leaders (Barros et al., 2011). As stated by Assaf and Dwyer (2013, p.1234), with the tourism industry often perceived as a low productivity industry, productivity analysis is "crucial to

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evaluating tourism sustainability and reshaping tourism activities. There is a direct link between productivity and profitability, as when productivity increases, the tourism industry's competitiveness in labour, capital and real estate markets also increase". This approach is also supported by the authors Slusarczyk et al. (2016) and Kozicka et al. (2019). The results of the research conducted in New Zealand by Prayag et al. (2019) show that increased domestic and international visitor spending is followed by a measurable and significant increase in local GDP. They also concluded that exchange rates have a small but non-significant impact on international tourist spending. Belloumi (2010) examined a long-term dependence between tourism expenditure, currency exchange rates and gross domestic product and found unidirectional causality of tourism on Tunisian GDP growth. On the other hand, Oh (2005) investigated the contribution of tourism development to economic growth in South Korea, while unable to confirm a long-term relationship, he found a short-period dependence between increased income from tourism and economic growth. Several other authors (e.g. Brida & Risso, 2009, Horvathova, 2015, Jaforullah, 2015) also found evidence for long- or short-term dependence between tourist expenditure and economic performance and growth.

2. Methodology

The main aim of this study is a research of effect between determinants of tourism development and macroeconomic indicators – national productivity, and a revelation of a space for a growth of OECD countries' productivity and their sustainable development, as well as a development of researched tourism sector. Multiple analytical trajectories were chosen to achieve aim of the research. The research also aimed at creating an international comparative platform. Consequently, the research sample consisted of all OECD countries. These countries were classified according to the international classification ISO 3166-1, code Alpha-3 with an emphasis on a period of 2010 – 2018. Tourism data (tourist spending) were obtained from World Travel & Tourism Council database in fair value of trillion US dollars (USD). Productivity data were obtained from OECD database (productivity in USD in current prices, GDP per capita). Elimination of exchange differences influence by using data source unified in USD currency was performed (based on findings by authors Prayag et al. (2019), according to whom in case of exchange differences it was confirmed that exchange rates have a small, but non-significant impact on international tourist spending). Number of inhabitants was used in data standardization of individual countries. It represents a standard procedure in GDP case. Population data of individual countries for a specific period were obtained from World Bank database (WB, 2020). As Nolan, Rores a nd Thewissen (2019) suggest, the evolution of GDP per capita is still widely taken to be the central indicator of a country's economic performance and success in improving living standards over time. There was a similar procedure in standardizing 5 types of tourism spending (per 1,000 inhabitant in individual countries) that provided data comparability and usability for a statistical processing. The study focuses on the following types of spending according to World Travel & Tourism Council: (1) Business Tourism Spending (BTS) - Spending on business travel within a country by residents and international visitors; (2) Domestic Tourism Spending (DTS) - Spending within a country by that country's residents for both business and leisure trips. Multi-use consumer durables are not included since they are not purchased solely for tourism purposes. This is consistent with total domestic tourism expenditure; (3) Leisure Tourism Spending (LTS) - Spending on leisure travel within a country by residents and international visitors; (4) Outbound Travel & Tourism Expenditure (OTTE) - Spending outside the country by residents on all trips abroad. This is fully aligned with total outbound tourism expenditure; (5) Visitor Exports (Foreign spending) (VEFS) - Spending within the country by international tourists for both business and leisure trips, including spending on transport, but excluding international spending on education. This is consistent with total inbound tourism expenditure (wttc, 2020).

Productivity (Prod) is expressed in USD GDP per capita (per head of population) and data were obtained from OECD databases (OECD, 2020).

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Firstly, descriptive statistics was applied (mean, 95 % confidence interval for mean (CI), median) and variance analysis (Kruskal-Wallis Rank Sum Test (KW)) that tested the differences of selected variables during individual years and between individual countries. Spearman's ρ coefficient was used to apply context analysis. Regression analysis was applied in the next step. The assumptions tests support application of simple linear regression, were used at the very beginning. They evaluate an occurrence of significant outliers - Bonferroni Outlier Test (Fox, Weisberg, 2019). Then, effects were tested and the most appropriate model was selected (F Test for Individual Effects, Hausman Test for Panel Models (Wooldridge, 2010)) - Fixed and random effect model, and the Arrelano and White 1 (White, 1980) methods to estimate the coefficients in the case of significant heteroscedasticity. Presence of a significant heteroscedasticity was also tested - Breusch-Pagan Test (Breusch, Pagan, 1979).

The cluster analysis was realized by means of Ward's method. The number of clusters was estimated by using silhouette method - for average silhouette width (Struyf et al., 1997). Data calculated by arithmetic mean and standardized in interval 0 - 1 (where 1 represents positive score) entered the cluster analysis. Programming language R v. 3.6.3 (Holding the Windsock) in R Studio was used to process the results.

3. Results

This chapter consists of all analytical procedures that led to the achievement of research aim. Tab. 1 provides an overview of primary statistical characteristics of variables together with a variance test that compares these variables during individual years and in the individual countries. Relations between individual variables were also considered. Regression and cluster analyses were applied in other procedures.

Table 1. Descriptive Statistics and Variance Test

Statistics	**BTS**	**LTS**	**DTS**	**OTTE**	**VEFS**	**Prod**
Mean	0.59	2.36	1.57	0.96	1.38	40580.31
95% CI	0.54 - 0.64	2.13 - 2.59	1.45 - 1.69	0.87 - 1.06	1.19 - 1.58	38823.28 - 42337.35
Median	0.54	1.85	1.20	0.73	0.88	39547.67
KW $\chi 2$ - Year	1.85	3.79	1.2	2.9	4.68	23.201**
KW $\chi 2$ - Country	317.28***	313.94***	319.65***	316.46***	313.84***	294.8***

Note 1: p<0.1 - +; p<0.05 - *; p<0.01 - **; p<0.001 - ***
Note 2: CI – confidence interval for mean; KW – the Kruskal-Wallis test

Tab. 1 shows the highest average spending calculated per person (LTS) and the lowest average spending (BTS). It is obvious, when comparing mean 95% CI and median, that there exist outliers in multiple variables. Median occurs in all cases out of CI, except of BTS and Prod. Non-parametric Kruskal-Wallis test, that identifies a difference only in a case of Prod variable in testing individual years, was used in significance tests of difference. Selected Variable mean (2010 - 2018) is provided in Apendix 1.

The category, countries, differed in all variables with a significance of α 0.001. Correlation analysis was applied in order to provide a broader view on researched variables and relations between them. Non-parametric Spearman's correlation coefficient ρ was used to confirm this correlation. Figure 1 displays a structure of variables as well as their relations.

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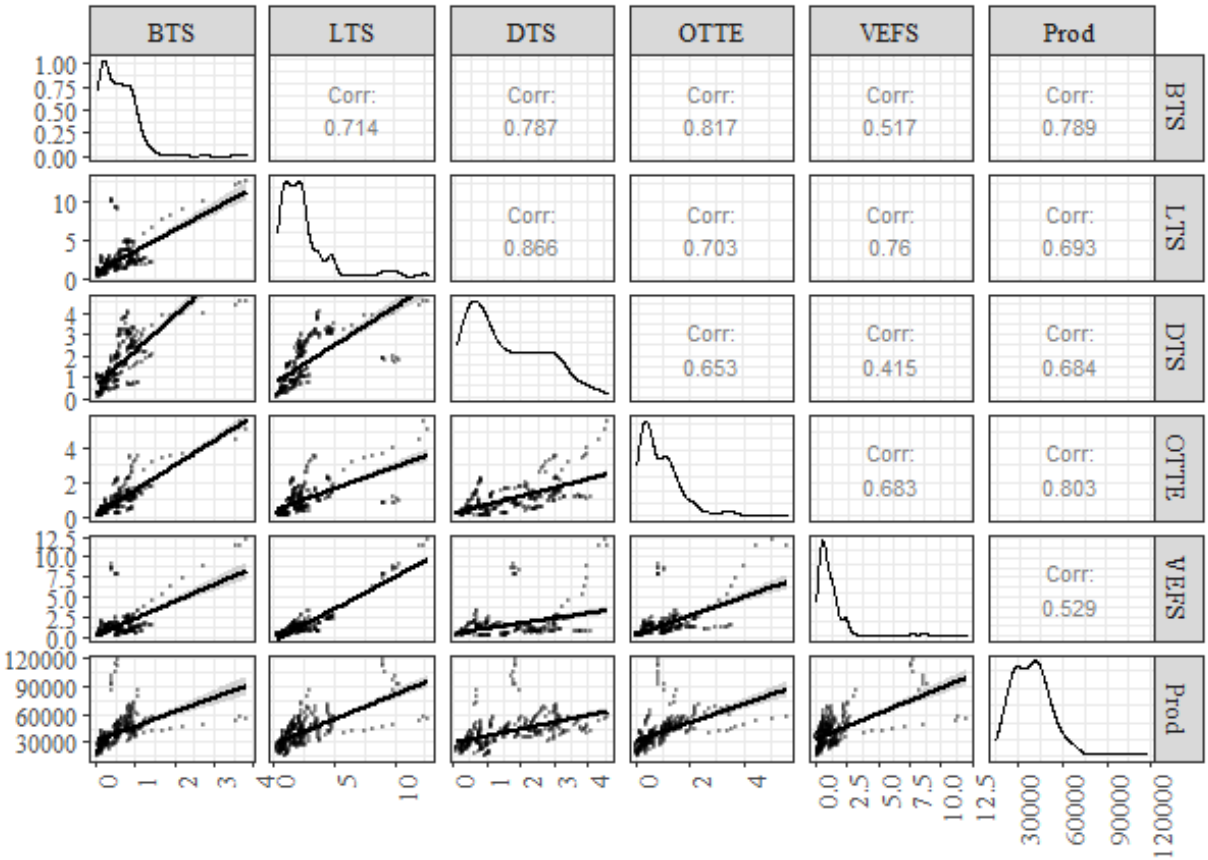

Fig. 1. Structure and relations of analysed variables
Source: own elaboration

Figure 1 illustrates matrix that shows variables' structure in its diagonal. Here, certain deviations from normal distribution that are caused by an obliqueness due to outliers' occurrence may be observed. Graphs that illustrates relations of analysed variables are visible below the diagonal, where outliers are evident. However, positive relationship is displayed on these graphs. Correlation coefficients are illustrated above the diagonal. These coefficients are significant in all of the cases. Similarly, they confirm an existence of a correlation spending of tourists and productivity, which is displayed in the last column of the matrix. Obviously, relatively high positive rates are presented in the matrix. Simultaneously, it is clear that variables of tourist spending correlate. Consequently, it is a positive correlation, i.e. when BTS increases, it is supposed that LTS will increase, as well. Another analyses' part focuses on regression models. Tab. 2 illustrates an evaluation of conditions in order to select the most appropriate regression method.

Models are labelled according to the independent variable (BTS, DTS, LTS, OTTE, VEFS), where the dependent variable is identical in all of the cases (productivity – Prod).

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Table 2. Assumptions' Testing for Simple Regression Analysis

Assumptions	**Model BTS**	**Model DTS**	**Model LTS**	**Model OTTE**	**Model VEFS**
Outliers	8 (2.47 %)	7 (2.16 %)	-	7 (2.16 %)	-
F	39.48***	74.93***	50.46***	41.23***	59.53***
Hausman χ^2	3.11+	10.01**	0.35	0.54	4.00*
BP	131.26***	0.04	200.25***	41.12***	178.57***
Estimate	Random White 1	Fixed	Random White 1	Random White 1	Fixed Arellano

Note 1: p<0.1 - +; p<0.05 - *; p<0.01 - **; p<0.001 - ***
Note 2: Outliers - Bonferroni Outlier Test; F - F test for individual effects; Hausman χ2 - Hausman Test; BP - Breusch-Pagan Test
Source: own elaboration

Tab. 3 shows evaluation of conditions based on which the models BTS, LTS and OTTE will be realized by means of the PLM Random Effect model and White 1 estimator. Model DTS will be realized by means of the PLM Fixed Effect as significant heteroscedasticity did not occur only in this model. Model VEFS will be calculated by the PLM Fixed Effect with Arellano estimator. Tab. 4 illustrates calculations' outputs.

Table 3. Regression Analysis Output

Model	Coefficients	CI 2.5 %	CI 97.5 %	Estimate	Std. Error	t value	Pr(>|t|)
Model BTS	Constant	29696.253	36741.76	33219	1790.4	18.554	$< 2.2\times10^{-16}$
	BTS	8731.753	14089.29	11410.5	1361.5	8.381	$< 2.2\times10^{-16}$
Model DTS	Constant	-	-	-	-	-	-
	DTS	11118.05	18991.25	15054.6	1999.9	7.5279	7.0×10^{-13}
Model LTS	Constant	26764.802	35233.25	30999.03	2001.22	15.49	$< 2.2\times10^{-16}$
	LTS	3095.821	4953.706	4024.76	696.86	5.7756	1.8×10^{-8}
Model OTTE	Constant	25664.23	33054.2	29359.2	2154.2	13.6287	$< 2.2\times10^{-16}$
	OTTE	9040.88	13259.1	11150	1948.9	5.7212	2.4×10^{-8}
Model VEFS	Constant	-	-	-	-	-	-
	VEFS	2183.454	4134.962	3159.2	1391.4	2.2706	2.4×10^{-2}

Source: own elaboration

All assumed relations seem to be significant. The lowest significance rate was determined in VEFS; it is possible to consider this relation as significant at the level of α 0.05. All coefficients are positive. There is therefore possible to speak of an expected result. If the expenditures will grow, the GDP will also grow. There is a positive effect that highlighted the importance of tourism in terms of productivity.

Another analyses' part focuses on an application of cluster analysis that aims at evaluating interconnection among countries according to their highest similarity (inside the group), and also according to the highest variance (to other groups) within an evaluation of selected variables of tourist spending and productivity evaluation. Average values of individual variables are standardized from 0 to 1, where 1 represents the best result. Subsequently, evaluations of tourist spending were corrected by arithmetic mean. There were created 2 new variables – evaluation of tourist spending (ETS) and a variable that indicates productivity evaluation (EPROD). There is only one difference between Prod and EPROD – EPROD (in scale 0:1) is an evaluation of Prod variables (in interval scale). These variables entered into cluster analysis. In the first step, the most appropriate number of clusters was estimated by means of the Silhouette method. There were 4 clusters. Also, there were applied multiple other cluster analysis's models. However, the Ward method (0.9505) was the most appropriate one based on the Agglomerative coefficient. Figure 2 illustrates a dendrogram of a relation for evaluating tourist spending and productivity.

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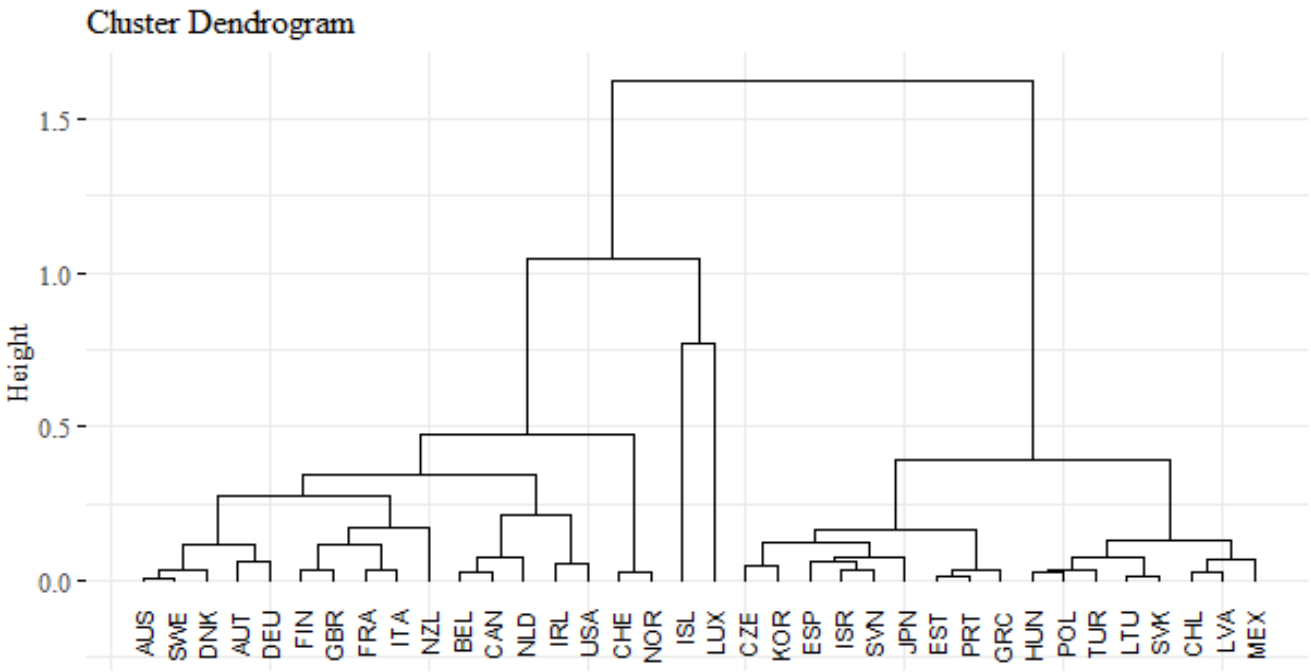

Fig. 2. Cluster dendrogram – relations ETS and EPROD
Source: own elaboration

Figure 2 visualizes links among countries in a researched relation of ETS and EPROD. The most appropriate division of countries was represented by 4 clusters, where the first cluster consists of the following countries: AUS, AUT, BEL, CAN, DEU, DNK, FIN, FRA, GBR, CHE, IRL, ITA, NLD, NOR, NZL, SWE and USA. Average value of ETS was at the level of 0.3209 and EPROD value reached 0.364. The second cluster includes the following countries: CZE, ESP, EST, GRC, HUN, CHL, ISR, JPN, KOR, LTU, LVA, MEX, POL, PRT, SVK, SVN and TUR, where average value of ETS is 0.0937 and EPROD values is 0.1302. The third cluster contains only one country, Iceland, while ETS value is 0.9847 and EPROD value is 0.3544. Also, the last, the fourth cluster, involves only one country, Luxembourg, where ETS output is 0.565240 and EPROD output is 1.0. LUX and ISL are evaluated as extremes. It may be assumed, based on the findings, that the first cluster consists of such countries, which have values of both indicators at relatively high levels. ISL and LUX achieve high evaluations in both areas, and these countries are closer to the first cluster than the second one. The second cluster comprises countries with lower outputs' rates. Similarly, countries may be also considered on the basis of a specific level of interconnection, e.g. AUS is very similar to SWE in the analysed relation, and both countries are very similar to DNK. Figure 3 provides a clear demonstration of interconnecting evaluations of tourist spending and productivity.

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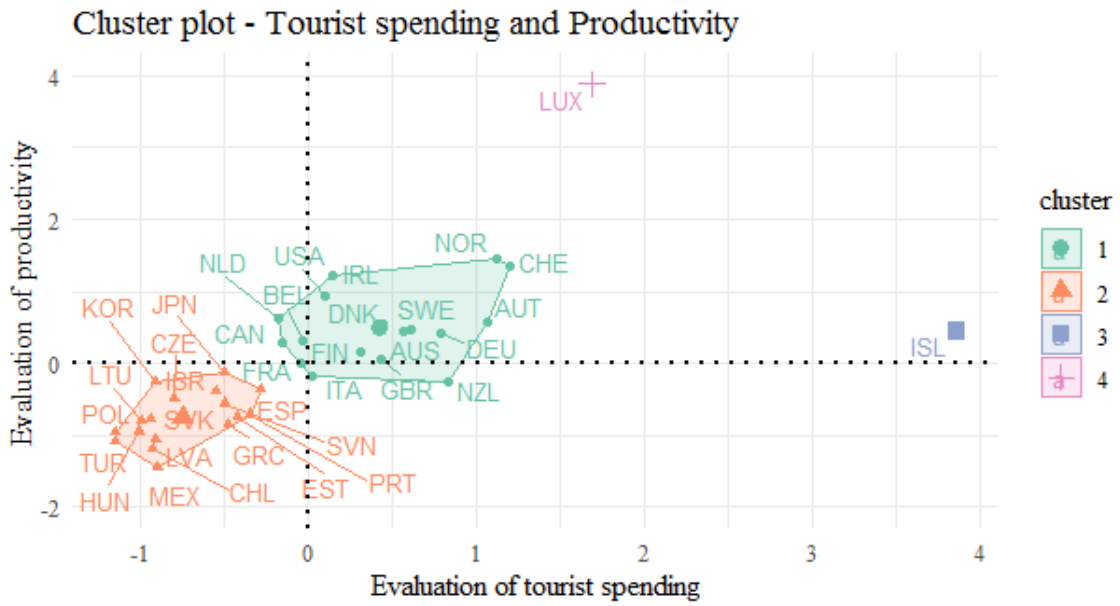

Fig. 3. Cluster plot – ETS and EPROD
Source: own elaboration

Figure 3 illustrates countries' relations in the analysed areas of given clusters. Lower left quadrant involves countries of the second cluster with low average evaluations of productivity, and also spending. Upper right quadrant identifies countries with positive evaluation.

4. Discussion

Analyses' results confirm existence of a relation between individual types of spending in tourism and between OECD countries' productivity. Leisure Tourism represents a category with the highest rate of spending, while category, Business Tourism, has the lowest rate of spending. These results are also related to a character of the individual spending types that are described in the part Theoretical Background in detail. It is also confirmed by many other studies, such as Parsons (2017) who suggests the impacts of budget limitation from employer's side during individual business trips in the study. It was found that it is important to observe differences between individual countries, while researching relations of tourist spending and productivity. Correlation matrix confirmed a relation between analysed variables of spending in the individual areas of tourism and productivity. It represents a very close relationship of positive correlation, while the closest dependency is between productivity and Outbound Tourism and the least close is in the category of Inbound Tourism. In case of Outbound Tourism, it may be caused by, for instance retro-causality, which assumes that higher productivity of a country leads to higher disponible incomes of its inhabitants. This may be divided into consumption and savings. If a consumption rate increases, spending also increases in the category of costly Outbound Tourism. On the other hand, Inbound Tourism influences country's productivity, but there absents retro-causality, which depends on disponible incomes intended for consumption in a country of tourist's origin.

Identical dependent variable, Productivity, is included in five independent models, which were created in researching of spending and productivity relations. Their (individual) relation with a productivity is important. Original assumption (based on the links of confirmed correlation coefficients) is confirmed. Consequently, it may be concluded that spending in the individual examined tourism categories influence countries' productivity in a positive way. Positive effect rate is not the same in each tourist spending variable. As regression function confirms, the spending of Business Tourism category influences productivity the most, which is also in

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accordance with the results of Carvalho et al. (2016) study. This tourism category spends the least average spending within OECD countries. The most average spending is typical of Leisure Tourism category. It is obvious that both tourism categories are at the third place right after Domestic Tourism Spending, when taking into consideration their influence on a productivity. This position results from spending character and their strong interconnection with the standard of a living and many socio-economic characteristics that are connected with economic parameters of a country (e.g. Crouch, 2013). The variables, Domestic Tourism and Leisure Tourism, represent categories with the highest potential to increase country's productivity in a successful tourism spending growth. This fact was determined in comparing the above-mentioned findings with those in the international studies by Massidda & Etzo (2012); Tribe (2015); Kruger & Douglas (2015); Scheyvens (2002); Samy (2016).

Another researched area of this study was a differentiation of analysed countries into groups with certain specificities in relation to researched topic – Tourism Spending that was connected to countries' productivity. Cluster analysis, which allowed division of countries into four main groups, was used. There were identified two countries, which are considered as extremes based on the results. These countries were Iceland (island nation with a very specific interest in tourism and economy that is adapted to geographical, natural and social specificities of the country) and Luxembourg (which has the highest productivity growth of the researched countries and which as Assaf and Tsionas (2018) state has experienced a significant increase in the number of international tourist arrivals and visitor spending. They stated that the country also ranks high on the tourism competitiveness and has invested significantly in the tourism industry over recent years.) Other countries were divided into two categories based on the results of cluster analysis, while variables were standardized (evaluated) average category of Tourism Spending in the countries a Productivity represented by the GDP of the countries.

The first group consists of countries with a relatively high rate of tourism spending and also with a relatively high productivity of a country. Tourism plays a significant role in economy of these countries, while these countries are very sensitive to incentives of tourism with regard to productivity. The second group involves countries with relative low GDP per person, but tourist spending is much lower per person as in the countries of the first group. It may signalize a different prioritization of countries' economies and different structural policy resulting from political aspects, economic position of a country, economic regional disparities, demographic structure, geographical conditions, country and regions' attractiveness.

The study's outputs represent an appeal to a formation of deeper structural analyses in order to create national and international comparative platform – national and international benchmarking indicators. It is a systematic, long procedure, where many international research teams would participate. This fact is confirmed by many foreign studies whose results emphasize a significance of a research that focuses on an influence of tourism spending on a country's economy, and an importance of reference models' development for countries' comparison. Also, it is supported by the study of Asaf & Dwyer (2013), who appeal for a need to develop a complex international methodology of tourism benchmarking. The authors emphasize that quality tourism benchmarking requires a creation of a reference framework of such indicators that would be able to underpin heterogeneity of this sector and geographical specificities of the countries, as well. Similarly, these authors state that ignoring heterogeneity (i.e. differences in destination characteristics) may lead to bias in the productivity rankings of different countries. They also suggest that if a tourism of Africa, Europe and America is supposed to be compared, there needs to be developed multiple models that would reflect on heterogeneity of tourism systems in the countries and their specificities. In addition, Brida and Risso (2009) highlight significance of a research focusing on an influence of sustainable tourism spending, while the authors indicate a potential of multiple scenarios and their development. Their Impulse Response analysis shows that a positive shock in the tourism expenditure and the real exchange rate first produces negative effects and then a continuous and sustained positive impact. Jaforullah (2015) confirms positive effects of spending influence on a growth of economy. As the results of this study show, the long-run elasticity of real GDP with respect to real international tourism expenditure is estimated to be 0.4, i.e. 1% growth in tourism will result in a 0.4% growth of the New Zealand economy. This finding implies that the

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New Zealand Government's policy to promote New Zealand as a preferred tourism destination in the key international tourism markets may boost its economic growth. These consequent facts emphasize an importance to solve this issue as in macroeconomic so in microeconomic sphere. It is important for a correct creation of policies, and even for a provision of sustainable tourism. The results of this study form a strong platform for subsequent researches. Simultaneously, these results represent an appeal to create quality national and international tourism databases that would support a development of given indicators and a creation of benchmarking models.

5. Conclusion

Tourism represents approximately one tenth of global GDP and it is also considered as one of the fastest growing segments of service sector. Similarly, one-third of all services is represented by tourism services, while employment rate in this sector is also very interesting from a global perspective. Tourism investments are characterized by relatively high profitability, while they are related as to an increase of a technical level of accommodation and catering facilities, so to a support of an infrastructure development with a positive influence on all segments and sectors, such as transport, trade, civil engineering, banking, telecommunication, culture, etc. Tourism has a multiplier effect on a business community and economy as such. Consequently, it supports a creation of new working places, and also capital accumulation and financial resources of sustainable development of economically weaker regions. Tourism's position, its development and relations to other sectors differ in the individual countries. In some countries, tourism is a long-term profiling factor of economic activities, while in others, it may play a supplementary role from a perspective of a country's economy development. It is given by a character of a country and its economic and political situation, attractiveness, population structure, etc. In the last decades, many countries have experienced a decrease of authentic, traditional economic sectors that leads to problem solving of sustainable tourism. As a consequence of this fact, it is very important to examine tourism parameters in relation to specific macroeconomic indicators and to research significant causal relations and quantify them. This would enable a realization of comparative analyses that may reveal new determinants of development and tourism sustainability. Also, these processes are influenced by economic crises, pandemics, other natural disasters and fortuitous events in the countries. These aspects motivated research team to create this study. Its primary aim is to research an influence of tourists' spending on a productivity of OECD countries, and consequently, to evaluate a potential of sector's sustainability. There were realized many analytical procedures with 5 selected variables that were examined during 2010 – 2018 in all of the OECD countries in order to achieve the study aim. The outputs of regression models confirmed an influence of tourists' spending on a productivity, where all of the variables that indicated spending were significant. The results of cluster analysis enabled a division of countries into four groups – two huge clusters and two clusters represented only by one country of selected sample. The countries with a higher rank are as follows: AUS, AUT, BEL, CAN, DEU, DNK, FIN, FRA, GBR, CHE, IRL, ITA, NLD, NOR, NZL, SWE, USA, ISL and LUX, while the countries with a lower rank are: CZE, ESP, EST, GRC, HUN, CHL, ISR, JPN, KOR, LTU, LVA, MEX, POL, PRT, SVK, SVN and TUR. The first group consists of countries with relatively high rate of tourism spending and also with relatively high productivity of a country. In these countries, tourism plays a significant role in economy. Also, these countries are more sensitive to incentives from tourism sector in relation to a productivity. The second group includes countries, whose GDP per person is relatively low, but also tourism spending per person is much lower than in the countries of the first group. These disparities signalize a different prioritization of countries' economies that may result from political aspects, economic position of a country, economic regional disparities, demographic structures, as well as geographical conditions and attractiveness of a country and its regions.

These findings provide a space for a deeper research of causal relations between determinants of tourism development and economic indicators, while they also create a platform for subsequent researches. The study's findings may help experts in a creation of concepts of national and regional strategic plans that focus on a sustainable development of regions, as well as a provision of sustainable tourism. This would be possible in case state-initiated activities would enable a systematic help to business community and all other subjects of tourism in

increasing services quality, expertise, support of regional development and competitiveness. Consequently, the study results make a significant contribution to policy creators and a development of international cooperation in this sphere. Similarly, the results represent a strong appeal for a creation of a quality database in each country in order to develop benchmarking indicators and other methods that would examine causal links between individual parameters of tourism.

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Apendix 1. Selected Variable mean (2010 - 2018)

Country	BTS	LTS	DTS	OTTE	VEFS	Prod
AUS	0.6383	3.2683	3.0596	1.3661	0.8470	47675.40
AUT	0.8281	4.8013	3.0801	1.4677	2.5493	49317.55
BEL	0.5409	1.5308	0.8277	2.0760	1.2440	45510.82
CAN	0.7569	1.2542	1.5765	1.0117	0.4346	44887.44
CZE	0.2402	1.0148	0.5086	0.4626	0.7463	32963.92
DEU	0.7708	3.6683	3.8242	1.1648	0.6149	47036.19
DNK	1.1983	1.8946	1.7456	1.6706	1.3472	48910.61
ESP	0.3343	2.4174	1.2911	0.5223	1.4606	34858.35
EST	0.4768	1.5420	0.5068	0.9145	1.5119	28926.41
FIN	0.9108	2.3027	2.3690	1.0900	0.8445	43161.46
FRA	0.5569	2.2938	1.9512	0.7259	0.8995	40592.10
GBR	1.0745	2.1405	2.6534	1.2055	0.5616	41411.39
GRC	0.1656	2.3858	1.0254	0.3248	1.5259	27411.13
HUN	0.0931	0.8146	0.2648	0.2802	0.6429	25911.94
CHE	0.8196	4.6404	3.1404	2.1243	2.3196	61677.69
CHL	0.1593	0.8573	0.8255	0.1295	0.1911	22054.92
IRL	0.9566	2.1454	0.6877	1.4053	2.4143	59721.46
ISL	2.4895	9.3492	3.9647	3.9755	7.8740	47485.65
ISR	0.2814	1.3925	0.8016	0.8204	0.8724	34670.92
ITA	0.6237	2.4123	2.3188	0.5281	0.7172	37857.00
JPN	0.5694	1.1550	1.5454	0.2111	0.1791	38757.75
KOR	0.1751	0.6962	0.4721	0.4854	0.3992	36447.08
LTU	0.1812	0.6486	0.3526	0.2704	0.4772	27983.70
LUX	0.4764	9.6192	1.8344	0.8915	8.2612	100940.11
LVA	0.1693	0.8227	0.4190	0.4183	0.5730	23959.28
MEX	0.0679	1.1014	1.0346	0.0924	0.1347	18142.32
NLD	0.5617	1.6327	1.1528	1.2309	1.0417	50324.57
NOR	0.9663	3.0361	2.8367	3.1055	1.1656	63118.76
NZL	0.9282	4.0835	3.1011	1.0334	1.9106	36673.00
POL	0.1167	0.3253	0.1418	0.2132	0.3002	25812.82
PRT	0.4115	2.2020	0.9502	0.4946	1.6633	29540.68
SVK	0.2709	0.6524	0.4738	0.2141	0.4495	28673.45
SVN	0.3138	1.8303	0.7575	0.5732	1.3867	31959.56
SWE	1.1607	2.4257	2.2500	1.6297	1.3365	47901.39
TUR	0.0822	0.5129	0.2780	0.0480	0.3171	23583.48
USA	0.8920	2.1414	2.4290	0.4479	0.6044	55030.92

Source: own elaboration

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CALCULATION OF TIME TO COMPLETE A TASK BY A GROUP OF EMPLOYEES USING FUZZY SETS FOR THE SUSTAINABLE DEVELOPMENT OF THE ENTERPRISE*

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Abstract. The article considers the use of fuzzy sets in determining the execution time of tasks. An approach is proposed that makes it possible to obtain an expert estimate of the time taken to complete a task by a specific employee in the form of a fuzzy set. A procedure is proposed for generalizing fuzzy sets defined on different bearing sets. To apply the proposed procedure, fuzzy sets are subject to continuity and monotonicity restrictions. The generalization procedure is based on the process of finding the value of a fuzzy set for a certain value of its membership function. For piecewise linear functions, the operation of calculating the points of the resulting function is defined. Piecewise nonlinear functions are considered and an algorithm for searching for individual values of the generalized membership function is described. In addition to generalizing fuzzy sets, an approach to calculating the interaction time of workers is proposed. Various approaches to defuzzification of fuzzy sets of task execution time are considered. The proposed approach will improve the work planning for sustainability of enterprise.

Keywords: fuzzy set; execution time to task; membership function; generalization procedure; interaction time for workers

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1. Introduction

Determining the time to complete a task is one of the main problems in planning work. Currently, approaches are being applied related to expert estimates of the time taken to complete the task. In this case, the expert is usually the leader, who, based on his experience in carrying out such projects, splits it up into tasks and estimates the time

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it takes to complete them in the form of a certain value. In addition, the leader sets the sequence of tasks in terms of the logic of their possible implementation (Fridlyanov, 2017).

Information on estimating task execution time and their relationship is used in the CPM (Critical Path Method) method (George E. 2016, Kiran D.R. 2019), which allows one to single out tasks of the so-called "Critical Path", i.e. tasks, changing the runtime, which will lead to a change in the runtime of the entire project. But this algorithm lacks the visibility and ability to manage resources. To eliminate the shortcomings of CPM and attract the leader directly to the calendar distribution of tasks, Gantt charts (Nahmias S. 2013, Wilson J.M. 2003) are used, which are primarily aimed at visualizing the process of performing work and occupying individual resources. At the same time, in Gantt charts, in addition to automatic task setting by the CPM method (for early start and finish positions), there is the possibility of manually changing the task start time. But it is worth noting that the number of allocated resources, for example, employees, can also change the duration of work, which is not taken into account either in the CPM method or in Gantt charts.

When developing science-intensive projects, the evaluation of the duration of individual tasks is impossible by the leader, since such work has not been carried out before. For such cases, an estimate of the time taken to complete the task directly by the employee or the leader of a small working group is used. But such an assessment is almost impossible to give in cases when several workers perform the same task at the same time. For such cases, they try to provide employees with smaller tasks designed for a short time of their implementation. For example, when developing software, the SCRUM methodology (Bott 2019, Darshita K.2019, Levine M.K.2019, Marques R. 2020, Ridewaan 2020) is used, which splits work up into weekly stages (sprint) with daily status checks.

Modern work on the use of fuzzy sets in task planning is usually based on the task of fuzzy resource allocation and the possibility of mathematical work planning taking into account these resources. (Stephen W. 1986, Piegat A. 2001, Wen-Xiang 2006, Zatsarinny A. 2019) At the same time, works devoted to fuzzy execution time of tasks are based mainly on triangular fuzzy sets. (Didier 2010, Kanmohammadi 2004, Matthew 2008, Nasution 1994, Mohammad 2008, Shih-Pin 2008) For the fuzzy set "employee performing the task", it is necessary to set the membership function $\nu_{i,j}(t)$ with saturation, for the fuzzy variable $t_{i,j}$, which determines the execution time of the task of the j-th type for the i-th employee. If several employees are assigned to a single task, then the time to complete this task will be shorter, and to evaluate this time, the concept of employee productivity is often used, which is calculated as the inverse of the time to complete the work, i.e. $p_{i,j} = 1/t_{i,j}$. The membership function $\mu_{i,j}(p_{i,j})$ with saturation, for the fuzzy variable $p_{i,j}$ is determined by the formula $\mu_{i,j}(p_{i,j}) = 1 - \nu_{i,j}(t_{i,j})$. To obtain the total productivity of all the workers assigned to the task, it is necessary to carry out the operation of generalizing the fuzzy productivity sets of these workers. But the generalization operation is defined for fuzzy numbers or for fuzzy functions defined on identical bearing sets. The paper proposes an algorithm for performing the generalization operation for fuzzy functions defined on various bearing sets under certain restrictions.

2. Description of the method of obtaining membership function

The membership function $\nu_{i,j}(t)$ can be defined as a piecewise function. In this case, to set the piecewise membership function, you can use the PERT method (Carl 2008, Ganesan 2019, Goman 2019, Kanmohammadi 2004) etermining the time to complete each work using a formula that uses optimistic, pessimistic, and expected time to complete the work: $t_w = {}^{1}/_{6} * (t_o + 4 * t_e + t_p)$. Pessimistic and optimistic terms can be calculated based on statistical methods or forecast. The expected time to complete the work can be determined by expert assessment, including with the involvement of the employee. In the general case, it is not necessary to be limited to 3 values. But the function $\nu_{i,j}(t)$ must be continuous and monotonic. For an optimistic period, the value of the membership function $\nu_{i,j}(t) = 1$, and for a pessimistic one, $\nu_{i,j}(t) = 0$.

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When assessing, in addition to the time it takes to complete the task, it is advisable to identify the positive and negative risks associated with the task. Negative risks are those that can increase the duration of the task, and positive risks – can reduce. For the time proposed by the employee to complete the task, we determine the probability of its completion. If the employee finds it difficult to give an assessment, then it can be suggested to determine several times and indicate for them the probabilities of the task. Notice that with an increase in the task time, the probability of its completion should not decrease.

3. Calculation of overall performance

For all employees assigned to this task, calculate their total productivity by the formula:

$$p_j = \sum_{i \ni I_j} p_{i,j}, \quad (1)$$

where p_j – is the performance when performing the j-th job; I_j – the set of all employees assigned to the j-th job; $p_{i,j}$ – productivity when performing the j-th job by the i-th employee.

The sum of the fuzzy sets $p_{i,j}$ is based on the principle of generalization.

$$\mu_j(p_j) = \max_{p_j = \sum_{i \ni I_j} p_{i,j}} (\min_i(\mu_{i,j}(p_{i,j}))) \quad (2)$$

Similar formulas are used when combining fuzzy numbers, and for fuzzy sets, the union procedure is used only in the case of identical bearing sets (Annaxsuel 2020, Bhowmik 2017). In our case, both workers have different, continuous bearing sets. If we carry out the generalization procedure by nodal points, then the generalized function loses its monotony (Fig. 1, red graph). If you sort through all possible combinations of points, you can get the graph, marked in Figure 1, with a blue function. From the analysis of the graph it is clear that sorting by nodal points does not allow us to calculate the generalized function. And the process of exhaustive search, in addition to computational complexity, requires setting the step accuracy (Kolesnik 2020, Formalev 2019).

For a more efficient procedure for calculating the values of the membership function, we use the properties superimposed on the function $\nu_{i,j}(t)$: continuity and monotonicity. The transformations that are carried out to obtain $\mu_{i,j}(p)$, preserve the properties of continuity and monotonicity for this function as well. The continuity properties and boundary conditions that determine the values of $p_{i,j}$, in which the value of the membership function $\mu_{i,j}(p)$ takes on the values 0 and 1, guarantee that after the generalization procedure, the calculated membership function $\mu_j(p)$ will take all values are from 0 to 1, i.e. for $\forall \mu \in (0..1)\ \exists p\colon \mu_j(p) = \mu$. The monotonicity property of membership functions of fuzzy employee productivity functions $\mu_{i,j}(p)$ allows us to conclude that the generalized membership function $\mu_j(p)$ will also be monotonic and the condition will be satisfied for it: $\forall p1, p2\colon p1 > p2\ \mu_j(p1) \geq \mu_j(p2)$.

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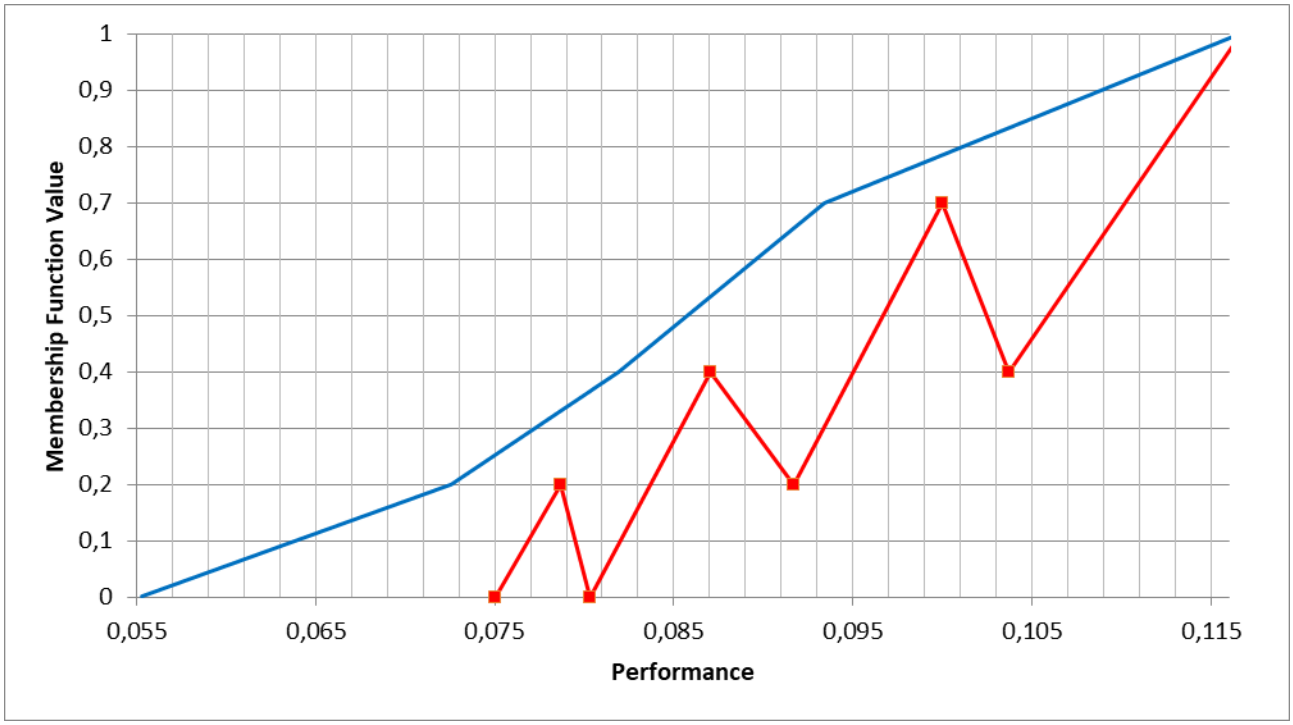

Figure 1. The membership function of the overall performance

Proposes to search not for the value of the membership function for a specific performance value, but for solving the inverse problem. From the generalization formula (2), we can conclude that the maximum value of the membership function will be equal to the values of all membership functions of individual workers $\mu_{i1,j}(p_{i,j}) = \mu_{i2,j}(p_{i,j})$. Since in this case the best value $\min_i(\mu_{i,j}(p_{i,j}))$ is achieved. An increase in at least one of the values $\mu_{i,j}(p_{i,j})$ will lead to a decrease in other values provided that the productivity value is constant $p_j = \sum_{i \ni I_j} p_{i,j} = \text{const}$. This conclusion can be made due to the properties of monotonicity and continuity of membership functions of fuzzy functions.

$$\mu_{i1,j}(p_{i,j}) = \mu_{i2,j}(p_{i,j}) = \max_{p_j = \sum_{i \ni I_j} p_{i,j}} (\min_i(\mu_{i,j}(p_{i,j}))) = \mu_j(p_j) : \forall i1, i2 \quad (3)$$

$$p_j = \sum_{i \ni I_j} p_{i,j} : \mu_j(p_j) = \mu_{i,j}(p_{i,j}), \text{для } \forall i \ni I_j, \forall \mu_j(p_j) \in (0..1) \quad (4)$$

Based on the fact that the generalized function is piecewise linear, it is possible to consider not all the values of the generalized membership function, but only the values equal to the inflection points of the membership function of the fuzzy function of each employee assigned to work, since the derivative between them does not change.

For nonlinear monotonic, continuous functions, the rules for calculating the generalized membership function (3, 4) will be similar. An algorithm for passing along the points of change in the graph of the membership function is suitable, since between these intervals the formula of the generalized function remains undefined, but the equation of the generalized function will not change. In calculations (3, 4), it is necessary to determine the productivity value for a given value of the membership function. Since the value of the membership function is the ordinate, it is necessary to use a pre-calculated inverse function. This approach is not always possible, since some functions, for example parabolas, have rather complex inverse functions, moreover, having several abscissa values accuracy (Formalev 2019, Formalev 2020). In this case, it is necessary to impose restrictions on a complex analytical

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function that will leave one solution. This problem must be solved before the calculations of the "common" functions themselves, when forming the initial membership functions of the employee's execution time of the task and their parameters.

4. Employee interaction

If the interaction is determined by a scalar value, possibly depending on the quantity and quality of workers, then the lead time must be shifted by an appropriate amount. In the case when the time spent on interaction is specified in the form of a fuzzy function with a piecewise membership function, it is necessary to carry out the procedure of generalizing the membership function of the total time of the work and the time spent on the interaction of workers.

Since the main problem of fuzzy sets is the complexity of their task, it is worth giving an example of the procedure for determining the time of interaction between employees. If you imagine the most non-optimal case of interaction, then it can be described by the phrase: "If you want to do well, do it yourself." In this case, a more experienced worker, i.e. the worker who does the work faster educates the inexperienced to a conditional level. In this case, you can choose a clear number equal to the difference in the pessimistic time of the work performed by the employees or as a maximum of the membership function $\gamma_{i1,i2,j}(t)$ of the fuzzy interaction function of two workers, calculated by the generalization principle (5). It should be noted that this time is quite large and should be taken with the interaction coefficient $k_{\mathrm{itr}} \in (0{,}1\,..0{,}3)$.

$$t_{itr} = \max_t(\gamma_{i1,i2,j}(t)) = \max_t(v_{i1,j}(t_{i1,j}) - v_{i2,j}(t_{i2,j})), \text{for } \forall\, i1, i2 \ni I_j \quad (5)$$

If we consider all the possible interactions between employees, then this time will greatly affect the overall time of the task. The interaction between employees can be represented as a fully connected interaction graph G (V, E), where V is the set of vertices corresponding to the workers, and E is the set of arcs corresponding to the interactions between them and determining the necessary time. For example, Figure 2 shows a graph of the interaction of six workers. The total time required for interaction is equal to the sum of all values of the graph arcs, and for our example it is equal to 77. In this case, we should set low $k_{itr} = 0{,}05$ since the time 77 is very excessive and most likely exceeds the time required to complete the work. Another case, we can consider only the arcs that form the Hamiltonian path (Chartrand 1983) (marked in bold lines in Figure 2). The Hamilton path in this case will describe only communication between employees of the same "skill" and will be a rather optimistic time, since most other types of communication in the group are most often required. In this case, the interaction time will be equal to 14 and k_{itr} should be taken in the interval (0.1; 0.5). But calculating the Hamiltonian path is a very laborious task.

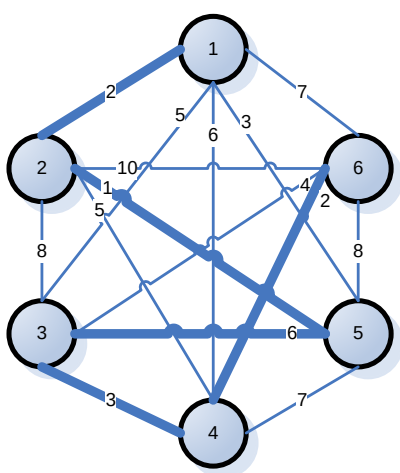

Figure 2. Graph of interaction between employees

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As an adequate estimate of the interaction time, you can use the estimate of the interaction time of each employee only with the employee who has the most experience, i.e. performing this work in the least amount of time. This approach is similar to the interaction of the department head with his subordinates and, on the whole, with a fairly small error can describe all the necessary interactions in the team. In addition, this approach is quite simple to implement and calculate. For Figure 2, employee No. 2 will be the best employee, and the time required for interaction is 26. The interaction coefficient k_{itr} should be taken from the interval (0.1; 0.3).

5. Calculating Work Lead Time

All values of membership functions and coefficients are set during the statement of the problem, but the process of determining the set of employees assigned to the task has not been determined yet. To solve such a problem, it is very difficult to choose a criterion, because the execution time is set in the form of a fuzzy function. It is necessary to carry out the operation of defuzzification of a fuzzy function to calculate the value of the criterion.

The easiest way to defuzzify a fuzzy run-time function is the right modal value method. This method is used for convex membership functions. If the membership function is monotonous and continuous, it is proposed to use the value of the time at which the work will be exactly performed, i.e. the minimum time value at which the membership function of the task execution time will take a value of 1. This point will in any case be obtained as a result of calculating the generalized function. In this case, the nature of the membership function is inessential and may not be considered at all. In a similar way, one can use the method of left modal value, which will consider the most optimistic deadlines for completing all tasks. With such methods of defuzzification, the calculation of a generalized fuzzy function is not required, which greatly simplifies the work, for example, with nonlinear membership functions, but at the same time, all the advantages of using fuzzy sets are lost.

Another possible defuzzification method is to decompose a fuzzy set into regular sets using the α – level (Bayoumi 2000, Debnath 2018). For this, it is necessary to determine the level value from the interval (0; 1). This level shows the value of the task execution time, with the membership function value equal to the value of α. The physical meaning of this level can be explained as follows: the reason why the value of the membership function is not equal to 0 is the hope of employees to complete the task fully, provided that they do not have unforeseen difficulties in its implementation. In the event of some difficulties, it can be safely assumed that at this point in time the task will not be completed in full or of poor quality, but will be close to completion. For example, when developing a software product, it is possible to obtain an early, partially working version. As a result, in the process of defuzzification, it is possible to calculate several different values of the execution time of the work, presumably at various stages of its completion. To calculate the α level, it is necessary for each generalized fuzzy function to add a point corresponding to the value of α for the membership function and calculate the corresponding values of the execution time and productivity. Moreover, for nonlinear functions it is necessary to use a pre-calculated inverse function.

Other defuzzification methods cannot be applied to the proposed membership functions for which the conditions of continuity and monotonicity are satisfied even if they are specified in the form of piecewise linear functions. To expand the capabilities of defuzzification, it is proposed to calculate the derivative of the membership function:

$$\varphi(t)_j = \frac{d\nu(t)_j}{dt} \tag{6}$$

The resulting function can be considered as a fuzzy function "task execution time". This function contains properties and, in limiting values, has a membership function value of 0. For such functions, other classical defuzzification methods can be used: the membership function maximum method, the center of gravity method,

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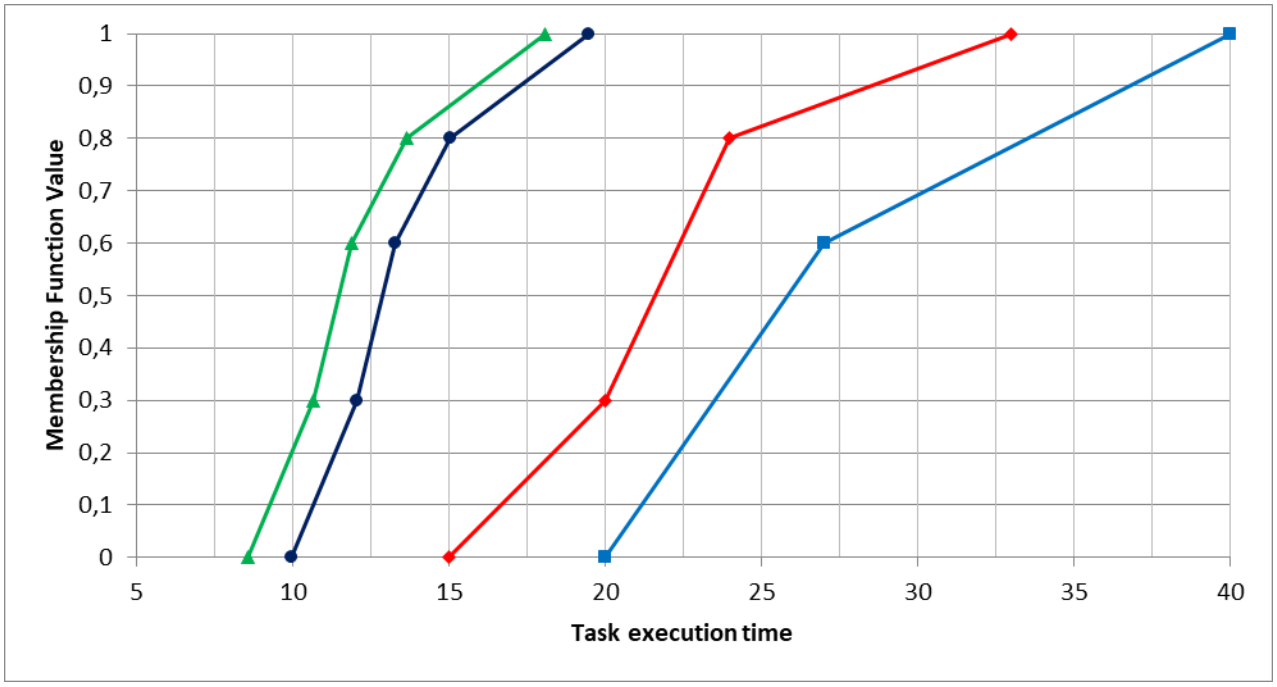
the median method, the center of maximum method, etc. (José 1995, Kumar 2017) These methods require knowledge of the function to calculate its various characteristics. In the case of piecewise linear functions, to determine the value of the derivative, it is necessary to calculate only the angle of inclination of the line. For nonlinear functions, the calculation of the derivative, within the framework of a software implementation, is difficult. It should be noted that in most cases, as a result of the generalization procedure, the calculation of the nonlinear function itself in an analytical form is not feasible, especially the calculation of its derivative.

All the proposed values cannot fully reflect the completeness of the fuzzy function of the time taken to complete the work and, therefore, optimization according to the calculated times (pessimistic, integral or mathematical expectation of the time to complete the work) can give various solutions to the task of appointing workers.

6. An Example

Suppose, a survey of two workers was made to assess the time taken to complete one specific task (Fig. 3, red and blue graphs).



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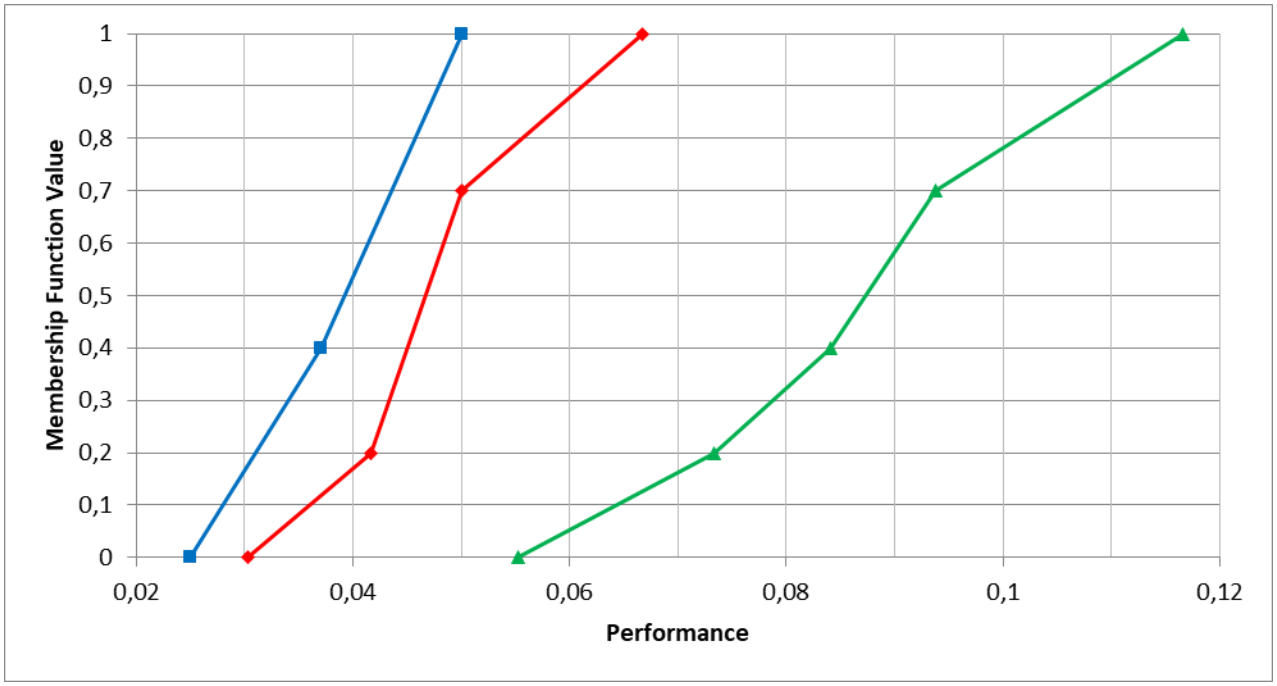

Figure 3. Graphs of fuzzy functions for an example. Red - employee number 1, blue - employee number 2, green - a generalized function, purple - a generalized function, taking into account the interaction of workers.

According to the results of calculations of the fuzzy set "total productivity of employees assigned to the task", 5 total inflection points corresponding to the following values of the generalized membership function can be identified: 1; 0.7; 0.4; 0.2; and 0. Points 1; 0.7; 0.2; 0 belong to the first employee and 1; 0.4; 0 to the second. The value of the membership function will take a value equal to 0 to the point 0.0303 + 0.025 = 0.0553. Further, the membership functions of fuzzy productivity functions of workers No. 1 and No. 2 change the values of derivatives, which leads to a change in the derivative of the generalized membership function. For the value of the membership function $\mu_{1,j}(p) = 0{,}2$ for employee No. 1, the productivity value p = 0.0417 is known. For employee No. 2, the productivity value must be calculated based on linear interpolation of two points: (0; 0.025) and (0.4; 0.037). The value of the membership function of the fuzzy productivity function of employee No. 2 takes the value $\mu_{2,j}(p) = 0{,}2$ at the point p = 0.0316. The value of the membership function of the fuzzy function of generalized productivity is $\mu_j(p) = 0{,}0417 + 0{,}0316 = 0{,}0733$. Changing the derived membership function of the fuzzy productivity function of employee No. 1 makes it necessary to search for the next point. The result of calculating the membership function of the fuzzy function of generalized performance is shown in Figure 3 in the form of a green graph.

For the proposed example of the interaction of two workers, the time difference is 40-33 = 7. In the general case, this is a rather pessimistic assessment of the interaction time of workers. For our example, the time for interaction between two employees is more than 20% of the time it takes to complete the task alone. But this time is the most unfavorable option for communication between employees. It is proposed to multiply it by the coefficient of communication (k_{itr}), which determines how tightly it is necessary to interact. $k_{itr} = 1$ for the case of constant interaction of employees, for example, according to the principle of two employees at the same computer, and $k_{itr} = 0$ for the case when interaction between employees is not required. In addition, this coefficient describes the interaction between all employees assigned to work, and can describe various methods of interaction of a whole group of employees. An example of changing the task execution time when taking into account the interaction of employees is shown in Figure 3, the purple line.

Conclusion

The article considers the process of appointing employees to certain tasks and determining the time to complete all work by this group of workers. It is proposed to set the execution time for a specific task for each employee in the form of a fuzzy function. The algorithm is proposed that allows one to calculate a fuzzy function of the task execution time if several employees are assigned to it. It is proposed to consider the operation of generalizing continuous membership functions of fuzzy functions defined on various bearing sets by searching for time values in which the membership function will take certain values. This approach required the imposition of restrictions on the membership functions of the times of work: continuity and monotony. In the case of assigning workers to tasks, these restrictions can be easily satisfied. Algorithms for accounting the time required for the interaction of workers assigned to one task are determined.

This technique was applied to determine the time to complete the work when solving the problem of compiling teams of programmers in the development of a software product. At the same time, about 15 tasks and 35 programmers with various qualifications were considered. The obtained solutions made it possible to sustain sprint planning using the SCRUM methodology.

To appoint workers in enterprise, it is recommended to use algorithms that allow you to quickly find rational solutions that can be equally good by various criteria. One of these algorithms can be considered the ant colony method, which, based on the probabilistic nature of the search for solutions, allows you to quickly find rational solutions. In addition to the proposed algorithms, it is worth considering the possibility of using linguistic variables for setting the time to complete the work and for evaluating the results obtained both.

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GOVERNANCE MECHANISMS AND COLLABORATIVE VALUE CREATION IN CROSS-SECTOR PARTNERSHIPS: CASE OF NGO AND BUSINESS

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Abstract. The article analyses aspects of the cross-sector partnership of NGO and business actualizing the context of the governance dimension and collaborative value creation. The theoretical part of this article revealed the formal (contractual) and informal (relational) governance mechanisms, which influence the behaviour of partners in the cross-sector partnership. Moreover, the research presented organizational and partnership perspectives of the governance in cross-sector partnerships. The case study strategy was applied to conduct empirical research in Lithuania. It was found out that value creation based on collaboration in cross-sector partnership is influenced by partnership context that consists of macro and mezzo stimulating and limiting factors, characteristics of NGO and business organization, selection of a proper partner as well as formal and informal mechanisms of partnership governance.

Keywords: cross-sector partnership; governance mechanisms; collaborative (collaboration-based) value creation; contractual and relational mechanisms

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JEL Classifications: O35, L31, M14

1. Introduction

The development of the open market, intensive flows of information and ideas, the communication in real time, the information diffusion via social networks, intensive social changes and the process of globalization, inherently intractable and open-ended challenges such as global warming, poor access to water, pandemics encourage governmental institutions, business and non-governmental organizations to look for new mechanisms of interactions (Dentoni et al. 2016; Yaziji, Doh 2009; Clarke, Fuller 2010). With growing awareness to dense environmental and social issues, meeting economic and technological challenges, public sector, business and

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NGO increasingly combine their resources in order to create greater social value and responsibility for society, to develop new innovative solutions. Cross-sector partnership is seen as a distinct impact on social welfare over recent decades (Van Tulder et al. 2016; Schuster, Holtbrügge 2014), as the main paradigm of collaboration in 21st century and one of essential strategic tools for global organizations (Branzei, Le Ber 2014; Maucuer, Renaud 2019). A cross-sector partnership is defined as "a cross-sector project designed to address social issues and the reasons for involving partners on an ongoing basis" (Selsky, Parker 2005, pp. 850). At the same time specifics of the activity of different sectors makes this collaboration as the complicated process (Selsky, Parker 2005, 2010; Rivera-Santos et al. 2011; Le Pennec, Raufflet 2018).

Partnership of business organizations and NGOs has been developed intensively in recent decade as a possibility for business organizations to create more active and innovative policy towards corporative social responsibility. Although NGO and business organization are not typical partners and this partnership may be complicated to implement, the tangible results of such a partnership are beginning to emerge. The involvement of NGOs in the cross-sector partnership provides them several advantages. First at all, they learn important skills and professionalism (Herlin 2015). NGOs, in collaboration with business organizations, gain the status of trustworthy organizations from the point of view of other stakeholders (Wymer, Samu 2009; Getha-Taylor 2012). Secondly, in the collaboration with business, NGOs gain more financial resources, which can be invested in relevant social projects (Seitanidi 2010). The non-materially motivated NGO leadership can effectively mobilize the community and identify low-cost solutions (Bano 2019). It can be stated that cross-sector partnerships can be seen as a means of strengthening the legitimacy of NGOs Cross-sector partnerships as an innovative source of social innovation and value, ensure the implementation of corporate social responsibility and allow NGOs to increase their capacity to solve various social problems (Le Ber, Branzei 2010; Demir, Budur 2019). It is assumed that organizations from different sectors benefit from synergy effects by pooling their resources, and at the same time they can address social issues that cannot be solved by working alone (Lee 2011). The increase of corporate social responsibility in the private sector encourages business organizations to work with NGOs to gain a positive reputation, thus partly taking responsibility for social problems (Seitanidi 2008). Thus, the popularity of cross-sector partnerships (between NGOs and business organizations) is constantly growing (Jamali, Keshishian 2009), leading to an increase of the number of organizations involved in partnerships. Business organizations are increasingly looking for partners with whom they can collaborate effectively because of gaining the competitive advantage (Stejskal et al. 2016). Cross-sector partnerships are one of the most complex ways which is used by business organizations to implement the corporate social responsibility (Seitanidi, Ryan, 2007; Van Tulder, Keen, 2018). Combining different competencies and resources of organizations is a key factor helping to solve complex, large-scale issues that individual organizations are unable to address (Austin 2010; Selsky, Parker 2005). NGOs and business organizations may gain the competitive advantage and create the value together seeking for common aims in the cross-sector partnerships (Teegen et al. 2004; Porter, Kramer 2011; Southby, Gamsu 2018).

Austin and Seitanidi (2012) conceptualize the collaborative value as transitory and enduring benefits relative to other costs which are generated by organizations, individuals, and society because of the interaction with partner organizations. Even the value creation is considered as one of main motives for the cross-sector partnerships, it is not created in every case (Bryson et al. 2006). NGOs and business organizations involve in such partnerships not only because of altruistic purposes, but for instrumental aims such as gaining the benefit, retrieving the recognition, the implementation of corporate social responsibility, etc. The creation of the collaborative value occurs in various forms (Seitanidi, Crane 2009; Sakarya et al. 2012; Hankammer, Kleer 2018; Chesbrough et al. 2018; Sroka, Szántó 2018) such as the usage of core competencies, resource transfer, knowledge exchange and access to new knowledge and networks, increased financial and technological resources, possibility to create and try innovative solutions, improved legitimacy, brand recognition, reputation, perception as a reliable partner, relationships with stakeholders, all of which can contribute to the increase of competitive advantage. However, the process of collaborative value creation needs the appropriate governance mechanisms too.

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Over the last two decades, the cross-sector partnership is analyzed in many scientific researches (Seitanidi 2010; Le Pennec, Raufflet 2018), however, responsibilities of the governance still remains not revealed and are named as "the black box of the governance of collaboration practice" (Kelman et al. 2013). Governance of cross-sector partnerships is very complicated, as the partnership is implemented by various levels, forms, and mechanisms (Clarke, Fuller 2010). Manifestations of the collaborative value in cross-sector partnerships depend not only on the context of the partnership, characteristics of the organization, managerial skills, but also on the application of formal and informal mechanisms of governance. However, there is still a lack of researches that integrate and highlight mechanisms for governing the implementation of cross-sector partnerships in the context of business and NGOs.

The main problematic question of the research is: *what are governance mechanisms used for the collaborative value creation in cross sector partnerships in a case of the interaction of NGOs and business organizations*. This article reveals practices of the cross-sector partnership's governance, enabling the collaborative value creation in the context of partnerships of NGOs and business organizations. In such a context the governance of cross-sector partnership is analyzed through two dimensions - at the levels organizations and partnerships including two interrelated aspects - formal (contractual) and informal (relational) governance mechanisms. It is assumed that used governance mechanisms have the influence on the behavior of the partner in the cross-sector partnership.

The aim of the empirical research is to disclosure of governance mechanisms of the collaborative value creation in the cross-sector partnership, focusing on the case of NGO and business partnership. In the context of cross-sector partnership, the article interprets the collaboration as a process in which organizations interact with each other to create the collaborative value revealing internal mechanisms of collaboration and the decision-making process. In this article cross-sector partnership is defined as the context in which the cross-sector collaboration proceeds. Processes of cross-sector partnership's governance are analyzed using different theoretical approaches such as Resource dependence theory, Collaborative Governance, Relational Governance and Inter-Organizational relations. Scientific methods such as semi-structured interviews, systematization and interpretation have been used for this research.

2. Theoretical background of the research

The partnership is considered as the meaningful and widespread cross-sectoral interaction, initiatives to ensure consistent, innovative, sustainable development, which enables partners to solve complex economic and social problems (Lysytsia et al. 2019). Many researches have advocated the need for (and potential of) value creation through inter-organizational collaboration (Le Pennec, Raufflet 2018). The collaborative value is conceptualized as transitory and enduring benefits relative to other costs which are generated by NGOs and business organizations because of the interaction with partners (Austin, Seitanidi 2012a, 2012b; Lyakhov, Gliedt 2017). According to Steijn (2011), who analyzed the effectiveness of partnership results, three forms of value creation can be identified: 1) cost reduction (effectiveness) in the process of achieving results; 2) increasing the desired results (efficiency); 3) creation of new results (innovation). The first two forms are relate to the obtaining of benefits at a lower costs; therefore, the creation of collaborative value can be analyzed on the perspective of cost-benefit analysis (Kolk et al. 2008); while the third form reflects the innovative results generated by the partnership, which are particularly important in solving complex problems. Seeking for mentioned effectiveness, efficiency and innovations in the creation of collaborative value the appropriate structures and processes of the governance must be applied in cross-sector partnerships.

Different ways of non-hierarchical coordination between organizations (or horizontal coordination), types of partnerships, forms of their governance, organizational and institutional implications (organizational values, required resources and capabilities, legal framework, and incentives for collaboration) exist (Mendoza 2009). The governance of cross-sector partnerships is defined as a combination of governance of vertical and horizontal

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relationships in a partnership, often without a clear responsible entity (Kooiman 2010). The conceptualization of the governance of cross-sector partnerships is presented through three dimensions: 1) a governance perspective; 2) formal and informal governance mechanisms; 3) stages of cross-sector partnership's processes.

The governance perspective emphasizes that governance in a cross-sector partnership is relational, i.e. it involves at least two participants, it is the dualistic one too - organizational and partnership structures and processes of the governance exist. The specific of the relationality remains in the value creation process where at least two partners must collaborate (Le Ber, Branzei 2010). Cross-sector partnership's governance describes relationships between participants (organizations partners), indicating certain responsibilities of them (Hayes et al. 2011). The governance of such a partnership is a complex process because partnerships are often created without any clear legal form or responsible body; besides, relationships between partners are constantly evolving (Stone et al. 2010).

The *governance dimension* in cross-sector partnerships is defined as the process of collaborative governance. Partners who engage in a partnership must be able to make decisions together to proceed to the value creation. The scientific literature on the analysis of collaboration and partnership issues describes the governance dimension differently: as the participative decision making (Grudinschi 2014), problem solving (Austin 2000; Crosby, Bryson 2005; Cankar, Petkovšek 2013), shared power arrangements (Crosby, Bryson 2005; Grudinschi 2014). Organizational governance describes relations between individuals and organizations. However, accountability is defined and perceived differently in an organization and partnership (Agranoff, McGuire 2001).

The scientific literature on management and inter-organizational relationships highlights many different tensions that rise from organizational and partnership perspectives through formal and informal structures and processes (Vangen, Huxman 2010; Hayes et al. 2011; Pfisterer, Van Tulder 2020). These tensions reveal why cross-sector partnerships sometimes do not meet participants 'expectations. Tensions are related to the implementation of the partnership and directly affect those who are responsible for governing activities. Participants of the cross-sector partnership need to pay attention on formal and informal mechanisms of the governance (Bryson et al. 2006), the trust level and the level of control. *Formal governance mechanisms reflect contractual and authoritative governance, while informal governance mechanisms reflect the role of trust, norms, and solidarity in the cross-sector partnership* (Hayes et al. 2011, pp. 3). Structures and processes of the multiple governance exist in such partnerships; i. e. participants of the partnership must meet organizational and partnership's expectations. Structures and processes change over the period of the partnership (especially because of existing tensions), therefore, governance mechanisms cannot be static (Alvarez et al. 2010). The choice of governance's approach is influenced by existing relationships and the need to manage them.

There are three main theories in the scientific literature explaining the effectiveness of contractual and relational governance: transaction cost theory, social exchange theory, and relational exchange theory.

The theory of transaction cost explains what the total costs of the partnership are, and what specific costs (transaction costs, operating costs) can be attributed to the partnership (Van Tulder et al. 2016). In this context *contractual (formal) governance involves clear structures that define the roles of participants and responsibilities to each other and processes that are implemented through positions of authority* (Lynn et al. 2000). Different terms to name the formal governance structures in cross-sector partnerships are used in the scientific literature: formal institutions, formal contracts, formal structures (Hayes et al. 2011). Some authors emphasize formal governance processes such as negotiation, agreement, steering and control (Das, Teng 2000; Crosby, Bryson 2005; Bryson et al. 2006; Forrer et al. 2014). Formal governance reflects contracts and other formal governance and control mechanisms. Contractual governance means the governance of transactions through formal contracts. The main goal is to control actions between partners and to prevent opportunistic behavior through commonly agreed and legally established acceptable behavior. Cullen and Hickman (2001, pp. 1197) emphasize that

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contracts are signed under the assumption that the partner will not fulfill its obligations if it is not controlled. Although contracts and financial obligations are considered as key tools to ensure the security of transactions, implications of the relational governance are increasingly discussed by scholars from different fields.

Informal governance involves structures and processes related to participants' social behavior and informal relationships. In the field of cross-sector relations, relational governance is usually developed based on relational exchange theory and social exchange theory (Benítez-Ávila et al. 2019). Researchers integrated these two theoretical approaches, emphasizing the strong link between established relational norms, the emergence of actual trust, and commitment between partners (Palmatier et al. 2007). Informal (relational) governance is referred to informal institutions, informal structures, informal dimensions (Hayes et al. 2011, pp. 6). Relational governance is based on the basic assumption that any exchange is based on social components. *Relational governance is considered as a degree of informal mechanisms and interactions between partners that builds social bonds such as trust, reciprocity, solidarity and norms, which reduce the relational risk and promote the communication and knowledge sharing* (Poppo, Zenger 2002; Yang et al. 2011; Benítez-Ávila et al. 2019). Relational governance is based on trust, collaboration, open communication, information sharing, and interdependence (Poppo et al. 2008). Therefore, it can be stated that the relational governance reflects the softer, "human" elements of cross-sector relationships, which take the form of social control and are used to coordinate activities and opportunistic behavior. Two main components of the relational governance are structures and processes. The governance process is considered as a degree of joint actions in the relationship of exchange. The dimension of the relational structure is perceived as the vertical integration of partners, while the processes reflect joint actions.

According to the theory of social exchange, trust arising from socially framed relationships can be an effective tool for governing the cross-sector partnerships (Faems et al. 2008). The theory of relational exchange emphasizes that the trust is the most important component in ensuring social relationships (Palmatier et al. 2007; Xue et al. 2016). The nature of relational relations is not only the economic but also the social one (Caoa, Lumineau 2015). It is focused on the role of social exchange, which is described as voluntary actions of exchange participants motivated by the return they expect to receive from the relationship. Main elements of social exchange are unspecified obligations and reciprocity (Cropanzano, Mithchell 2005; Thacker 2015). Collaborating parties must comply with the rule of reciprocity; otherwise, they may be penalized by social relations. In order to prove their credibility, exchange participants regularly fulfill their obligations and invest in relationships. Connectedness reflects the density of social connections and serves as a management mechanism in the exchange of knowledge (Jaworski, Kohli 1993), promoting the commonality of knowledge and communication. Trust and relational norms are the most common types of relational governance analyzed in the scientific literature (Griffith, Myers 2005). The theory of relational exchange emphasizes relational norms and provides them as another mechanism to enable the analysis of behaviors expected in cross-sector relationships (Palmatier et al. 2007). Relational norms, such as flexibility, information exchange and solidarity, define the comprehensiveness of the relationship and oblige the participants of the exchange to act according to shared relational norms. Acting according to relational norms provides the return with no economic value, including a sense of personal commitment, gratitude, trust, and a shared obligation to maintain collaborative relationships (Cropanzano, Mitchell 2005; Benítez-Ávila et al. 2019). Thus, the trust reflects the belief in a partner's honesty, trustworthiness, goodwill in risky exchange relationships (Das, Teng 2000), while relational norms reflect common expectations that reflect each partner's behavior in cross-sector relationships (Cannon et al. 2000). Both of them may reduce the opportunism; therefore, both are seen as important governance mechanisms. In summary, the relational governance means that: the high level of trust exists between partners; relations are governed using informal norms and procedures; the relationship is flexible while responding to changes.

The relation between contractual and relational governance is usually explained based on the theories mentioned before. Transaction cost theory is used to substantiate the effectiveness of contractual governance, while social exchange and relational exchange theories are used to explain the influence of trust and relational norms on cross-

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sector partnerships. This research is based on the approach that contractual and relational governance are complementary or compensatory mechanisms of the governance of cross-sector partnerships. First, clearly defined terms of a contract can give more confidence to participants of the partnership by promoting the development of relational governance (Poppo, Zenger 2002). Second, contractual relationships clearly define rights, responsibilities and penalties for opportunistic behavior that reduce information asymmetry and create a fair environment among participants, which promotes the development of relational governance (Yang et al. 2011). The contractual governance provides a formal protection for the development of relational governance by formulating and clearly defining roles and responsibilities of each party of the cross-sector partnership. For example, the dimension of contract's control can give signal about a lack of trust and displace the trust in good faith, while the dimension of the contract coordination can reduce misunderstandings and strengthen trust in good faith (Malhotra, Lumineau 2011). Thus, the control dimension forces partners to focus on roles and responsibilities in the partnership, while the coordination dimension creates a structure of common knowledge and promotes the development of trust competencies. Both dimensions can contribute to the value creation.

This research of the collaborative value creation in cross-sector partnerships assumes that the formal (contractual) and informal (relational) governance mechanisms enable the disclosure of joint activities of partners as relational outcomes of cross-sector interactions. Based on this approach, formal and informal governance mechanisms perform functions of knowledge creation and coordination, promoting the collaborative value creation in cross-sector partnerships. Thus, two (organizational and partnership) perspectives of cross-sector governance are presented and two interconnected aspects (formal and informal governance mechanisms) are included in this research.

3. Research methodology

While analyzing the data, case-oriented theorization has been selected. The value of case-oriented approach is expressed through holistic and particularized causal explanations of the results of a researched case (Piekkari et al. 2009). In case of this research, theorization means "identification of causal processes that generate results in specific contexts" (Piekkari et al. 2009, pp. 571). The context of researched phenomenon is very important when trying to present meaningful explanations. Generalization is presented referring to one situation. Having completed the field research, the collected material is given a theoretical form. Thus, abduction or a deductive way of results' analysis close to it is the most suitable methodological approach of performed qualitative research since the research guidelines are prepared referring to analysis of theoretical conceptions trying to extract the best explanatory reality from them.

Therefore, the research of case study was performed referring to interpretational constructionist approach. We must admit that various realities exist where the existing phenomena can be understood and interpreted differently giving them a subjective meaning i.e. a researcher constructs reality referring to own experience and researcher's attitude to the reality is valid. Qualitative research methods applied in this research are based on such worldview and perception of reality. The research is an explanatory process providing an opportunity to reveal the structure of the phenomenon. Case study provides an opportunity to analyze informative and contextual data and interpreting it to provide conclusions about the researched phenomenon; interpretation has a certain degree of subjectivity and this can be considered as both a disadvantage and an advantage that is related to a particular situation and emotional as well as intellectual information of the researchers.

Value creation based on collaboration in cross-sector partnership is a diverse phenomenon, its examination and analysis can cover different phenomena (organizational, partnership, contextual levels). Considering the complexity and volume of this phenomenon, exploratory and in-depth case study research based on abductive research strategy and systematic coordination has been selected. Trying to determine which aspects of situation can be generalized and which aspects appear due to the specificity of the situation influenced by situational

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environment factors the in-depth case study analysis is performed referring to composed preliminary theoretical tool and developed research instrument. Analytical tool composed on the basis of scientific literature analysis and disclosure study findings combining creation process of collaboration-based value and partnership management dimensions is used.

The research was conducted in Lithuania, as a small developed country, having young traditions of cross-sector partnerships. Organizations having experience in implementation of cross-sector partnership have been selected to analyze the value creation governance processes based on collaboration of empirical units (subjects) in cross-sector partnership. Semi-structured interview applied in the research helped to interview people who were able to argumentatively reflect their experience, present insights about collaboration-based value creation in partnership of NGOs and business organizations. Research participants were divided in three groups: NGO, business organizations and NGO and business partnership brokers/mediators. Altogether 22 informants were interviewed: 9 representatives of business organizations (marked IK-V), 9 NGO representatives (marked IK-N) and 4 NGO and business partnership brokers/mediators (marked IK-T). The main requirements for informants and organizations are listed as follows:

a) *Business organizations* – 1) organizations that have at least one year of partnership experience with NGO; 2) socially responsible business organizations with high reputation;
b) *NGO* – 1) working in the social sphere; 2) organizations that have at least one year of partnership experience with business organization;
c) *NGO and business partnership brokers/mediators* – 1) persons that provided consultations to NGO and business organizations about partnership issues.

The interview was organized considering the following principles: to present open and clearly formulated questions, to ask one question at a time, nonverbally react to the ideas expressed by the research participants, to encourage the research participant to explain the answer, to ask to present examples, encouraging research participants to present a more comprehensive and more detailed narrative. Interviews were conducted in 2016. Principles of research ethics such as volunteering and confidentiality of interviewees were applied.

4. Research results and discussion

The research tried to reveal cross-sector partnership governance practices that enable collaboration-based value creation in the context of NGOs and business organizations partnership. *In the context of this article, cross-sector partnership governance is analyzed through two dimensions – at organizations and partnership level and covers two interrelated aspects – formal (contractual) and informal (relational) governance mechanisms.* It is assumed that the used governance mechanisms influence partner behavior in cross-sector partnership.

Identification of relational and contractual governance mechanisms. Partnership participants trying to ensure acceptable risk level and governance costs may use different combinations of formal and informal governance mechanisms (Poppo, Zenger 2002). Regardless to the level of formality, cross-sector contracts are treated as a starting point of working together, as a process combining partners for an intended purpose that helps to determine roles and responsibilities of each partner (Rein, Stoott 2009). In formal contracts partnership aim is determined, necessary resources are identified, responsibilities are allocated, the structure of decision making is indicated (Crosby, Bryson 2005). Relational governance reflects softer, "human" elements of cross-sector relationships that appear in the form of social control and are used for coordination of activities and opportunistic behavior. Usually relational governance is related to confidence, mechanisms of social control, commitment, communication, interdependence.

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Scientists (Provan, Kenis 2008) state that selection of governance structure influences partnership efficiency. The following governance types are distinguished: a) self-governing governance/self-governance: self-governing structures where decisions are made during regular members' meetings or through distant informal interactions; b) centralized governance: the leading organization makes main decisions and coordinates activities and c) separate unit is formed for partnership administration that coordinates partnership activities (Bryson et al. 2006). While analyzing governance practices of NGOs and business organizations that participated in the research it appeared that cross-sector partnerships are implemented through self-governing governance structures that demand constant communication (see Table 1).

Table 1. Identification of relational governance features and mechanisms

Category	Subcategory	Illustrative statement
Governance of relationships through informal norms and procedures	Showing constant attention to the partner	*We (NGO) really try to do our best not to forget and show versatile attention <...> we ask "how are you?", send information letters with our planned activities (IK-N7); showing attention or constant "hello-hi" just shows that you are not interesting, I just got from you what I needed and now do as you wish* (IK-N6); *I try myself to maintain more or less a kind of relation with all partners. This relation helps to revive; share information not in particular about a very narrow initiative or the project, just helps to know each other better* (IK-N5).
	Cherishing and support of personal relationships among the partners	*A person who works with a partner (business organization) devotes his time to tell about implemented activities, invites employees to the organization <...> communicates <...> in principle everything happens because of personal contact* (IK-N1); *in business organization people have specific contact with particular people <...> cherishing and support of relationships help to believe in our activities because they believe in people who work in our organization* (IK-N2); *every member of the committee has personal contact with one or 2-3 NGOs* (IK-V-9);
Trust	Good reputation	*The contract is made mainly for recovering taxes <...> all other issues are quickly reconciled. I think that this is because of our NGO name <...> partners say "just do, we trust you"* (IK-N1); *such western attitude <...> when we really have trust-based mechanism that is apparently transferred to our organization in Lithuania* (IK-V4).
	High level of trust among the organizations	*Relationships are managed more by trust, because we know them, we know how they work (IK-V4); we know who "drives" the initiative, I know that they will do, because everything they promise to do – they do <...> the same "pool" of people* (IK-V8). *It is easily managed and easy to control, relationship is quite friendly, in case something happens we would inform each other that we stop, terminate, consider, and postpone payment* (IK-N7).
	Open communication	*In big meetings I encourage to be frank with each other: I tell you where the holes are, where we have to "patch up" the budget and you say what you really need* (IK-N5); *we need to speak frankly what we are capable of doing and what not* (IK-N2).
Informal control mechanisms	Employee as a control mechanism	*We have a person inside – a volunteer who can confirm how the funds are used <...> he ensures proper implementation of activities* (IK-V1); *the first and most effective control mechanism is employees who are volunteering <...> involvement of employees ensures that funds are being used properly* (IK-V3); *volunteering of our employees helps to implement informal control* (IK-V3).
	Constant communication	*Informal correspondence by e-mails how, for instance, the process is going on <...> I really want to follow and to hear, because we want to forward that message to the employees, I want to feel safe that we have done useful work* (IK-V2); *my personal contact with organization, a month does not pass without an exchange of e-mails, phone calls* (IK-V4). *"Report" is "report", but to my mind, many things are visible mainly through this daily, weekly, monthly collaboration* (IK-V9); *constant meetings are really necessary because employees change and the person that you were communicating with after a half of the year may not work anymore* (IK-N3); *besides corresponding we always try to organize live communication* (IK-V6); *almost every Friday we have meetings* (IK-V9).

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While analyzing the features of relational governance applied to the governance of NGO and business organizations partnership, we may state that organizations which participated in the research tend to apply informal forms and procedures in relationship governance. In their opinion, constant attention to the partner and cherishing and support of personal relationships among partners stimulate affection. Referring to scientific literature (Jaworski, Kohli 1993), affection reflects density of relationships, serves as a mechanism during knowledge exchange and stimulates communication. NGO representatives emphasized that: *"at the beginning when you do not know a partner or when you as an NGO are not known from the inside, when they do not know how you will fulfill obligations, formal obligations are more important but if the collaboration continues everything is managed by informal communication with organization's representatives, staying in touch, discussing <...> relationship becomes warmer and clearer"* (IK-N8). Another important feature of relational governance – trust that reflects faith in partner's honesty, reliability and benevolence in risky exchange relationships. The analysis of research data showed that representatives of business organizations relate trust in NGO to good reputation of this organization: *"we have selected those very good partners who are excited about what they do and their reputation speaks for them"* (IK-V3). High level of trust between NGO and business organization is related to prior positive collaboration experience and people working in NGO. The representatives of business organizations emphasized that informal control is performed by employees' volunteering. For example, volunteering of employees is related to a possibility to control the suitability of using the funds. Generalizing we may state that during the partnership of NGO and business organization constant social exchanges take place encouraging the feeling of personal commitment, gratitude and general obligation to maintain collaboration-based relationships: *"human contact and maintenance of relationships as well as saying "thank you", to my mind, is a significant part of partnership"* (IK-N2).

According to Malhotra and Lumineau (2011), contracts can have different impact on relational governance. In this article while analyzing governance of partnership of NGO and business organization, two main functions of contractual governance are distinguished – control and coordination (see Table 2).

During the research it has been identified that NGOs trying to avoid conflict situations with business organizations use contracts as a kind of certain protection: *"in the contracts it is clearly indicated what we commit to do and what we will not do <...> a contract is a kind of protection that we will not experience pressure <...> we agree upon the period of time when our name will be used communicating us as a social partner to avoid the situation when I did something once and tell this to everybody for a decade"* (IK-N3).

Brokers/mediators of NGO and business organization emphasized that control of business organizations is conditioned by previous negative experience of partnership: *"because of not very good experience they [business organizations] control NGO, ask for monthly reports, how much money has been spent, what has been done, why there are deviations from the plan, etc. It is a kind of attitude of financier, control – big control"* (IK-T2). We may state that the used control indicates a lack of trust among NGOs and business organizations, i.e. there is a lack of trust in goodwill, therefore, both NGOs and business organizations experience additional time costs trying to constantly control partner. Control function is used trying to avoid partner's opportunistic behavior.

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Table 2. Dimensions of contractual governance

Table 2. Dimensions of contractual governance **Category**	**Sub-category**	**Illustrative statement**
Functions of contractual governance	Control dimension	*We sign <...> often partners want that their finances were used for one particular program rather than the other, therefore, it allows them (business organization) to control where the money is used* (IK-N1); we sign a contract, indicate where exactly the money will be used, we add the discussed activities as an annex (IK-N5); *maybe it's a kind of assurance <...> we sign a contract, discuss conditions, define obligations, put our signatures* (IK-N7); *collaboration contracts are always signed and often we have annexes of the contract that contain activities, obligations of each part, it is indicated who does what* (IK-N8).
	Coordination dimension	*We define our aims by schedule and time <...> what the NGO wants to achieve and what the company. If we speak about publicity, then we must plan PiaR actions, in case of internal communication, you also plan clearly and precisely how many meetings, which people participate. Plan is necessary* (IK- N5); *annual plan is prepared, actions what we will do are planned <...> essential moments are discussed what we give and what we get for this <...> where are we going, are we doing this purposefully, we discuss time and deadlines* (IK-V5).
Formal control mechanisms	Formalized reports	*We ask each partner to prepare a report* (IK-V5); *one of contract's conditions i.e. after 6 months a company has to present us a report* (IK-V8); *one of contract's conditions i.e. after 6 months NGO has to present us a report where they describe what has been implemented, if the foreseen plans have been achieved* (IK-V9).

Source: compiled by authors

Coordination function is used in NGOs and business organizations partnership in order to coordinate common activities. Malhotra and Lumineau (2011) emphasize that coordination function reduces misunderstandings among partners and promotes trust. The informants emphasized that coordination expressed through formation of annual plans allow to identify if partnership activities are implemented properly.

***Institutionalization and governance of cross-sector partnership in a business organization*.** While performing the research we dissociated from analysis of governance of cross-sector partnership at NGO level, since the selected NGOs have indicated in their mission and aims that partnership with a business organization is one of the strategies of activities implementation. The research results showed that governance of NGO partnership at organizational level depends on managerial abilities of NGO. Institutionalization level of cross-sector partnership in business organization allows identifying business organization's attitude towards social investments and importance of cross-sector partnerships in the context of business organizations. Business organizations having understood strategical importance of social responsibility to business much more often tend to implement partnership with NGOs.

Carroll (1979) states that one of the components of social responsibility – philanthropic responsibility. Completely voluntary activities that depend only upon the decisions of the heads are ascribed to philanthropic or discreet responsibility. In other words, philanthropic responsibility is not provided by the laws or ascribed to ethical behavior of a business organization. Besides, social responsibility becomes a part of business organization's strategy (Vogel 2007). Referring to resource dependence theory philanthropic activities can be considered as means that help business organization to reduce the risk of resource acquisition. It is not a coincidence that philanthropic activities strengthen public image of business organization and interest groups such as government, consumers, suppliers, employees, shareholders and local communities will tend to communicate and provide resources (Backhaus et al. 2002). Therefore, business organizations are encouraged to relate their philanthropic expenses with such spheres that would help to change competitive position of a business organization in a positive way in a long-term perspective. In the context of research we have selected business organizations that implement philanthropic responsibility through partnership with NGOs. We consider the

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assumption that collaboration-based value creation depends on institutionalization level of cross-sector partnership in a business organization (see Table 3).

Table 3. Institutionalization and governance of partnership in a business organization

Category	Sub-category	Illustrative statement
Cross-sector partnership as a strategy of implementation of philanthropic responsibility	Formation of partnership tradition	*To my mind, the established tradition helps a lot. At first, maybe it seemed like an order from above but later it became a tradition <...> people [business organization employees] are already thinking which NGO to select for partnership, how to get involved* (IK-V1); there are no any additional hours, no payments, nothing, it is already a tradition (IK-V2).
	Integration of philanthropic responsibility in business processes	*Earlier it was fashionable to have a person responsible for social responsibility, who had let's say 0,25 position, for instance CSR or communication person <...>now the tradition changes and it is stated that social responsibility must be integrated in all company's activities* (IK-N5).
Formation of organizational culture based on philanthropic responsibility	Creation of employees' volunteering program	*Globally our company pays very much attention to volunteering <...> an employee is provided one day for volunteering that is fully paid* (IK-V9); *it is paid work time, considered as normal work time <...> transport and all necessary resources are provided* (IK-V7); *when this project appeared we were speaking that every employee should volunteer at least one day <...> this day is paid* (IK-V5); *it is allowed to volunteer during the work <…> in CAC [remark of doctoral student – community action] program it is indicated that having arranged with the head an employee can volunteer eight hours per year* (IK-V3); *an employee can devote at least 2 days per year to volunteering <...> these days in our organization are fully paid as working days. If your manager agrees to let you out more often and understands that it does not interrupt your work process and corresponds to the strategy of social responsibility of our organization you can volunteer more often* (IK-V4). *In our organization volunteering and the so called "CSR" or as we call in our organization "Citizenship" is completely ingrown in our blood, it is natural for us* (IK-V4).
Creation of structures of partnership governance	Establishment of informal partnership governance bodies	*In our company there is such practice as "Charity" committee. It means that employees gather in groups of 6-7 people who want to get involved in partnership with NGOs during the year* (IK-V1); *we have two committees <...> one of them is looking for NGOs that we could support and the other one is responsible for volunteering of employees* (IK-V9); *in Vilnius there is such informal council where every activity has its own coordinator, I am the coordinator of these coordinators* (IK-V3).
	The process of partnership governance is focused on coordinators of social responsibility	*My direct duties – coordinator for social responsibility projects <...> I coordinate all issues related to NGOs, volunteering, various external projects* (IK-V4); *me and my several colleagues are coordinators of initiatives, ambassadors of CSR initiatives in the company. We regularly meet, discuss, create a plan and respectively communicate and plan projects with NGOs* (IK-V7).
Creation of partnership financing system	Program funding	*Every year the company allocates a certain budget for the development of the program <...> departments that participate in the program may apply and get money for implementation of activities with NGOs* (IK-V3).
	Formation of a separate budget	*Planning the budget for the next year in advance we always think what activities we will implement being partners with NGOs* (IK-V6).
	Matched fundraising	*We have a "matched fundraising" option, our employees get an opportunity to organize specific activities and in such way collect money for a particular NGO. If everything is organized following the determined rules, the organization doubles collected amount <...> each of us has to put our contribution to make the support happen* (IK-V3)*; the company adds as much as we collect so the amount is double* (IK-V3)*; if each of us gives one euro, our parent company triples the amount <...> this is our main funding* (IK-V9).
Support of management staff	Head's positive provisions and decision to cooperate	*To my mind, it depends on head's maturity <...> earlier there were more companies where the head was authoritarian or dictator who just said I will or I won't support; now there are more and more companies that consider practice from western Europe <...> they discuss what organizations to support, what to do, which direction to select* (IK-N5); *a game (remark by doctoral student – partnership) is built on the heads, if the heads are positive and understand we will cooperate in any case, if due to some reasons they think differently, the arguments will not help* (IK-N6); *since the head was Danish <...> very involved in*

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Category	Sub-category	Illustrative statement
		partnerships with NGOs abroad, we wanted to share this good experience also in Lithuania (IK-V2).

Source: compiled by authors

During the research we have noticed that the guidelines of social responsibility of the companies that participated in the research are drawn by the parent companies, so business organizations of foreign capital acting in Lithuania adapt them to Lithuanian context: *"the guidelines of social responsibilities are created at „high level", and in the Baltic States we adapt them and transfer into practical level"* (IK-V7). Representatives of NGO emphasized that continuity of partnership depends on head's attitude to partnerships with NGOs, *"from the level of integration of partnership into governance processes of business organization, volunteering, and integration of donation culture into the activities of business organization: "in our company partnership index is one of the most important business indexes, so called key performance indicators" <...> every year we decide what kind of employees' involvement we want"* (IK-V3). In all business organizations that participated in the research partnership governance structures and financing systems are created.

Conclusions

Analyzed and generalized theoretical provisions of conception of relational governance and resources-based approach allow to state that cross-sector partnership is an emerging process covering uncertainty conditioned by the context, type of process, and relationships with a partner and results; it is a manifold process the development of which depends on partnership characteristics. Stages and their characteristics determine the type of relationships, enable partners to identify necessary level of responsibility that helps to achieve intended aims.

It has been revealed that time dimension in the analysis of cross-sector partnership is used trying to distinguish static partnership characteristics and process-based approach enables to reveal the process of cross-sector partnership governance that influences the creation of collaboration-based value. Trying to reveal deeper the process of formation and implementation of cross-sector partnership it is necessary to overstep existing standardized stages of partnership formation and implementation and to distinguish micro processes that form separate stages of cross-sector partnership.

Referring to the findings of qualitative research it has been determined that value creation based on collaboration in cross-sector partnership is influenced by partnership context that consists of macro and mezzo stimulating and limiting factors, characteristics of NGO and business organization, selection of a proper partner as well as formal and informal mechanisms of partnership governance.

Having generalized research data it has been identified that cross-sector partnerships are implemented through self-governing governance structures that require constant communication. Analyzing the features of relational governance applied in management of NGOs and business organizations partnerships we may state that organizations participating in the research tend to apply informal forms and procedures for relationship management. During the research it has been identified that NGOs trying to avoid conflicts with business organizations use contracts as a kind of protection.

Although during the research the brokers/mediators of NGO and business partnership have been interviewed as persons able to properly reflect the experiences of NGO and business partnership formation and implementation, their role and influence on collaboration-based value creation in cross-sector partnership have not been revealed. Therefore, it is recommended to perform further research determining role and functions of brokers/mediators of NGO and business partnership in collaboration-based value creation in cross-sector partnership.

Trying to determine context influence on the development of cross-sector partnership, disclosure of governance mechanisms in further research perspective it would be appropriate to perform comparative analysis of other European countries that have similar level of economic and social development.

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THE INFLUENCE OF MACROECONOMIC VARIABLES, PROCESSING INDUSTRY, AND EDUCATION SERVICES ON ECONOMIC GROWTH IN INDONESIA*

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Abstract. This study aims to look at the effect of Human Development Index (HDI), consumption, investment, and imports on economic growth in Indonesia and especially in the Province of Yogyakarta from 2010 to 2018. The research model used was panel data. The findings showed that HDI had a negative influence on economic growth. This happens because the education fee and health costs are expensive in Indonesia. Other findings implied that the number of imported goods did not have an influence on economic growth in the Special Province of Yogyakarta. Therefore, this issue needs to be studied seriously since it will have an impact on unemployment.

Keywords: Human Development Index; consumption; investment; imports; economic growth

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1. Introduction

Basically, regional development cannot be separated from national development. One of Indonesia's national development goals is to create economic growth and equitable distributions, including the distribution of income among regions. To achieve the above target is not easy because in general, the economic development of an area is closely related to the economic potential and its characteristics (Todaro & Smith, 2003).

According to (Todaro & Smith, 2003), Gross Domestic Regional Product (GDRP) is the total value of all final output produced by an economy at the regional level (both that is done by local residents and residents of other regions who live in the area). The amount of production or output of goods and services produced by the region/province/district/city is referred to as the Gross Regional Domestic Product. GDRP is valued in monetary

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units (Rupiah) and detailed based on various economic activities that build the economy of the area, such as agriculture, mining, manufacturing industry, trade, and so on.

Based on the data in Table 1, it can be seen from 2018 that the economic growth of the Special Region of Yogyakarta grew by an average of between 4.95 percent and 6.2 percent. From the 17 existing sectors, the sectors that have the largest contribution are; Processing Industry (12.74%), Information and Communication (11.1%), Construction (10.19%), Accommodation and Food and Beverages (9.57%) and Education Services (8.76%). While the sectors that have the lowest contribution are: Water Supply, Waste Management, Waste and Recycling (0.1%), Electricity and Gas Procurement (0.16%), Mining and Quarrying (0.55%), Company Services (1, 17%) and Health Services and Social Activities (2.65%) (see Table 1).

Table 1. PDRB Contribution of Yogyakarta (Million Rupiah)**,** Year 2018 (2010 = 100)

Sectors	2018	Average contribution from 2014-2018
A. Agriculture, Forestry, and Fisheries	8.101.333	8.26
B. Mining and Excavation	541.184	0.55
C. Processing Industry	12.487.005	12.74
D. Electricity and Gas Procurement	156.707	0.16
E. Water Supply, Waste Management, Waste and Recycling	94.923	0.10
F. Construction	9.987.059	10.19
G. Wholesale and Retail Trade; Car and Motorcycle Repair	8.219.289	8.38
H. Transportation and Warehouse	5.304.844	5.41
I. Accommodation and Food and Beverages	9.383.603	9.57
J. Information and Communication	10.884.533	11.10
K. Financial Services and Insurance	3,506,588	3.58
L. Real Estate	7,079,839	7.22
M. Company Services	1,146,812	1.17
N. Government Administration, Defense, and Mandatory Social Security	7,239,152	7.38
O. Education Services	8,583,074	8.76
P. Health Services and Social Activities	2.593.233	2.65
Q. Other Services	2.717.386	2.77
Gross Regional Domestic Product	98.026.564	100.00
Economic Growth	6.20	

Source: Central Statistics Agency (*Badan Pusat Statistik* – BPS) Yogyakarta

The following are several studies conducted to find out about what factors can influence the economic growth of a region: Research on the Effect of the Human Development Index on economic growth was carried out by Ranis, G., at al. (2000). The results of the study concluded that economic and social policies prioritize prioritizing getting the right economic fundamentals as a prerequisite needed for economic growth, while Enhancing Human Development (HD) must wait for economic growth (EG). His findings do not deny the importance of economic reform, but support the focus on HD must be included from the beginning of each reform program. Restoring the economy itself will not be resolved unless it is preceded or approved with an increase in HD. While research Suri, T., at al. (2011) signifies that HD is not only an EG product, but also an important input for EG. This paper develops a new empirical strategy to increase the power of two directions connecting HD and EG. Based on the existing growth literature, they explored the drainer of the positive growth trajectory that goes from HD to EG and found that HD plays an important role in explaining economic growth (EG). Azeem Qureshi's (2009) concludes that higher public spending on human development increases human development indicators and increases (+) economic growth. Akanbi Research, at. All (2014) concludes that the human development index in Negeria inhibits (-) economic growth.

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Research conducted by Haraguchi, Cheng & Smeets (2017) refutes the statement of the development of manufacturing in developing countries and increases the importance of manufacturing for economic development. This study shows that there is no evidence (?) That supports this argument. Su & Yao's study (2017) concludes that its empirical findings indicate that the manufacturing sector is still the main engine of growth (+) for middle-income countries. The research of Behun, Gavurova, Tkacova & Kotaskova (2018) concluded that the manufacturing industry is a sector with significant cycle behavior. In most countries, production and sales in the manufacturing industry behave as concurrent indicators, changes in production and sales are immediately reflected in the growth or decline in GDP.

Research by Feriyantoa & El Aiyubbic (2019), Rafiy, Adam, Bachmid & Saenong (2018) and Ramli & Andriani (2013) concluded that consumption expenditure has a positive (+) effect on economic growth. Aslam's research (2017) concludes that consumption expenditure is a very important element to promote economic growth, which is confirmed by sufficient empirical studies in various countries. Alas, in Sri Lanka there is no evidence of a relationship (?) Between consumption spending and economic growth.

Kartikasari Research (2017) concluded that there is a negative relationship (-) between imports and economic growth. Research by Bakari & Mabrouki (2017), Hussain & Saaed (2015) and Kim, Lim & Park (2007) concluded that imports have a significant positive (+) effect on productivity growth. Most of the research results still use the growth of gross domestic product rather than productivity growth as a measure of economic growth. Ali, Ali & Dalmar (2018) conclude that imports in the short term have no (?) Effect on economic growth.

Based on the results of these studies can be used as a reference to see whether the economic growth of the special region of Yogyakarta is also influenced by the factors mentioned above. Does the index of human development, household consumption and government consumption, education services, processing industry and imports affect the economic growth of the special region of Yogyakarta.

2. Review on Previous Studies

Economic growth is a process of changing a country's economic conditions on an ongoing basis towards better conditions for a certain period. Economic growth can also be interpreted as a process of increasing the production capacity of an economy that is realized in the form of an increase in national income. The existence of economic growth is an indication of the success of economic development in people's lives. Economic growth shows the growth of production of goods and services in an economic region within a certain time interval. The higher the rate of economic growth, the faster the process of increasing regional output so that the prospects for regional development are better. By knowing the sources of economic growth, the priority development sectors can be determined. According to Todaro and Smith (2003) there are three main factors or components that influence economic growth, namely capital accumulation, growth in population, and technological progress.

Based on the above background economic growth is influenced by the human development index, public consumption and government consumption, the processing industry and the import of goods. The composite Human Development Index (HDI) in-tegrates three basic dimensions of human develop-ment. Life expectancy at birth reflects the ability to lead a long and healthy life. Mean years of schooling and expected years of schooling reflect the ability to acquire knowledge. And gross national income per capita reflects the ability to achieve a decent stan-dard of livin (Jahan, S. 2017). While the definition of the Human Development Index (HDI) in Indonesia measures the achievements of human development based on a number of basic components of quality of life. As a measure of quality of life, HDI is built through a basic three-dimensional approach. These dimensions include long and healthy life; knowledge, and a decent life. These three dimensions have a very broad understanding because they are related to many factors. To measure the dimensions of health, life expectancy at birth is used. Next to measure the dimensions of knowledge used a combination of literacy rate indicators and

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average length of school. As for measuring the dimensions of decent living, an indicator of people's purchasing power is used for a number of basic needs as seen from the average amount of expenditure per capita as an income approach that represents development achievements for decent living (Statistik, B. P. 2017).

The effect of HDI on Imports was carried out by Elistia & Syahzuni (2018), Daniela & Oana (2015) and Shome & Tondon (2010) concluded that there is a relationship and effect of the value of the Human Development Index on Gross Domestic Product (GDP).Research on the Effect of the Human Development Index on economic growth was carried out by Ranis, G., at al. (2000). His findings do not deny the importance of economic reform, but support the focus on HD must be included from the beginning of each reform program. While research Suri, T., at al. (2011) signifies that HD is not only an EG product, but also an important input for EG. Azeem Qureshi's research (2009) concludes that higher public spending on human development increases human development indicators and increases (+) economic growth. Research by Akanbi, at. all (2014) concluded that the human development index in Negeria could hamper (-) economic growth.

Research conducted by Haraguchi, Cheng & Smeets (2017) refutes the statement of the development of manufacturing in developing countries and increases the importance of manufacturing for economic development. This study shows that there is no evidence (?) That supports this argument. Su & Yao's (2017) study concludes that their empirical findings indicate that the manufacturing sector is still the main engine driving driver (+) for middle-income countries. The research of Behun, Gavurova, Tkacova & Kotaskova (2018) concluded that the manufacturing industry is a sector with significant cycle behavior. In most countries, production and sales in the manufacturing industry behave as concurrent indicators, changes in production and sales are reflected in GDP growth or decline.

Research by Rafiy, Adam, Bachmid & Saenong (2018) and Ramli & Andriani (2013) concluded that consumption expenditure has a positive (+) effect on economic growth. Aslam's research (2017) concludes that consumption expenditure is a very important element to drive economic growth, which is confirmed by adequate empirical studies in various countries. The case of Sri Lanka is no evidence of a relationship (?) Between consumption expenditure and economic growth. Research conducted by Abdul Karim, Abdul Karim & Ahmad (2010) discusses the dynamic relationship between economic growth, fixed investment, and household consumption in Malaysia using a structural vector error correction (SVECM) model approach. Empirical results reveal that household consumption and fixed investment only significantly affect output growth in the short run. This finding tends to support an alternative view of the growth hypothesis, namely growth triggered by fixed investment, and growth driven by household consumption in the short run.

Research conducted by Bakari & Mabrouki (2016) aims to explore the relationship between exports, imports, and economic growth in Turkey. Annual data is taken for the period between 1960 and 2015. The model used is the Vector Auto Regression Model and the Granger-Causality test. The results of his research show strong evidence of two-way causality from imports to economic growth and from exports to economic growth. Kartikasari Research (2017) concludes that there is a negative relationship (-) between imports and economic growth. Kim, Lim & Park's (2007) study concluded that imports had a significant positive (+) effect on productivity growth. Most of the research results still use the growth of gross domestic product rather than productivity growth as a measure of economic growth. Ali, Ali & Dalmar (2018) conclude that imports in the short term have no (?) Effect on economic growth.

Research conducted by Iskandar, (2017) aims to determine the index of human development on economic growth through the granting of special autonomy. The method used panel data regression. The results showed that moderation between the human development index through special autonomy funds had a significant negative effect on economic growth.

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Based on the previous study above, the results of the research can be used as a basis for analyzing the influence of the human development index, consumption, investment and imports on economic growth in the Special Province of Yogyakarta and at the same time to see which sectors have the dominant influence on economic growth.

This study discusses the factors that influence economic growth in the Special Region of Yogyakarta, so that this study cannot represent the case of Indonesia, due to the limited data that researchers have. Because HDI has the role of driving economic growth, the role of government spending on health and education is very important to be considered in the analysis, but researchers only use government spending through total government consumption in this study.

3. Research Methodology

Based on the background and objectives of the study, the factors that determine economic growth are as follows: GDRP: f (HDI, CRT, CPEM, INDPENG, JSPEND, IMPORT). The model used in this study is the dynamic panel data model (Panel PAM). Model development as follows:

Regression models that show the relationship between the dependent variable and the independent variables distributed based on a certain time period are commonly called Distributed Lag Models (Gujarati, 2003).
Distributed Lag Models or Infinite Lag Models, can be written as follows

$$Y_t = \alpha + \beta_0 X_t + \beta_1 X_{t-1} + \beta_2 X_{t-2} + .\beta_3 X_{t-3} + ... + \varepsilon_t \quad ..... (1)$$

The Adaptive Expectation Model is specified by paying attention to expectations in the future. Although experience in the past can be used as a guide for predictions in the future.
The adaptive expectation model is formulated in the following forms:

$$Y_t = \beta_0 + \beta_1 X_t^* + \varepsilon_t \quad ..... (2)$$

This model illustrates that the value Y_t depends or is influenced by the value of X at the time t expected in the current period to be produced in the future period (Lains, 2006). Because hopeful X_t^* variables cannot be directly observed, Cagan and Friedman put forward a hypothesis about how these expectations are formed which are then known as the additive expectation hypothesis:

$$X_t^* - X_{t-1}^* = \pi \left(X_t - X_{t-1}^* \right) \quad ..... (3)$$

Where π is the coefficient of Expectation with $0 < \pi \leq 1$
The rationalization of the Koyck Model is the Partial Adjustment Model (MPA). The consideration of the flexible accelerator model of economic theory assumes that there is an optimal balance in the long run. Suppose the (Y_t^*) desired capital association (X_t) with income is:

$$Y_t^* = \beta_0 + \beta_1 X_t + \varepsilon_t \quad ..... (4)$$

and the formulation of the partial adjustment or stock adjustment hypothesis is $Y_t - Y_{t-1} = \delta\,(Y_t^* - Y_{t-1})$ where 0 <δ 1 is called the adjustment coefficient; is the actual change of capital; and $Y_t^* - Y_{t-1}$ is the desired change in capital. This explanation shows that the capital and investment period t are:

$$Y_t = \delta Y_t^* + (1-\delta) Y_{t-i} \text{ and } . \; I_t = \delta (Y_t^* - Y_{t-1}) \quad ..... (5)$$

and substitution of equation (4) to equation (5) obtained by actual capital

$$Y_t = \delta(\beta_0 + \beta_1 X_t + \varepsilon_t) + (1-\delta) Y_{t-1}$$

$$Y_t = \delta\beta_0 + \delta\beta_1 X + (1-\delta) Y_{t-i} + \delta\varepsilon_t \quad ..... (6)$$

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This equation is called the Partial Adjustment Model (MPA). Equation (4) explains the balance of capital demand in the long run and equation (5) explains the balance of short-term capital demand. Estimating equation (5) produces a coefficient on long-term capital by knowing the adjustment coefficient (δ).

The relationship between HDI, household consumption (CRT), government consumption (CPEM), processing industry (INDPENG), education services (JSPEND) and imports IMPOR towards GRDP is stated as follows:

$$GDRP_t^* = \beta_0 + \beta_1 HDI_t + \beta_2 CRT_t + \beta_3 CPEM_t + \beta_4 INDPENG_t + \beta_5 JSPEND_t + \beta_5 IMPOR_t + \varepsilon_t \quad \text{..... (7)}$$

$$GDRP_t = \delta\, GDRP_t^* + (1-\delta) GDRP_{t-i} \quad \text{..... (8)}$$

Enter equation (7) into equation (8) so that it is obtained

$$GDRP_t = \delta(\beta_0 + \beta_1 HDI_t + \beta_2 CRT_t + \beta_3 CPEM_t + \beta_4 INDPENG_t + \beta_5 JSPEND_t + \beta_5 IMPOR_t + \varepsilon_t) + (1-\delta) GDRP_{t-1}$$

$$GDRP_t = \delta\beta_0 + \delta\beta_1 HDI_t + \delta\beta_2 CRT_t + \delta\beta_3 CPEM_t + \delta\beta_4 INDPENG_t + \delta\beta_5 JSPEND_t + \delta\beta_6 IMPOR_t + \delta\varepsilon_t + (1-\delta) GDRP_{t-1} \quad \text{..... (9)}$$

$$GDRP_t = \alpha_0 + \alpha_1 HDI_t + \alpha_2 CRT_t + \alpha_3 CPEM_t + \alpha_4 INDPENG_t + \alpha_5 JSPEND_t + \alpha_6 IMPOR_t + \alpha_6 GDRP_{t-1} + \upsilon_t \quad \text{..... (10)}$$

Equation (10) which will be used to observe the factors that influence economic growth in the Special Region of Yogyakarta.

The following are the stages of completing the regression analysis with the PAM Model Panel (Figure 1):

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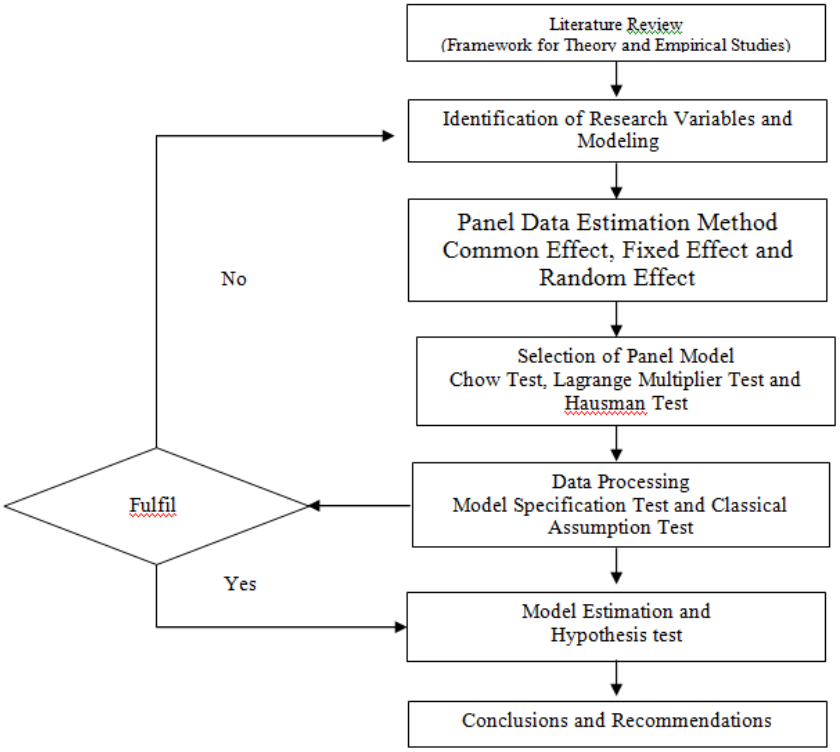

Source : Gujarati, 2003

Figure 1
Steps for PAM Panel Data Research

4. Data

In this study, the data used were taken from various Central Statistics Agency (Badan Pusat Statistik - BPS) in Yogyakarta, such as Sleman Regency, Bantul Regency, Kulon Progo Regency, Gunung Kidul Regency, and Yogyakarta City. The time period used is from 2010 to 2018 and for cross data is the City of Yogyakarta, Sleman Regency, Bantul Regency, Kulonprogo Regency and Gunungkidul Regency.

5. Result and Discussion

In analyzing panel data 3 regression models will be produced, namely the None Effect model, the Fixed Effect model, and the Random Effect model. The results of the regression to the model are as follows (Table 2).

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Table 2. Data Panel Regression Results

Variable	Coefficient		
	None	Fixed Effect	Random effect
HDI	-0.002843***	-0.004337***	-0.002686***
LOG(CRT)	0.175191***	0.233687***	0.200752***
LOG(CPEM)	0.119790***	0.137808***	0.096122***
LOG(INDPENG)	0.030485***	0.045688**	0.017964
LOG(JSPEND)	0.110999***	0.175596***	0.149276***
LOG(IMPOR)	0.022117	0.010082	-0.001641
LOG(PDRB(-1))	0.551650***	0.401435***	0.532885***
C	0.740903***	1.199868***	1.003165***
R-squared	0.999983	0.999994	0.999950

Source: Author, 2019
Notes:
*** significant at α 1 % ** significant at α 5 % * significant at α 10 %

Based on the Chow and Hausman test, the results are consistent and the model meets classical assumptions. It implies that the fixed effect model is more appropriate to be used in this model. The hallmark of the panel adjustment model is that the lag value for GRDP must be significant. The probability for LOG (GRDP (-1)) in Model 1 is smaller than 0.05, and the magnitude of the coefficient is 0.5716 or (1 - 0.4284). The meaning of the adjustment coefficient is the expected economic growth with actual economic growth that can be adjusted by 57.16 percent in one period.

Based on Table 3, HDI has a negative influence on economic growth both in the short and long term. The HDI component consists of longevity and healthy life as measured by life expectancy at birth, knowledge calculated from school expectations and an average length of schooling, and a decent standard of living calculated from Gross Domestic Product / GDP (balance of shopping ability) per capita. To increase HDI, one component that can be done is to increase life expectancy after birth through improving healthy living behaviors. Improving healthy behavior can be done if health facilities that meet the standards and low-cost health care can be fulfilled. The reality in Indonesia is that most health facilities are inadequate and medical costs are very expensive. Indonesia does not yet have an integrated medical service system with a referral system.

As a result, health services in Indonesia have become extremely expensive and commercial. Indonesia only has a hospital legal system, it does not yet have a health care system law. Poor families in Indonesia are very vulnerable when it comes to health. Once a family member is seriously ill, it will have an impact on the family's welfare. Increasing HDI through health requires very expensive costs and impacts on other family expenses. Increasing health costs will reduce household consumption and ultimately reduce economic growth.

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Table 3. Short-term and Long-term Regression Results

Variable	Model 1		Model 2	
	Short- term	Long-term	Short- term	Long-term
HDI	-0.0042***	-0.0073	-0.0024***	-0.0040
LOG(CRT)	0.2267***	0.3967	0.2779***	0.4663
LOG(CPEM)	0.1213***	0.2122	0.1310***	0.2199
LOG(INDPENG)	0.0430***	0.07523		
LOG(JSPEND)	0.1801**	0.3151	0.1767***	0.2967
LOG(IMPOR)			0.0036	0.0062
LOG(PDRB(-1))	0.4284***		0.4040***	
C	1.2333***		1.1455***	
R-squared	0.9999		0.9999	

Source: Author, 2019
Note:
*** significant at α 1 % ** significant pada α 5 % * significant pada α 10 %

Household consumption has an influence on economic growth, both in the short run and the long run. Increased consumption will encourage increased demand for goods and services and an increase in demand for goods and services will encourage increased production of goods. Increased demand will encourage increased investment and ultimately will drive economic growth. In model 1 (Table 3) the coefficient value of household consumption in the short term is 0.2267 meaning that an increase in household consumption by 1 percent will encourage economic growth in the short term by 0.2267 percent. Whereas in the long run, there is an increase in the coefficient value to 0.3967, meaning that an increase in household consumption. In the long run, it will result in an increase in the economic growth of 0.3967 percent. Increasing the number of 0.2267 to 0.3967 can occur if household consumption can be produced in the region (import of goods can be reduced through the substitution strategy of imported goods) or the public is aware of buying domestic goods.

Government consumption has a positive effect in the short term as well as in the long term. Government Consumption Expenditures consist of the expenditure of civil servants, provision of public facilities, and subsidies. Provision of Public Facilities like government investment is to build new hospitals, build roads, build bridges and provide educational facilities, while retirement pensions are transferred payments. In model 1 the coefficient for government consumption in the short run is 0.1213, meaning that any additional increase in government consumption of 1 percent will increase economic growth by 0.1213 percent in the short run. In the long run, a 1 percent increased in government consumption will increase by 0.2122 percent economic growth. Changes in increasing the coefficient in the short run to the long run from 0.1213 to 0.2122 indicate that local governments have succeeded in increasing the efficient use of the budget through budget efficiency from output to outcome. This efficiency improvement is shown in the short term to increase 1 percent of economic growth. An additional increase in government consumption expenditure is increased by 8.2 percent to only 4.7 percent (or a 4.5 percent budget savings).

The processing industry has an influence on economic growth both in the short and long term. Yogyakarta Special Region (DIY), as an area known as a city of education and culture, is believed to be a place for the rapid development of services and creative industries in it. The processing industry is one part of the investment that sustains the economy of the Special Region of Yogyakarta. Regression results show the coefficient value of the processing industry is 0.04 in the short term, which means that every 1 percent increase in the processing industry

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will increase DI Yogyakarta's economic growth by 0.04 percent in the short term. In the long run, the processing industry coefficient is 0.075, which means that any increase in the manufacturing industry by 1 percent will drive economic growth by 0.075 percent. Although the manufacturing sector in Yogyakarta has an influence on economic growth, but its effect is very small compared to other sectors. This happens because of investments made by investors (both domestic and foreign investors) in traditional industries (Táncošová, 2019).

Educational services have a positive influence on economic growth both in the short and long term. Yogyakarta is famous as a city of education and culture. Yogyakarta in 2017 has 106 public and private universities. With a label as an educational city, it can absorb students from outside Yogyakarta. Increasing the number of students outside Yogyakarta causes the number of accommodations for students to increase and consumption to increase and will encourage economic growth. The coefficient value for education services is 0.18 meaning a 1 percent increase in education services will increase economic growth by 0.18 percent in the short term. In the short term, a 1 percent increase in economic growth requires an additional increase in education services by 5.5 percent. In the long run, a 1 percent increase in education services will increase economic growth by 0.31 percent. In the long term, a 1 percent increase in economic growth requires an additional 3.2 percent education services. Savings increase of 1 percent from 5.5 percent to 3.2 percent of education services due to Yogyakarta as one of the cities in Indonesia which has a low cost of living compared to other cities which are used as education cities. Thus, the high cost of education is offset by the low cost of living in the city of Yogyakarta.

Imports do not have an influence on economic growth in the Yogyakarta Region in both the long term and in the short term. This is because the raw materials used to produce products in the Yogyakarta Region can be fulfilled from within the Yogyakarta Region or from areas around. This study is in accordance with the results of research Ali, Ali & Dalmar (2018). They state that imports does not have a significant effect on the GRDP.

Conclusion

HDI has a negating influence on economic growth. The increase in HDI actually inhibits economic growth because of the high cost of education and health. To overcome this, the government needs to do several solutions. First, people are required to have health insurance based on their ability to pay, so that people get intensive and efficient care in hospitals. With public health insurance, they are able to avoid additional financial burdens and access to better care. Second, there needs to be a collaboration between the world of education with companies both private and state-owned companies to be involved in education funding.

Household consumption has a role in driving economic growth, meaning that household consumption can encourage economic growth through increased demand for household consumption goods. If the demand for consumer goods cannot be fulfilled by the local industry, it will cause an increase in imports of household consumption goods. To overcome this problem, the government needs to implement some strategies. First, the government limits imports by increasing the income tax rate (PPh), especially for imported goods, household consumption. Second, the government encourages the substitution of imported goods by increasing the attractiveness of domestic investment, so that investors are interested and willing, and invest their capital in Indonesia.

The second variable that has an influence on economic growth is government consumption. What is meant by government consumption is government expenditure for development, through education, health, and public facilities and the provision of subsidies. Even though it has an influence, the use of the budget for government expenditure has not been effective. This can be caused by the budget being used based on output and not the outcome. To overcome this, the government needs to make budget efficiency based on outcome performance.
The processing industry has an influence on economic growth, but the effect is very small. The Special Region of Yogyakarta is known as one of the provinces whose GRDP is supported by the industrial sector. However, as the

role of this industry is very small, the processing industry sector has not been able to provide welfare for the processing industry players. One strategy to overcome local governments must empower the local processing industry through cheap and affordable capital assistance, assistance in increasing human resources and government assistance in marketing products made by processing industries, as well as the campaign to love domestic products.

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THE DEVELOPMENT PROCESS OF THE RIGHT TEAM IN EARLY STAGE START-UPS

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Abstract. The purpose of the paper is to create grounded theory to reveal the problems of the right team development process of the early stage start-ups and to explain how the main challenges of the process are being solved. A structured grounded theory (GT) has been chosen based on the combination of deductive and inductive approaches, revealing a contextual epistemological view, which is important when explaining the phenomenon through the experience of the research participants. GT helped to reveal concepts and their relations, relevant to the understanding of a right team of start-ups. The concept of the right team of an early stage start-up includes primary founders having the right competences, having a team leader and other team members having the right competences. The competences of the right team include knowledge, experience and characteristics that influence the development process and help successfully overcome the challenges of an early stage start-up.

Keywords: start-up team; right team; early stage; grounded theory

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JEL codes: M13, F63, I25

1. Introduction

The rapid changes in technological processes together with economic globalization are forming an environment receptive to innovation; and create opportunities to develop start-ups, which for the last decade have produced astounding global success stories and have encouraged all market participants to adopt technological and managerial innovations. Businesses face increasing competition, therefore radical innovation is necessary for companies to achieve vitality (Richter et al., 2016). The increased interest from the science and business communities into the business model of the successful companies is evident with many trying to identify the start-up success factors. Not only do start-ups have to commercialize their ideas fast, but they also have to choose a clear direction and enter the market with their innovation at the right time (Marmer et al., 2012). The innovative product is being developed at

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the early stage of the start-up's life cycle with certain success factors determining if the start-up will gain, maintain its position in the market, or fail. Precisely at this stage special attention is placed on the right team of a start-up: it must create a product for a market with as little resources as possible, overcome challenges, put in the effort, work hard and completely devote themselves to the fulfilment of the idea.

Nowadays the team has become a cornerstone success factor not only for start-ups but many other types of organizations as well. "Team is an essential ingredient on and off the race track" (Harris and Sherblom, 2018). The authors' quote reflects perfectly the current competitive landscape, where only the strongest and most capable in gathering the right team in their pursuit of success survive. Most start-ups "die" at the early developmental stage, and so for this reason alone science must deepen the knowledge, change perspectives and start discussions in this area of research. One of the reasons contributing to the failure of the start-up is the team (it has been identified that up to 60% of all failed new companies had issues with their teams), therefore if the team manages to understand and meet customer needs, and make the right decisions it will have a greater chance of success. *However, what lies beneath the concept of the right team, how it is understood in the context of a certain stage of a start-up's development incorporating the context, conditions and outcomes, what kind of team creates a successful new business are all questions open to new scientific research.*

In the 90s, as the world wide web emerged, the process of a start-up's development changed completely with opportunities for rapid scalability and the potential to reach a global customer base became more readily available. Such technological changes require a completely different understanding of the right team and over the last few decades the interest from an array of different scientific fields into this topic has increased dramatically. Start-up teams are now being examined from different perspectives: what appropriate characteristics influence the success of a company (Ammeter and Dukerich, 2002; Leary and DeVaughn, 2009; Jin et al., 2017), what characteristics are essential to start a company (Leary and DeVaughn, 2009), how are successful teams formed (Lazar et al., 2020), what influences the performance of the team and the effectiveness of decision making (Lechler, 2011; Knight et al., 2020), the size of the team (Agarwal et al., 2016) or it's demographic (Beckman et al., 2007), the heterogeneity of the team (Lazar et al., 2020), and the entrepreneurial team cognition (de Mol et al., 2015).

Although there has been a lot of research done in this area, it doesn't cover the main purpose of this paper, which is to generate grounded theory that would reveal the developmental issues of a start-up team and would explain how the main issues relating to the start-up's early development stages are being solved. To implement this objective the concepts of the right team and the development stages have been overviewed; the methodological principles of the procedural inquiry as well as the discussion and conclusion have been presented. The latter are particularly relevant to the educational and training institutions that prepare entrepreneurship, start-up development, acceleration programs and for those seeking to develop a successful start-up and to pass on the knowledge on how to successfully overcome the issues of the development stage. Development issues, as a research topic, has been chosen as development (or growth) can reveal the ability outlook and can be used as a tool allowing people to achieve their highest potential and give them the freedom of action (freedom of economic, social and family actions, etc.). The author of the paper relies on this definition, developed by an Indian Nobel prize winner in economics Amartya Kumar Sen (DeFilippis and Saegert, 2013).

It is important to note, that the aim of this paper is to reveal the experiences, meanings, the processes of cause and effect, the causality within start-ups, showcasing how actions influence each other, without forming any pre-existing hypotheses, but creating a theory by following the experience of the research participants. Structured grounded theory has been chosen, which helped to understand what and how decisions are being made and allowed to find out the essence of the studied phenomenon. The version of the structured grounded theory, as developed by A. Strauss and J. Corbin, has been chosen for the following reasons:
*The deductive and inductive view***.** The scope of the research topic became apparent after the literature review has been carried out, which was used to formulate the pre-existing research questions.

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The contextual epistemological view. The author seaked to personally participate in the research, to better understand the world of the research subject and the experiences of the research participants.
The positivist philosophical stance. The author distanced herself from the philosophical line of thought, which states that there is one correct way of understanding the world. Each existing theory has been developed at a different period, influenced by different ideologies and conditions therefore analysing current data, new knowledge and findings are always necessary.
*The symbolic interactionist view***.** Experience and constant communication with people help to develop a continuous dialog. The author focuses on the meaning, stemming from the interaction between people.
A flexible data analysis. The author chose to use supporting means for data analysis and is of the opinion that a researcher can choose freely the research method as long as the procedures of grounded theory are retained.
Complexity and dimensionalism. A comprehensive, complex view allows to reveal the contexts, interrelations, set conditions, causes and consequences. Strauss & Corbin (1990) emphasised that their paradigm model helps researchers develop a more comprehensive, complex, systemic and accurate thinking, and helps to answer why and how phenomena appear in real time, allowing to reveal the dimensionality of a phenomena.

By implementing the chosen strategy of structured grounded theory, the author analyzed the literature, examined the concept of the start-up's right team, revealed the development stages of start-ups and formed the instrument for empirical research. By conducting qualitative research, the author was seeking to collect as many conclusive results, therefore was using more than one data source: one-on-one interviews, digital commentary, memoing the ideas expressed during the pitches at start-up competitions. The conducted qualitative research on the development of early stage start-ups includes 17 qualitative interviews and the authors memos, after which point the research was deemed to have reached theoretical saturation. One-on-one interviews were conducted using a semi structured questionnaire allowing to refine the data and expand it with additional questions. The data was analyzed conducting a constant comparative analysis: it has been collected, analyzed and coded at the same time, without delay, maintaining theoretical sensitivity and using the red flag technique.

The data analysis was done using a structured grounded theory coding process, which entails three stages: the open stage used for identifying, naming, breaking down and describing the phenomenon. The axial stage - a process for linking the codes together. And the selective stage when the core category is chosen and all other categories are linked to the core. These coding methods were used to create concepts from field data. When the link between the categories was established, the author, using a conditional matrix, analyzed the different conditions and consequences in attempt to connect the process and the structure (Strauss & Corbin, 1990; Žydžiūnaitė ir Sabaliauskas, 2017; Švedaitė-Sakalauskė et al., 2019). The data was analysed using ATLAS.ti (version 8.4.3) software, which has been developed to analyse qualitative data and allows to do so in varying formats, such as text, graphics, video and audio files, as well as manage, separate, compare, explore and conceptualise a big quantity of data in a systematic way better than it would be possible doing it manually (Paulus & Lester, 2016). The studied phenomenon is revealed by presenting a generalized picture of a phenomenon (the submission of a generated theory), main concepts, causes and connections. In an attempt to reveal the sequential factors a procedural inquiry has been conducted.

2. Literature review

The different approaches found in the literature raises many academic discussions yet also present a broader holistic view, which allows for the concept of the right team of start-ups its theoretical aspects to be revealed and analysed in a more versatile and critical manner. Meanwhile a theoretical overview of corporate developmental studies reveals how the understanding of a start-up team and its characteristics changes based on the development stage. For example, in entrepreneurship theories some of the determining characteristics of start-ups at the early development stages are ideation, creativity, innovation. Whereas at the later stages, as discussed in management theories, risk, team and company management become more prominent. Therefore, the examined theoretical aspects will be determined by the start-up's development stage and its environment, which is in constant shift and influences

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the concept of the start-up team and the factors of the development stages. Such line of thought helped to structure the research topic as it progressed.

2.1. The concept of a start-up's right team

The concept of a "start-up's team" in scientific literature is widely discussed. However, there is no one agreed upon and established definition as they emerged at different times and were influenced by different conditions. New knowledge, discovery and explanations therefore are always needed. The variety of terms such as „*start-up team*", „*team*", „*work team*" „*entrepreneurial team",* „*founding team*", „*new venture team*", *„great team", „successful team" and „right team"* prompts to analyze the different scientific approaches, to conceptualize the definitions and understand if these are all synonyms, what divide is possible between them, what crucial points must be included when conceptualizing the definition. First, such terms as „*start-up team*", „f*ounding team*" and „*new venture team*" must be separated as they define a start-up and its founding team (although the term „*new venture team*" could presuppose a preconceived opinion that it relates to a team of a starting new company in its initial, bootstrapping stage). Meanwhile the term „*entrepreneurial team*" emphasizes only one of the team's characteristics - namely entrepreneurship - and could leave out the full context. There's a clear diversity in different definitions used by different researchers, for instance an *"entrepreneurial team*" is defined as a team responsible for the establishment, development and management of a new company and seeking of common goals. The composition of the team's characteristics in this term reflects if the company will succeed or not (Jin et al., 2017; Harper, 2008). The team could also be seen through the lens of diversity: diversity of opinion, diversity of expertise, diversity as disparity (Kakarika, 2013). Meanwhile Cooney (2005) presents „*entrepreneurial team*" through the understanding of value, having substantial financial interests and being actively involved in the creation of the company, but not through the revelation of team characteristics and pursuit of common goals. Chen et al. (2019) gives a clear divide between and „*entrepreneurial team*" and a „*work team*". „*Entrepreneurial teams*" form spontaneously by people who share common interests and develop initial business processes, form organizational culture and have to find ways to utilize market opportunities, mitigate risks, manage ambiguity and react to market dynamics. Whereas an organization's „*work team*" elects the management team and the team has clearly formulated tasks. Social interplay between the team members in the newly formed business is crucial in dealing with challenges and influences the results of the whole company (Ensley et al., 2002).

Under the term „*new venture team*" lies the team's ability to take up responsibility, make decisions, execute actions (Klotz et al., 2014), and includes its financial interest (Watson et al., 1995), whereas *„founding team"* refers to the founding members having competencies, sharing skills, knowledge, life experience, social and personal qualities (Ye, 2017) while being capable of creating the initial strategies, structures of the company and taking action and achieving results (Beckman, 2006). The term „*start-up team*" is very similar and was widely analyzed by Knight et al. (2020) who offered a multidimensional concept, which includes having a share of the capital, autonomy in strategic decision making and entitativity. „*Start-up team*" also reveals a group of individuals, where each member has an idea, a mission, an understanding how to achieve it and is a part of the execution process (Lee et al., 2020). Meanwhile the term „*team*" encompasses the collection of the characteristics of certain team members, such as interdependence, shared responsibility, the ability to draw the boundaries of the team, boundary crossing and the development of a shared mental model (Boon et al., 2013). A *„Team"* is a group of individuals, who help to develop a company with their different and necessary skills, are actively involved and take actions (Hernandez et al., 2018), help to see new opportunities (Muñoz-Bullon et al., 2015), communicate amongst themselves to achieve common goals, share responsibility, are responsible for one another (Vangrieken et al., 2017) and focus their attention on how the job is being done (Rydenfält et al., 2017).

Other terms like „*great team*", „*right team*", „*successful team*", „*effective team*" explain what the correct team should be like (the collection of characteristics), what challenges it has to take on (Lazar et al., 2020) to be able to predict and assure a successful execution of a project. For example, „s*uccessful executive teams*" are presented as

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able to make decisions fast but have high conflict between team members, which helps to better allocate resources and exploit opportunities. Previous work experience is considered as a time saver and helps grasp and solve issues fast (Eisenhardt and Schoonhoven, 1990). „*Effective teams* "refers to the assurance of the right number of team members with a respective diversity of tasks and interpersonal skills (Mickan and Rodger, 2000). Therefore, each different case of the „*right team*" can have its unique conceptual framework, encompassing a collection of concepts necessary when forming a right, successful and great team, and explain which context and conditions it encompasses. The concept of the right team changes at a different development stage of a start-up.

2.2. Contemporary organization and upper echelon theories

The theoretical aspects of a team are present in contemporary organization theories. One such aspect was revealed by Peters & Waterman (Colville et al., 1999) in their 1982 book „In Search of Excellence" on the characteristics of a team in a contemporary context. The authors identified that the personnel of a team of a successful organization are inclined to experiment, take risks, they tolerate failure, are flexible and likely to integrate ideas, are constantly in search for better solutions as there is no one unchanging answer. Current entrepreneurship training is commonly based on the team challenge, such as the creation of a new company or solving a problem. To find creative and professional solutions to such challenges personal and team effort is needed (Harms, 2015). Team characteristics are also discussed in management theory such as the upper echelon theory. The theory (Hambrick, 2007) states „that executives' experiences, values, and personalities greatly influence their interpretations of the situations they face and, in turn, affect their choices" and the greater managerial discretion executives have the better the forecast as these managerial qualities will be reflected in the strategy and the results.

2.3. The early development stage of a start-up

The team is very important at the early stage as the attraction of the necessary resources and the market entry success of the product will depend on its ambition, professionalism and skills. The success of a start-up at the early stage will depend on the implementation of solutions, including who are the suppliers of the resources, what incentives will be needed to attract partners and how the team will manage these tasks and support each other (Kamm, Nurick, 1993). Therefore, the concept of a team at the early stage is more concerned with the individual traits of the founding members and individuals (Lechler, 2011), their motivation (which often determines if a team member has a share of the start-up's capital) and full commitment to the fulfilment of the idea. Experienced team members can focus on the main risk factors and evaluate the needed resources at this stage, while the utilization of a personal network and trust capital at the early stage of technological development is paramount as the team can acquire necessary resources and a competitive advantage, necessary for business development (Wu et al., 2009). A successful team includes employees, their experience and skills (Teal and Hofer, 2003). They are capable of performing each other's tasks, can change work spaces flexibly, adapt to the changing market and organizational conditions. It is likely that precisely these people will spend more time dealing with partners, clients, suppliers and employees (Duchesneau & Gartner 1990). The team of a start-up is concerned with finding network contacts that could give access to an array of resources, including human, technical and financial (Grossman et al., 2012, Muñoz-Bullon et al., 2015). Existing start-up ecosystems dedicated to a start-up at an early stage, i.e. accelerators, could also be linked to this as they are attractive to start-ups and are seen as launching pad to the next stage. Typically, accelerators offer a wide network of connections and provide opportunities and access to a variety of resources, which only need to be utilized.

Klotz et al. (2014) defined a new company at the early development and growth stage as a company that enters products and services to market, forms a client base and roots its organizational processes and procedures. At the same time, he is critical of views that define new companies according to their age and size as these are very specific conditions that depend on context and the characteristics of a sector such as complexity and technical intensity. Freeman, Engel (2007) noted that the lifespan of stages depends on the specifics of the company: for example, time for internet companies can be measured in months; software companies - years, and biotechnology companies – in

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decades. A clear divide is seen in the literature between different lifecycle stages. Some researchers include downfall, aging/death, failure stage (Mueller, 1972; Miller, Friesen, 1984; Baird, Meshoulam, 1988; Lester et al., 2003; Adizes, 2004; Richard et al. 2006), other authors bypass this stage (Greiner, 1972; Jawahar and McLaughlin, 2001; Churchill and Lewis, 1983). Such difference in outlook could be explained by arguing that some researchers concentrate on a lifecycle that, step by step, allows start-ups to survive and strive, while others rely on certain patterns of outlook, actions and indications at each stage which might lead to a company's "death" or closure. However, it is important to note that such a scenario isn't inevitable. Each stage of any lifecycle model should be relevant, adaptable and help companies take necessary stage-appropriate actions, which would allow them to thrive while mitigating company and sector specific risks.

Reviewing the different approaches from an array of researchers it can be concluded that a start-up is a dynamic organism characterized by certain stages and varying in duration, scope and resources (for example, a large company might start developing a start-up on the side with all necessary resources allocated, while an independent start-up could have little to no resources). A start-up's lifecycle model shows a unique combination of certain factors, related to the start-up's strategic direction that change at each developmental stage. The factors of each stage change depending on the business specification and area of operation. The reviewed studies consistently depict a start-up as seeking company's vitality and success. However, in terms of a start-up's lifecycle, the author distances herself from downfall and death stages. By holding a perspective view, she is of the opinion that a start-up's (or any other company's) lifecycle should analyze the company's development stages to help them stay lively, unlike the evolutionary perspective, which includes the death, downfall and other aging and slowing down stages. The author also chooses to exclude the duration and the number of employees from the lifecycle stages, as they don't explain the issues and strategic actions of any company's developmental process. The factors named in certain stages must relate to the development issues. It's a multidimensional and a perspective view, which includes internal and external factors. For the purpose of this paper, the early stage is considered to start when the founding member(s) clearly decide to sacrifice time, give themselves to the unknown, with only a hypothetical knowledge of the possible outcome and hope that it will succeed. The early stage starts with a clear determination and hope, internal motivation and the decision with a predetermined member(s) to join an execution of a business project and a readiness to bring the product to the market by testing its demand.

3. Methodology

The analysis of the main concepts related to this research topic revealed that the theoretical aspects showcased in the literature review are not unequivocal. Simple and clear answers are missing to questions like why some start-ups do better than others, what is the right start-up team, what conditions must be met and actions taken to build the right team. Structured GT version (*Strauss & Corbin*) has been chosen. GT not only explains the current situation, but also reveals the understanding about the process by which it's happening (Strauss and Corbin, 1998). GT method is usually chosen when literature does not offer enough theories to cover all aspects and areas of social life, when data justification is lacking or due to ongoing phenomena as reality is dynamic, constantly formed by diversity, subjective experience and innovation (Thornberg and Dunne, 2019).

The purpose of Grounded theory is to investigate a topic with the aim of creating a richer understanding of the phenomenon and to generate a theory, which would help explain the issue better (Glaser and Strauss, 1967; Corbin and Strauss, 1990; Charmaz, 2006). Following Birks & Mills (2015), it is an explanatory scheme, combined out of concepts interrelated with one another through logical combination of links. The insights and arguments gathered through the empirical research are what help reveal the logical links. GT, as a method, indicates toward category setting guidelines that help to create links and bridge a connection between those categories. The expanded theory provides an explanatory base, which helps to understand the researched phenomenon. In the case of GT, however, the basis for new theory is created not through the analysis of scientific literature, but by collecting and analysing empirical data (Urquhart, 2013).

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3.1. The premise for the application of Grounded theory

Theoretical sensitivity has to be ensured when the GT research is carried out. Theoretical sensitivity is the ability to conceptualize, find new insights, structure, determine links between different sources and data points, keep an analytical distance, tolerate ambiguity, stay open, trust the process and believe in the discovery of the theory. According to Glaser & Strauss (2009), theoretical sensitivity is the ability by the researcher to understand the meaning of data and the theoretical nuances. It is formed by the researcher's personality, temperament and experience in research; therefore, the results of the research are based not just on the participants, but on the researcher herself.

When conducting GT research, it is important to follow these procedures (Flick, 2018): 1) *concurrent data analysis*; 2) *coding*; 3) *constant comparative analysis*; 4) *memoing*; 5) *theoretical sampling*; 6) *theoretical saturation*; 7) *substantive theory development*.

Concurrent data analysis is characteristic for GT methodology. Data is being analyzed when it's received without waiting for all necessary data to be collected. Such data collection is particularly important for theoretical selection, when the researcher, receiving and instantly analyzing the data, can modify the questions, fill in gaps or refine arising questions, doubts.

Coding is one commonly used way for the analysis of qualitative data when seeking to develop a theory out of a case study. When developing a theory, the researcher considers many theory codes until one core code, explaining the situation the best, is chosen. The core code explains main categories and the link between interconnected codes.

Constant comparative analysis, conducted during the research, allows to understand and explain data diversity (Žydžiūnaitė and Sabaliauskas, 2017), raise questions, discover properties and dimensions that can increase scientists' sensitivity (Strauss and Corbin, 1998). *Memoing***.** Coding and constant comparative analysis help to develop new concepts and all gathered data is captured in memos where researcher's own thoughts and considerations are given. This allows the researcher to record the direct route from the foundation to the final new idea and helps develop reflections, ideation and codes (Kenny and Fourie, 2015).

Theoretical sampling is a process whereas the researcher consciously and purposefully collects data from more sources to further expand on specific, earlier noticed themes thus developing the emerging theory. Data is being collected until new categories, characteristics are being discovered, i.e. unit the theoretical saturation is reached. Carmichael and Cunningham (2017), based on the approach of Glaser and Strauss (1965), explained theoretical sampling as the process of data collection for the purpose of theory generation when data is collected, coded and analyzed and further data collection is planned only when the codes of primary data have been established, compared and the researcher has decided what further data and from what sources to collect. This approach opens a space for the researcher to correct the process of data gathering, introduce new research questions and guide them to the right direction.

Theoretical saturation, as a stage, is reached when based on the collected and analyzed data no further data collection and (or) analysis is needed (Glaser and Strauss, 1967; Saunders et al., 2018). Birks and Mills (2015) relates theoretical saturation firstly with the closure of analysis and not with the collection of new data. Saturation means there is no additional data based on which the researcher could develop characteristics of a category, because she grasps similar cases and additional data doesn't evoke any new themes (Goulding, 2002).

S*ubstantive theory development.* The results gathered during the research are converted into the main developed theory where links between concepts (categories), context, assumptions, processes are formed and depicted. Theoretical coding includes the final level of abstraction as the researcher conceptualizes the links between the essential concepts. This determines the emerging theory, which reveals concept links and explains the latent social

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behaviour model (Kenny & Fourie, 2015). Theoretical codes are linked with other codes that are directed more towards formal connections (where one thing is a cause of something else) (Flick, 2018). Therefore, the essential theory reveals the theoretical explanation of the researched phenomenon (Chun Tie et. al, 2019), whereas the gathered data and GT research specific process helps to distinguish the links between the main categories thus creating the main theoretical model.

3.2. Limitations of the study

Thinking about the potential limitations of the study, the author recalled the problems she had encountered when conducting the study under the GT method. One of the limitations could be seen as the lack of researcher's experience in this method. On the other hand, it was a wonderful journey into a new and unexplored path of knowledge. While this requires effort, engagement and problem-solving skills, the chosen structured GT version gace flexibility as long as the required GT procedures were followed. The researcher conveyed her personal thoughts from the memoirs in a coherent manner without excluding additional extracts. Based on Strauss & Corbin (1998) the researcher allowed herself to be creative and flexible.

3.3. Research ethics

Research ethics help to ensure that the research process is transparent and helps to protect research participants from any possible consequences (Flick, 2018). In conducting qualitative research, the researcher observed these principles of scientific ethics: following a personal value code of honesty, sincerity, and familiarity; and treating others in the study in terms of informed consent, confidentiality, anonymity, and courtesy (Walliman, 2018). The researcher distinguished these principles based on Flick (2018), Žydžiūnaitė and Sabaliauskas (2017).

The principle of human dignity and privacy. The investigator treated all informants politely and respectfully, avoiding placing pressure.
Principles of confidentiality, anonymity and autonomy. A pledge was given to all informants to maintain confidentiality of their identities, if desired, during the course of the investigation and publish the survey data only in encrypted form. In order to keep the informants anonymous, each was assigned a unique code.
Principle of transparency and fairness. The researcher informed the participants in a clear and honest manner of the aims, the benefits, the value of the study and maintained a trust-based research environment.
The principle of justice. All participants partook in the study voluntarily and a relationship of equals during the interviews was built. In order to maintain the authenticity of interviews all quotes presented in the paper are direct.

3.4. Research Design of Structured Grounded Theory

The following is the implementation process of the study: its stages, subjects, methods of data collection, the data analysis process. The process demonstrates the path towards the underlying theoretical model revealing the role of the researcher (Figure 1).

4. Results

The subject of the study covers the early stage of start-up development. The selected start-ups have surpassed this stage within no more than three years and this choice was made in order to recreate the experience and provide the most complete and valuable information. In addition, these start-ups may still be developing or *have already completed* their growth phase. Chosen investors are currently employed and have at least five years of experience actively working with early stage start-ups. The five-year period has been chosen so that the experience gained is sufficient, extensive and diverse. Investors were interviewed not about a particular start-up, but about their accumulated experience with early development stage start-ups. Only start-ups that have already attracted funding

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from a venture capital fund, private equity fund or angel fund have been selected for the study. The empirical study was carried out simultaneously to avoid a gap between what happened, what information was obtained, not to degrees from data or to lose theoretical sensitivity. 17 informants were surveyed in October of 2019 including 6

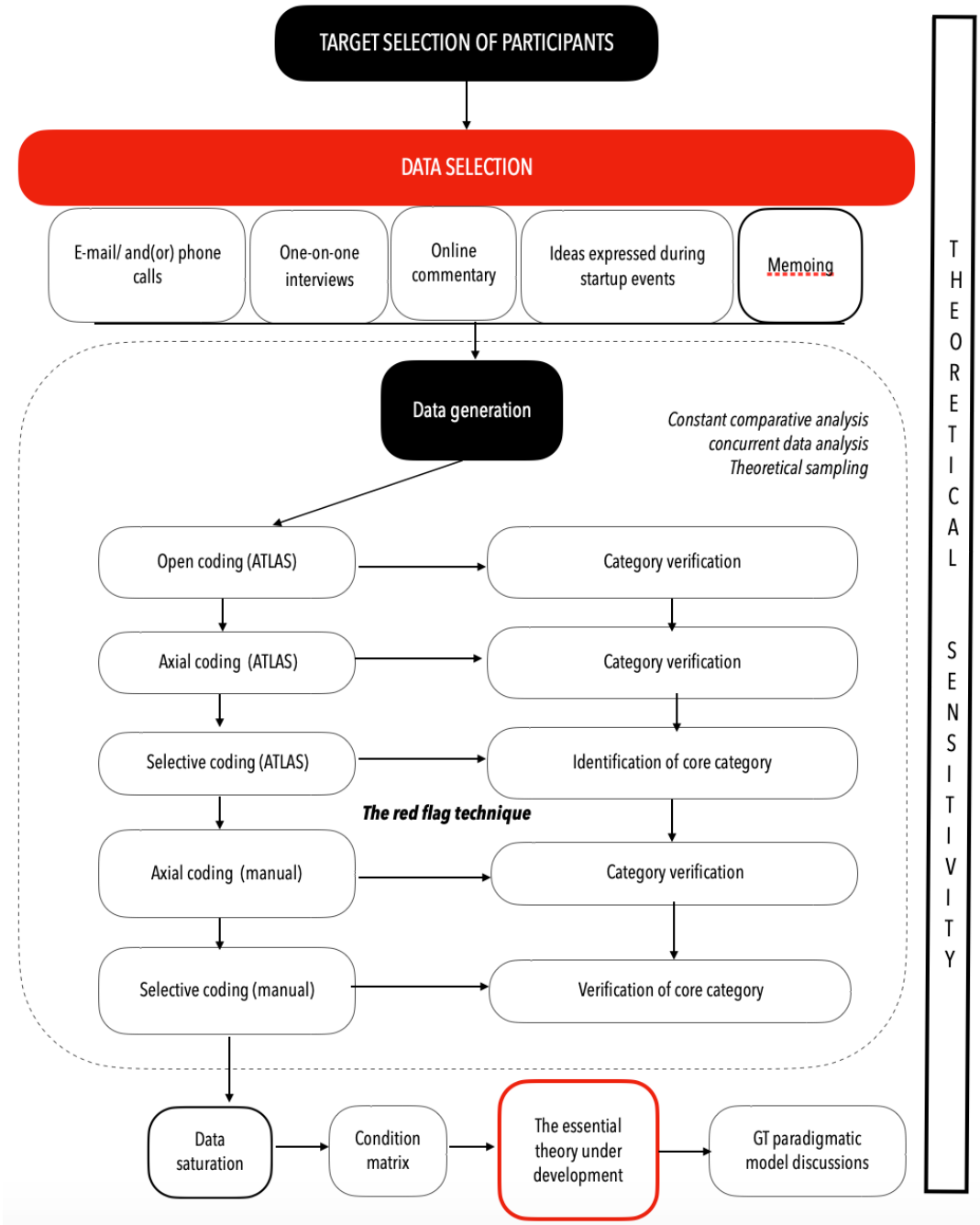

Figure 1. A research design structure implementing the structured GT process (by the author)

investors, 4 production start-ups and 7 service start-ups. Each interview was given an hour using a semi-structured questionnaire that framed the questions in a way that allowed to describe action. During each interview the researcher tried to go beyond the obvious and to seek the hidden knowledge behind what the participants had not

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yet considered or were departing towards. After the first interview it was clear that the prepared questionnaire was sufficient and allowed to dive deeper.

During the open coding process selected quotes were encoded and 291 codes were marked. During selective coding 4 categories were identified and consolidated: the possession of appropriate knowledge; experience; having certain abilities and personal qualities; and the presence of a clear leader. The set of categories formed a structured field of results. Continuous comparison and the understanding of which parts to associate together allowed to refine the most important essential category. Each distinguished category is an action or a set of interrelated actions, and the essential category identified *"building the right team"* reflects the action that addresses the underlying phenomenon under investigation.

Figure 2. Distribution of eligible team code numbers by category.

Subsequently, once the changes were saved, the data was again extracted and analysed manually, reflecting the results of the study. During this time the researcher categorized certain codes updating them regularly in the created ATLAS.ti document. Figure 2 shows the distribution of code mentions across categories. Such data visualization demonstrates the importance in the overall context of the right team at an early stage.

It was interesting to discover what the term *"right team"* meant in the context of the early stage of a start-up's development, because the often-heard phrase *"good or right team"* doesn't in itself explain the meaning. Numerous codes naturally lead down a rabbit hole, where terms such as "competencies", "skills", "experience", "knowledge", "personal qualities", "biography", and others are abound. As the essence of this study is to reveal the process and to give meaning, the term "team" was separated into two category-uniting groups, i.e. *leader and competences*. The leader encompassed the presence of a clear leader, while the following categories were assigned to competencies: 1) knowledge, 2) experience, 3) personal qualities and abilities. This distinction provided clarity and simplicity and was based on the reasoning of the author and Le Deist and Winterton (2005), which state that competencies are interpreted as knowledge (theoretical and practical know-how), the awareness of what needs doing and how to do it better, value creation, skills that are developed with practice, the right mindset/attitudes and appropriate work habits, abilities and personal characteristics. This helped clarify the concept of the right team at this stage and the relationship of related concepts to the main category.

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Once the main categories have been identified, the researcher analysed each category separately. It is only after this phase that the researcher confirmed the most important category and demonstrated the early stage development process of a start-up team and developed a theory.

4.1. Concepts revealed during empirical research

When analysing each category all the components needed to build the theory were highlighted thus demonstrating an understanding of the ongoing process. The red flag technique was used to reveal results (a red flag symbol used for data visualization), quotes and reasoning conveyed in memos via descriptive text (a form most convenient for the researcher).

Skills and personal attributes (competencies / team)
Figure 3 shows that by the number of repetitions of the codes assigned to the trait, the key features for skills and personal characteristics include 1) **the ability to do things quickly** (making decisions, letting employees go when needed, taking on new actions, etc.): *"You have to have a mindset that if a hiring error was made, it must be solved here and now "(I12)*; 2) **ability to make mistakes and take risks, overcome difficulties, perseverance and stubbornness, inclination to experiment**: "*... the ability to withstand a "no" and find a "yes" even after a thousand attempts. To experiment" (I4)*; 3) **a team of excellence**: "the *success was not in the attracted investment but in the talent"* (I10) and so on. The size of the bubble in the figure is proportional to the number of mentions in this code.

Looking at the picture of ability and personal qualities in general, it looks rather broad and the requirements for successful development are really high. The impression is that such requirements are not always imposed on senior management. However, in the context of a start-up team, these requirements are not so much compulsory, as it is understood that having them will speed up and increase the chances of a successful business idea execution. It is preferable, before starting any business project, to take these mentioned qualities into consideration and ask oneself if one possesses them and is able to perform accordingly. And if it happens that one doesn't possess all of the mentioned qualities, one should self-evaluate the impact that it would have on the project, the risks that would have to be faced and the time that it would cost. The set of qualities and abilities could also be applied to the manager of a modern innovative organization, taking into account the goals of the company. Analysing the skills and personal attributes the author of the study is convinced that each stage of the development requires a different team to meet the essential qualities or abilities. The author assumes that, supposedly, in the initial stage creativity would emerge precisely due to certain intrinsic qualities, however this characteristic would not be essential at an early stage. It is good to have it, but it's not the most important trait.

Further analysis of the understanding of a team brings in the next category, i.e. knowledge.

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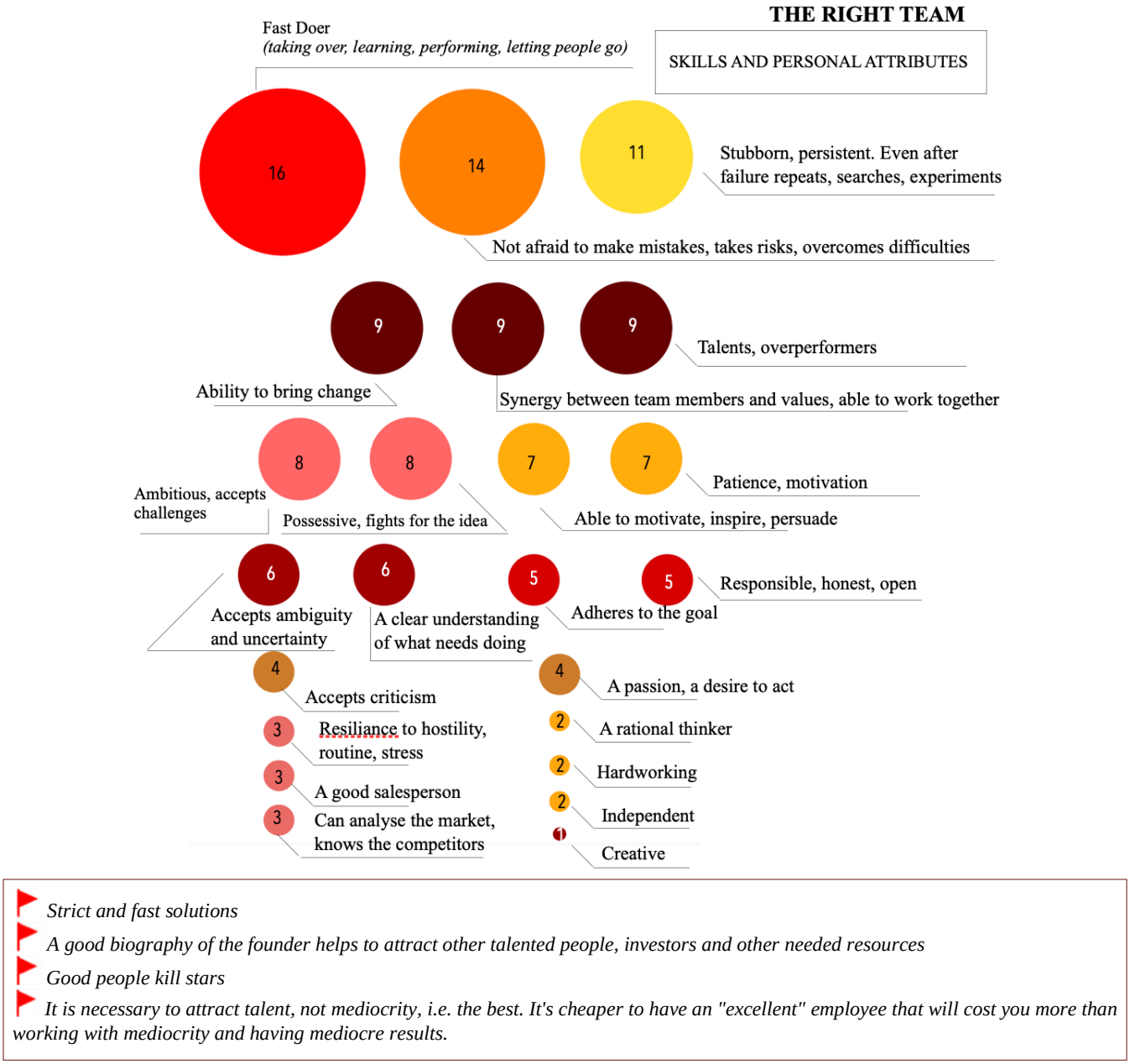

Figure 3. The concept of skills and personal attributes, distinguishing their characteristic qualities and the number of repetitions of actions.

Possession of knowledge

During the interviews the researcher asked if education was important and most often got the reply that experience was more important. However, as the informants got deeper and clearer about how they understand a good or right team, it became clear that they were all talking about the knowledge needed at this stage. Therefore, it is also important to understand where and how they acquire that knowledge and, of course, how it can be expanded.

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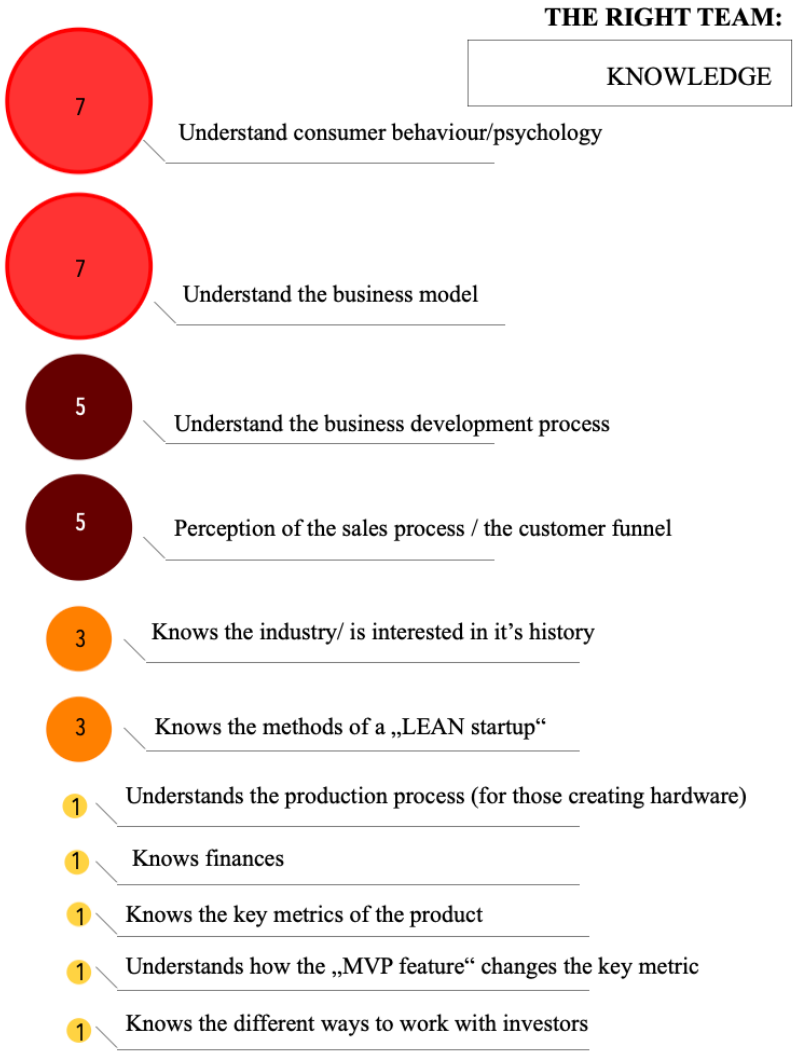
After evaluating the features presented in Figure 4 the actions related to the concept of knowledge reveal a clear field of know-how that is required for the early stage start-up: it includes the knowledge of 1) **consumer behaviour, psychology:** "*Take a survey on the street and ask people if they think eating greens is healthy. They will answer that it is, but will not eat them. The point is that a start-up needs to understand consumer behaviour and realize that a "yes, it's healthy" does translate to the product being needed and useful"(I6)*; 2) **the business model:** *"... understanding of possible monetization methods, who, how much and in what ways will they pay ..." (I18);* 3) **development, the sales funnel:** *"... must know how the customers ... come and how they leave ... must know their metrics ..." (I7), "<....> by now we understand that the seller has to call, right? But the whole process of managing inbound and outbound sales (I4)*, 4) **LEAN start-up:** *"LEAN is about stages, it teaches iterations, all of that circle where you need to know what's going on ... This is a kind of methodology for how you set up a start-up "(I6)*;
5) **history of the industry, the understanding of metrics:** *"have an understanding of your key metric, of what it is ..." (I18), "... let's say Airbnb metrics that reflect value are bookings and overnight stays and the ideal frequency for these services - annual. Lyft metrics are rides and the ideal frequency - a week / month, etc."(I2);*



**Customer funnel - knowledge of the customer path: how to find a customer, how to sell, and what happens afterwards*

Figure 4. Concept of knowledge, distinguishing characteristic features, actions, indicating the number of repetitions.

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6) **knowledge of how other competitors work (especially in hardware)**: *"... it is important to keep an open network of competitors. Not to watch them work, which is also helpful, but to get their experience. <...> That is, for example, I know all the manufacturers, I know exactly where each of my competitors produce their product. And that information can save me a lot of time and help improve quality. This is why doing this research is very important." (I6).*

All knowledge can be gained by studying relevant programs in higher education, reading books, various quality information web portals or databases, taking interest in the experiences of others, attending various events, etc. Therefore, the acquisition of knowledge depends to a large extent on the existing infrastructure in that market, on the preparation (in the case of higher education institutions), on the quality of the events taking place. In this age of globalization everyone can acquire knowledge anywhere in the world, it all depends on the resources in possession (time and money).

Possession of experience

The concept of experience was no less interesting. Figure 5 reveals characteristics and actions that are specifically related to the understanding of experience at an early stage of a start-up's development.

There's a consensus that the 1) **experience in the field** where the product is being developed helps save resources and shortens the development path: *"... surveys, research, user testing are very time consuming and people can get lost. That product founder fit allows you to avoid all of these things, because they are their own customer and they know very well what features there should be and have maybe spent 10 years in that market and that save a lot of time, and if you agree that it is very important to move, test, run, etc. at an early stage then that helps a lot."(I3), "... experience in that area, he might have done one project or two ... has started companies, has sold them <...> has done a second or third, you know ... Maybe he has worked successfully for someone in that field, is solving very specific problems ... "* (I11), 2) **it helps understand the pain points of the user:** *"... if a person comes and says, "I'll start a business, ... I will be selling hundreds of thousands of customers to Microsoft, Google, and more, but previously I worked as a manager of "Speculation" Ltd. and my biggest contract was of a thousand euros." Well ... something is wrong, right? And if you haven't been working and you do not understand what a six-month sales cycle means, then you are basically unfit to do this business…"* (I4), and to 3) **succeed**: *"... the people who build successful businesses, they have started more than one business… '(I18).*

The author, when participating at start-up pitches, heard questions from the investors about the experience they had in the area where the product is being developed. On many occasions the teams responded with great enthusiasm that: *"we have no experience, but that there is a desire to learn and learn everything quickly. There are many tools to do that…"* (I35). At the time it seemed that these start-ups, being so enthusiastic, would definitely learn it all, but investors would end their pitches. It is now clear why. Without the experience and understanding of the pains of the user, solving user problems is difficult. As one of the informants said, *"A lot of the people that I see say, 'You know, I've come up with something here...'" And that person has never worked in that area and it doesn't make sense <...> Work in that field, I say, for at least 5 years, then we'll talk <...>"* (I17).

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EXPERIENCE means you don't have to learn and save time on testing and experimenting, so you move much faster. 5-10 years of experience in the field where the product is being developed is RECOMMENDED.

Figure 5. The concept of experience, distinguishing characteristic features, actions, indicating the number of repetitions.

Presence of a clear leader

A team leader has been distinguished from other competences for very clear reasons. The role of the leader is very important, (s) he is characterised by additional qualities and actions, and the rest of the team is structured around him/her. When defining the concept of a team leader, 1) **having a vision** comes to mind first *"... you have to think, what's next, where's the big opportunity ..." (I4), 2)* **supporting others**: *"... but you're with them even if you don't have to do it directly, just motivating, like, hey guys, no stepping back, we won't go to sleep until we do this..."* (I21), 3) **ability to attract other talent:** *"... authority, the guide of the team <...> that stream around something <...> It's important for people who they bake a cake with, especially for the exceptional talent or the overperformers... The*

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mediocre or those below average don't care, but talent attracts talent. They gravitate to one another…" (I3). Figure 6 presents the concept of a leader indicating the number of repetitions.

Figure 6. The concept of a leader, distinguishing characteristic features, actions, indicating the number of repetitions.

The analysis of the concept of "the right team" allowed us to identify clear aspects needed to bring together the "right team". In an attempt to reveal an even clearer picture of the team at an early stage the author of the study created a word cloud that reveals the key features or actions of the team in general (see Figure 7): *"… good team = good background '(*I17). When comparing the results of the empirical research with theoretical aspects of the team concept it can be noted that personal qualities observed in literature, certain conditions, such as full-time work, consequences stemming from competencies, etc. they all influence the ability to attract resources, but there is a clear gap in the logical explanation and the clear distinction what value does each quality or action bring, why each is necessary, what lies behind them and how to build the right team.

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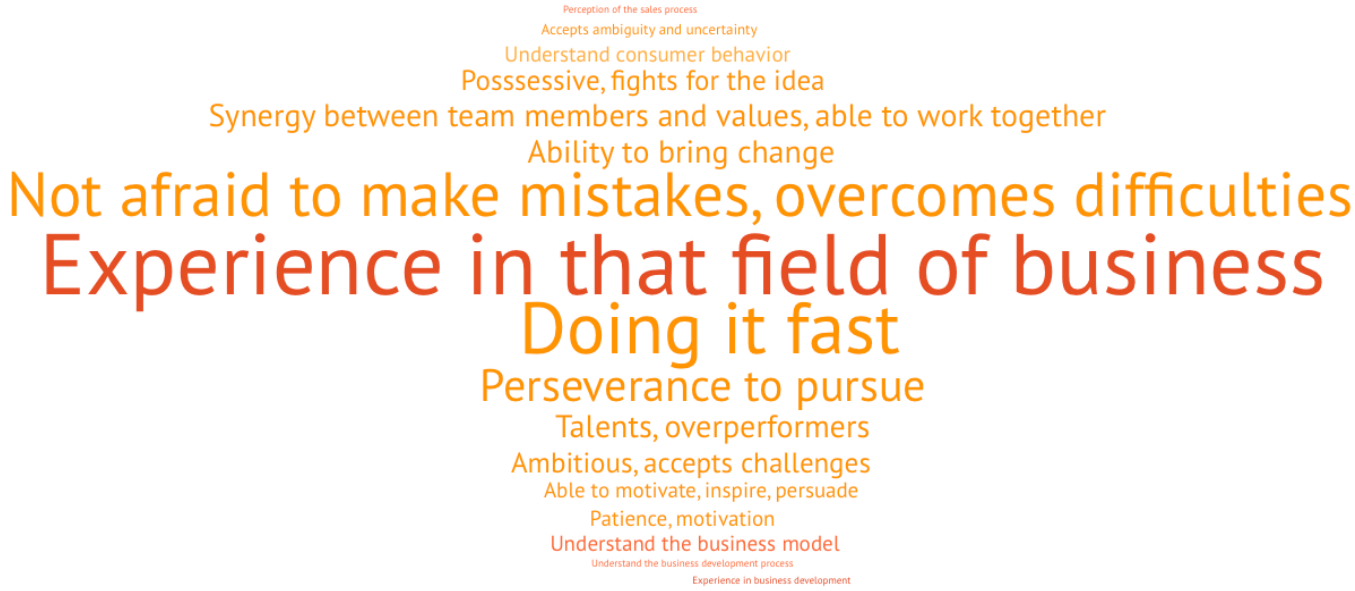

Figure 7. The key features and actions of the right team, using the word cloud.

4.2. Introduction of a generated theory: the development process of critical success factors of the right team in early stage start-up

The chosen research perspective helped to discover a new concept and explain what is a right team, why things are done in certain ways, why certain conditions are important. All collected information, memos, comments, personal notes, the theoretical part were reviewed to evaluate the result achieved and to disclose links to the identified core category "Primary founders having the right competencies". In Figure 8 the author uncovers a generated theory - the early stage development process of a start-up's right team, or *the pains to be overcome finding the right solutions and understanding their effects and consequences*.

This encompasses the exact challenge for the right team. As the figure 8 shows, the essential category is " primary founders having the right competencies" on which all the early stage development depends. Primary founders, the team leader and other team members with the right competencies compose the perception of a team. Primary founders have been distinguished as this is the term that emerged during the research with the informants stressing that the journey to the formation of the right team and the further development of the start-up begins with these members. The importance of a team leader has also been revealed, who needs to be talented and reputable to be able to attract other talented team members. In other words, the competencies (knowledge, experience, personal qualities and abilities) of the primary founders will lay the foundation for the right team as they will determine what kind of people they will bring to the team. Accordingly, appropriate early stage competences were revealed by analysing each concept separately. Therefore, each development stage of a start-up must have unique competencies (skills, knowledge, experience) that are needed for that stage as each stage has its own process, goals and scope. The right team will determine how successful will the start-up be in passing the growth stage, i.e. the perception of the problem (the so-called consumer pain points), which will have a direct impact on the team's experience in the

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area where the product is being developed, as it is only through experience that one can understand the user's pain and offer a valuable solution.

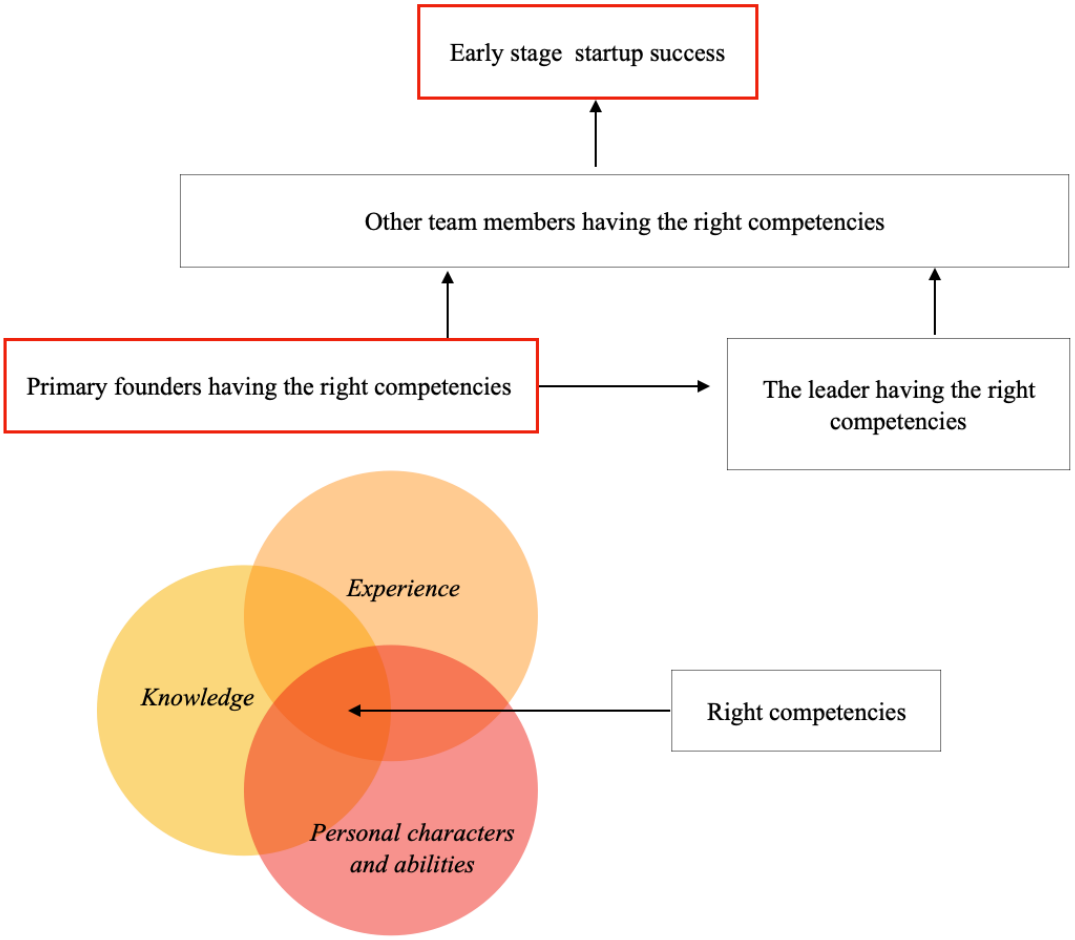

Figure 8. A generated theory that covers a start-up's right team as a critical success factor for the early stage development process.

To summarize, the critical success factors for the right team in the early stage are: primary founders having the right competencies; having a leader; and other team members having the right competencies, needed for a successfully handled early stage of the start-up.

The developed theory further expanded the theoretical understanding of a start-up team not only in its early stage, but also likely at other development stages. However, in comparison to the analysed theory concepts of a team, the role of the leader or the leader as an important determinant was not distinguished. The emphasis was placed on team leadership in a general sense and not towards a single individual who could occupy that position and could be an important success factor for the right team. The uncovered concepts of the generated theory will hypothetically help both the start-up developers and investors to determine whether the existing formation of a team is perspective. Therefore, the findings of this study are relevant to the business world and beyond.

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5. Discussion

The purpose of this study was to develop a new concept of a right early stage start-up team. First, a literature review was conducted to reveal the views of various scholars on the understanding of a start-up team. While analysing the literature, many terms related to the "team" were discovered, so it was appropriate to look at how all of these terms were related, was there an agreement between researchers and how they propose to conceptualize the concepts of a start-up team. There is a diversity in the understanding of teams, but there is a lack of conceptual thinking that would reveal the phenomenon under consideration. The GT method chosen by the authot helped to disclose the context and look at it deeper and through experience. In addition, as current reality is dynamic, constantly being shaped by diversity, subjective experience and innovation (Thornberg and Dunne, 2019), this encourages greater research and answer-seeking for pressing issues that could help grow businesses. However, in the analysed literature there are also disagreements between certain start-up team-related issues, such as financial interest or ownership, which underlie team motivation. However, it should be noted that the inclusion of such determinants in the start-up team concept is not viable for several reasons: 1) start-up team members may not want or be capable of owning shares, and their motivation to contribute to a start-up's product may lie elsewhere (their backgrounds, willingness to take on new challenges, an interesting and promising idea and so on). 2) Start-up team members may be offered a company share option, which the employee would be able to acquire at the price determined at the time of the "option" in a few years time. 3) Reality is so dynamic and innovative that many untried motivational tools or methods are continuously being discovered.

Critical points of disclosure of the concept of some terms are also noticeable, such as the exclusion of one or more abilities or one or more personality characteristics. In order to conceptualize the understanding of any term, the concept must first include foundational, essential elements that are systematic and not controversial in the scientific literature. The chosen research method (GT) helped to unravel the concepts and their connections to the understanding of the early stage of a start-up's right team by generating theory based on experience. The concept of the start-up' right team in the early stage involves primary founders having the right competencies, having a team leader, other team members having the right competencies. And the team starts with primary founders with their background influencing the further development of the team. <...> *It's important for the people who they bake a cake with, especially for the exceptional talent or the overperformers... The mediocre or those below average don't care, but talent attracts talent. They gravitate to one another…"* (I3).

Such a theoretical contribution is important to all stakeholders: entrepreneurs (they can assess whether a start-up team is suitable for start-up development), venture capitalists (when deciding whether a team is capable, have the competencies to meet their goals, whether to invest and fill in the gaps by offering their expertise and networks), other companies that innovate alongside their operations, develop various projects; and for a forming team to help identify if they have what it takes to achieve their goals. It must be borne in mind that this is a multidimensional approach that helps to look at the phenomenon in a complex way. The distinctiveness of one trait does not necessarily mean that it is appropriate for team members. In today's business, entrepreneurs often prioritize their personal qualities over experience, looking if human empathy and values overlap with the company goals. If a team member is a good specialist in their field, it doesn't necessarily mean they will commit themselves, contribute with their ideas, exceed expectations, endure difficulties together, contribute to everyday decisions. These are very important aspects that have to be analysed thoroughly. And the understanding of the early-stage start-up's right team, revealed in the framework of this study, can be transformed and adapted to the context of a modern, innovative and growth-oriented company. Only the team member will change and at this point it's important to make sure that the main member of the project team is „possessive to the bone marrow", and doesn't just come in to perform his duties. This encourages further discussions by looking at the context the of a start-up through its various stages of development, and the context of a company and the right team needed to achieve set tasks and goals.

Conclusion

A right team of an early stage start-up is a group of individuals who have the appropriate competencies such as knowledge, which include theoretical and practical understanding; the awareness of what needs doing and how to do it better, value creation, skills that are developed with practice, the right mindset/attitudes and appropriate work habits, abilities and personal characteristics. The chosen structured GT strategy, based on a combination of deductive and inductive approaches, revealed a contextual epistemological approach that is important in explaining the researched phenomenon through the experiences of the study participants. The results of the study demonstrate how the phenomenological concept of the development of a start-up's right team reveals fundamental concepts and their logical connections. The essential category of "the primary founders having the right competencies " was revealed. It is this category and its complex set of actions that help to solve the main phenomenon under investigation. The results of the study reveal a new approach to the process of developing a right team of an early stage start-up: primary founders should have the right competencies, there should be clear leader, and the combination of the both should attract other team members with the right competencies needed for the successful development of an early stage start-up. The right competencies include knowledge, experience, personal characteristics. The right team, with its experience, knowledge, abilities and personal characteristics influence the development process of an early stage start-up and help successfully overcome the challenges of that stage.

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LIFELONG LEARNING AS AN EMPLOYEE RETENTION TOOL. COMPARATIVE BANKING ANALYSIS*

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Abstract. Different companies choose different training strategies to reinforce human capital. The main aim of this paper is to measure the impact of training on the loyalty of bank employees. Various factors that could potentially impact the loyalty levels were considered. This comparative quantitative study is the first one that investigates the differences in loyalty levels that was carried out on a sample of Polish and Russian bank employees. The study manages to elaborate on the results of an original comprehensive survey conducted in both Poland and Russia on a sample of more than 2000 bank employees. Kolmogorov-Smirnov test, Mann-Whitney test, Kruskal-Wallis test, exploratory factor analysis, Cronbach's alpha, Kaiser-Mayer-Olkin and Bartlett`s test and answer tree (CHAID method) were used. The paper confirms breaking up general loyalty concept into affective commitment and calculative loyalty. Training does not impact employees' rational choices. However, employers can strengthen loyalty by using instruments influencing employees' emotionality and thus strengthen human capital.

Keywords: lifelong learning; employee retention tool; training, human capital; e-learning

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JEL Classifications: J00, J39, G21

Additional disciplines (besides field of economics reflected in JEL classifications): management; sociology; psychology

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Introduction

Data confirm that among adults (25 to 64 years old) Russians are more educated than Poles (55% vs. 30% of tertiary education graduates; OECD, 2017). Paradoxically, this high human capital is not reflected in modern business practice. While Russian students are characterized by significant achievements in particular tests measuring skills, those extra-ordinary results are less and less impressive as the education process continues, i.e. the closer it is to obtaining Master's degree (Silova, Millei & Piattoeva, 2017). Meanwhile, modern businesses require flexibility and critical thinking on the highest level – by universities or employers through various training initiatives.

In Poland, on the other hand, the number of university students increased fivefold from the 1990s till 2005/2006 and then started falling (Ministerstwo Nauki i Szkolnictwa Wyższego, 2013). Not only there is significantly more young Poles with higher education degree than it used to be in the past, but they also strongly strive for applying their knowledge in a job setting (Wach-Kąkolewicz & Sławecki, 2012). The learning paradigm has been undergoing significant changes. As a society, we are moving from education for life to life-long learning. Those with lower acquisition costs and higher efficiency enjoy comparative advantages. And education is crucial in achieving both of them.

The labour market results from the interplay of two main actors – employers and employees. The dynamic changes it has been undergoing over the recent years and the influence of the government have been reflected in rich literature (Apella & Zunino, 2017; Du & Yang, 2014; Antoszak, 2016; Olafsdottir et al., 2015; Paszkowicz & Garbat, 2013; Greve, 2017; Andrianova & Tarasova, 2017; Kogay E.A. et al., 2008; Kalinowska-Sufinowicz, 2013; Jaźwiński, 2017; Jędrzejczak-Gas & Wyrwa, 2005; Parreira do Amaral & Zelinka, 2019; Roumell Erichsen, & Salajan, 2014; Wieczorek-Szymańska, 2017). On the one hand, many available publications focus on downsizing and restructuring in the financial services across the whole world. On the other hand, employers often complain about the high level of rotation and job mobility, or about situations when they train employees first and then the same employees leave for the competitors. Similar processes are generally universal across the globe, and they occur in Poland and Russia as well.

Moreover, employees' hierarchy of values has also become more dynamic. In the times when most experts predict on average 6 different career paths undertaken by current graduates, loyalty is not taken for granted any more (Association of Accounting Technicians report, 2015). As Lurie and Frenkel report, personal development and happiness take the top spot not only in terms of professional growth but also in other areas of life, as the evidence ranging from the popularity of extreme sports to new types of family relationships suggests (2002).

Achieving a competitive advantage depends to a large extent on people employed in the organization: their competencies, knowledge and personality traits. At the same time, shortage of specialists (talents) can be observed. Organizations undertake coordinated actions aimed at retaining valuable employees. In this context, the attention of researchers focuses on issues related to the attachment of employees to the organization. Many researchers devote attention to affective attachment, because numerous studies have proved that it plays the most important role: brings the most benefits in shaping relations between employees and positively correlates with the level of work performance and profits (Lewicka, 2013; Czarnovsky, 2008; Soojung & Jeongkoo, 2018; Fryzel & Seppala, 2016; Ying *et al.*, 2016). In modern organizations, human capital is key, and employee loyalty is part of this trend.

Among various branches of the global economy where one can observe the importance of loyalty-related issues, the banking sector is a particularly interesting one. Perceived as the main cause of the Great Recession, the whole industry implemented restructuring programs, that led to changes in the level and structure of employment

(Baszyński, 2016; Pająk, Kamińska, & Kvilinskyi, 2016). Moreover, it should be noted that crisis was a prime example of negative consequences of profit-seeking at any cost. Such behaviours did not strengthen loyalty.

In the changing environment of the never-ending restructuring and downsizing processes in the banking sector, the issue of employee's loyalty has become crucial to maintaining a high level of services offered. Academia also accepts this claim; as stated by Narteh and Odoom: loyalty is very important in service-based industries like the banking sector, when the relationships with customers are important (2015).

To analyze the issue Polish and Russian bankers were chosen as a subject of the research. A strong trend to maximize workers' productivity is currently observable in both countries. In Poland, Western management methods are present, introduced by foreign capital that took over most of the industry in the 90's and early 2000's. Moreover, a recent tendency to renationalize, or 'repolonize' banks also impacts the workers. Russian banking system, on the other hand, is dominated by national capital. This trend has been strengthened as a result of EU and American sanctions against Russia. Centralization of particular banking functions such as HR, accounting, IT, compliance, etc., has also been present in Poland since the last few years. Over the past few years: we can observe constantly growing number of banks that have lost their licenses in Russia. 2014 – 86 banks, 2015 – 93, 2016 – 97 banks, 2017 – 40 banks, 2018 – 66 banks (The situation in the banking sector in December and the forecast for 2017; Banking license 2018; Banking license 2017). Both Polish and Russian banks aim at introducing Western management toolkits (Kaźmierczyk & Żelichowska, 2017), such as management style and organizational culture.

The main aim of this paper is to measure the impact of training on the loyalty of bank employees. There are few precise methods of measuring the level of loyalty in the literature. The available tools are based on expressing opinions on the behaviour of organizations generally represented by most employees. It must be stressed that loyalty is not measured frequently in organizations.

The following theses are propounded in this paper:
H1: Employees who took part in training programs are more loyal than the ones who did not.
H2: Employees who took part in the online training programs are less loyal than the ones who took part in traditional training.

To accomplish the research aims the authors used source literature in English, Polish and Russian on economics, sociology, human resources management, banking and industrial and organizational psychology (EBSCO, The ACM Digital Library, BazEkon, Emerald, ProQuest). There is a limited presence of quantitative research in the field of lifelong learning (Boeren, 2018). An additional original survey of 1,920 bank employees in Poland and 359 bank employees in Russia was conducted to bridge this gap.

Following the introduction, this paper includes formulation of the theses. Then the research sample and the method adopted are described. Finally, the research results and conclusions are presented.

Loyalty: hypotheses to be tested

H1: Employees who took part in training programs are more loyal than the ones who did not.

Training impacts loyalty of employers through a few mechanisms simultaneously. Because of its signaling function (Spence, 1973), employees feel that employers care about them when they are sent to attend training initiatives (higher safety due to the smaller probability of being sacked – in that case the training cost would become a sunk cost). They are moreover grateful to their employers for investing in them, which equals to moving a company's surplus (cost of a training initiative) into an employee's development. Additionally, different forms of training usually support interactions between employees, coaches, and employers (Andrzejczak, 2010).

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Such interactions lead to strengthening bonds between these actors, as a result of potentially supporting loyalty. This hypothesis can be thus be the best summarized in a sentence that people trained by their company will exhibit higher levels of their loyalty. In their study, Narteh and Odoom (2015) indeed confirmed that training contributes to employee loyalty in the banking sector. 62% of their sample had a higher education degree, which makes the structure of surveyed similar to this study, for this proportion in Polish and Russian banks equals to around 70-80% (Kaźmierczyk 2011, pp. 115-124).

H2: Employees who took part in the online training programs are less loyal than the ones who took part in traditional training.

While e-learning may mean achieving cost or time efficiencies (George, 2002; Schmeeckle, 2003; Andrzejczak, 2010) it does not necessarily lead to the better results in terms of loyalty. In his study Schmeeckle (2003) reports that 'The classroom group felt more motivated and positive toward their instruction than the online group' and while online training negatives were countered by 'convenience and time efficiency', the trainees still claimed that 'the biggest disadvantage of online training was missing classroom interaction' – a crucial factor in forming loyalty towards the company. The loyalty from a broader sense is a complex set of mutually intertwined relationships, affections to different coworkers, values, objects, together with conflicts between them, rather than an abstract organization being the only one subject of loyalty (see Schrag, 2001 for example). Therefore, traditional training methods with more co-workers interaction prove better suited to form a stronger sense of loyalty towards co-workers and the employer at the end.

To sum up, it can be stated that the workers who were involved in e-learning initiatives are less loyal than the ones under traditional training. Those taking part in the conventional programs simultaneously with training are somehow interacting with other workers, thus strengthening relationships between them. Loyalty as such exists in relation to someone (co-workers, superiors), it can be seen as an intertwined network of connections between all of them, not in relation to an organization as such. Therefore, learning, repeating and implementing new skills together during the training sessions, as well as integration time, also in more informal settings, offer an unbeatable advantage of traditional training methods over e-learning one in terms of their impact on loyalty.

Methodology

In order to measure loyalty level in banks, a questionnaire was used which covered various aspects of loyalty (items on a 0-4 scale). Following Allen and Meyer (1990) classic study it was assumed that loyalty can be divided up into calculative loyalty and affective commitment. The exploratory factor analysis (EFA) was performed to confirm this assumption and to confirm the quality of the calculated loyalty indices for Poland and Russia together and for both countries separately (principal component analysis, PCA, oblimin). The total variance explained was 68.06% for both countries together, 66.74% for Russia and 67.68% for Poland respectively. All the data used in the exploratory factor analysis yielded two components with high correlations. This was confirmed by a scree plot, which also pointed to two components (both in Poland and Russia). Table 1 presents the matrix of components for Poland and Russia. The reliability of the scale of loyalty measured by Cronbach's alpha was respectively for both countries together/for Russia/for Poland: 0.707/0.712/0.686, for the affective commitment it was: 0.826/0.808/0.820, and for calculative loyalty: 0.677/0.656/0.681.

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Table 1. The component matrix of the general index of loyalty and its subindices (exploratory factor analysis) for Poland and Russia

Statements	PL + RU		PL		RU	
	Affective commitment	Calculative loyalty	Affective commitment	Calculative loyalty	Affective commitment	Calculative loyalty
In general, I am satisfied with my work in the Bank	0.885		0.880		0.885	
I am ready to recommend employment in my Bank to relatives or friends	0.873		0.874		0.835	
I am proud of my work and I admit it openly	0.828		0.820		0.845	
Work is just work. A person should always seek better conditions of employment for himself (a reversed scale applied)		0.793		0.789		0.770
At present, the employer should not expect the employee to be loyal solely to him (a reversed scale applied)		0.778		0.793		0.764
In times of crisis, the employee reserves the right to seek a new, safer job (a reversed scale applied)		0.773		0.766		0.788

Source: Author's own computations based on the survey data

Notice: Kaiser-Mayer-Olkin and Bartlett`s test: p=0.000 (for both countries together, for Poland, for Russia). Due to the unsatisfying results of the factor analysis the authors dropped the following items: I refrain from criticizing the Bank when I am dissatisfied with its activities (item loading=0.270); The employee should be guided by a career and manage it skillfully (a reversed scale applied) (item loading=0.367). Both decreased the value of calculated indices and did not significantly the quality of indices received as a result of factor analysis.

The research agenda was designed to inquire about various types of training: online, on the job (OJT), outside your workplace, training conducted exclusively for one bank's employees, training organised for one bank's employees and employees of other organizations, and no training. Next, an analysis was conducted to check for differences in loyalty and its' affective and calculative commitments given the differing type of training.

The research results presented are part of a broader study. Thus, the description of the research method and data is applicable also to the results of research on other aspects of HRM and other papers by the authors. You can find more detailed data in our previous papers (Davydenko et al., 2018; Kaźmierczyk, 2019; Kaźmierczyk & Chinalska, 2018; Kaźmierczyk et al., 2019; Kaźmierczyk et al., 2020; Kaźmierczyk & Żelichowska, 2017).

Data

The data from the survey, which was conducted in Poland between January 2016 and April 2016 and in Russia (the Tyumen region) between February 2017 and April 2017, were used to test the research thesis. In Poland, more than 20,000 requests, and in Russia more than 4,000 queries were sent asking recipients to fill in the questionnaire via e-mail, social networking websites (such as Facebook, GoldenLine and LinkedIn) and thematic forums. Both electronic versions (Anonymous study of bank employees, 2016) and physical copies of the questionnaire were used in the survey.

The main survey was preceded by a two-stage pilot survey in Poland. Firstly, the survey was conducted on a small group of participants (180 students in Poland). In the second stage of the pilot study, the target group consisted of 100 employees from the banking sector in Poland. The aim was to reveal any inconsistencies and to examine

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whether the questions were understandable. Thanks to the pilot study, the questionnaire was modified and improved. Then, the survey was translated into Russian by a group of 12 philologists, psychologists, bankers and HRM specialists. The two-stage study in Russia was conducted on a group of 50 students and then a group of 50 bankers.

The composition of the research sample according to gender, the type of education and the type of bank corresponds to the structure of employment in the banking sector in Poland (Anonymous, pp. 115-124). The mean age of the respondents was 36.6 years in Poland and 31.7 in Russia. The mean work experience in banking was 7.8 years in Russia and 12.1 in Poland. The mean total work experience of the respondents was 15.0 years in Poland and 11.2 in Russia.

Loyalty: empirical research

H1: Employees who took part in training programs are more loyal than the ones who did not.

Several pairs of bankers were separated: trained in a certain way and not trained in a given way, and then their level of loyalty, affective commitment and calculative loyalty were compared. Because the normal distribution could not be assumed, the Mann-Whitney test was conducted. The first pair includes those trained in any way and those who have not been trained at all.

Based on types of training they participated in, employee's scores of general loyalty, affective commitment and calculative loyalty were compared. Between employees that participated in any training initiative and those, who did not at all, the following results were obtained. H1 was partly confirmed in respect to affective commitment in Poland and Russia and to loyalty in Poland. Trained employees in Poland and Russia tend to be more loyal emotionally than the not trained ones (Table 2, Table 4). The difference in affective commitment between the trained (3.03 in Russia, 2.49 in Poland) and the untrained (2.76 in Russia, 2.18 in Poland) banking employees was significant yet minimal (Glass rank coefficient around 0.20), similarly in case of loyalty in Poland. Participation in training did not impact calculative loyalty in both analyzed countries and loyalty in Russia.

Additionally, a similar comparison was conducted among employees trained under non-bank specific initiatives and those not trained under this type of training (Table 2, Table 5). Trained Polish bankers exhibited higher loyalty levels (1.79 vs. 1. 60), higher calculative loyalty (0.91 vs. 0.78) and higher affective commitment (2.67 vs. 2.43). The magnitude of the differences was relatively low (Glass rank coefficient between 0.11-0.17). No significant difference was observed in Russia, what can most likely be attributed to the small sample size.

Moreover, the groups of employees who took part in a company-specific training were also compared to those who did not (Table 2, Table 6). No statistically significant differences were observed between them. Only in case of general loyalty (1.68 vs. 1.56) and affective commitment (2.54 vs. 2.36) among Polish employees, a small difference in favour of the trained ones was observed (Glass rank coefficient up to 0.1).

Participating in OJT did not impact loyalty in Russia (Table 2, Table 7). The only statistically significant difference was observed in calculative loyalty among Polish employees (0.75 vs. 0.83) (Glass rank coefficient=0.07). Interestingly enough, participating in OJT instead of increasing calculative loyalty level, decreased it.

E-learning training was associated with a higher affective commitment among both Russian (3.03 vs. 2.64), as well as Polish employees (2.44 vs. 2.29) (Glass rank coefficient=0.27, Table 2, 8). Russian employees also exhibited a significant difference in general loyalty level (2.11 vs. 1.78).

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To sum up, in Russia participating in training essentially did not matter for loyalty level of employees. Lack of statistically significant differences may be a result of a small sample. In Poland, the most meaningful for loyalty level training were traditional not bank-specific training programs. Participating in them statistically increased each of analyzed types of loyalty. Internal bank-specific training increased loyalty and affective commitment. Interestingly enough among Polish employees participating in OJT training negatively correlated with calculative loyalty level. This particular type of training does not seem to matter to individual employees. The authors suppose this finding may be attributed to the fact that usually the youngest and newest employees participate in this type of training and they exhibit the lowest values of loyalty. This claim requires a further in-depth research because the obtained data doesn't allow to confirm or negative this assumption.

Table 2. Average values of loyalty, calculative loyalty and affective commitment depending on the type of training and country

	Any type of training		Non-bank specific training opened to employees from different companies		Internal, bank-specific training		OJT		Elearning	
	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
Loyalty in Russia	2.11	1.89	2.10	2.09	2.11	2.06	2.08	2.09	**2.11**	**1.78**
Calculative loyalty in Russia	1.17	0.97	1.13	1.15	1.15	1.14	1.14	1.16	1.17	0.88
Affective commitment in Russia	**3.03**	**2.76**	3.09	2.99	3.04	2.97	3.01	2.99	**3.03**	**2.64**
Loyalty in Poland	**1.64**	**1.50**	**1.79**	**1.60**	**1.68**	**1.56**	1.62	1.64	1.61	1.57
Calculative loyalty in Poland	0.80	0.81	**0.91**	**0.78**	0.82	0.76	**0.75**	**0.83**	0.77	0.85
Affective commitment in Poland	**2.49**	**2.18**	**2.67**	**2.43**	**2.54**	**2.36**	2.49	2.45	**2.44**	**2.29**

Note: The indices do not follow normal distribution (Kolmogorov-Smirnov test's results are summarized below): loyalty in both countries together (arithmetic mean=1.70, standard deviation=0.67, test statistics=0.072, asymptotic significance (two-tailed)=0.000); calculative loyalty in both countries together (mean=0.85, standard deviation=0.80, test statistics=0.166, p (two-tailed)=0.000), affective commitment in both countries together (mean=2.55, standard deviation=0.92, test statistics=0.140, p (two-tailed)=0.000); total loyalty in Russia (mean=2.10, standard deviation=0.69, test statistics=0.053, p (two-tailed)=0.016); calculative loyalty in Russia (mean=1.15, standard deviation=0.85, test statistics=0.154, p (two-tailed)=0.000); affective commitment in Russia (mean=3.01, standard deviation=0.86, test statistics=0.148, p (two-tailed)=0.000); total loyalty in Poland (mean=1.63, standard deviation=0.64, test statistics=0.081, p (two-tailed)=0.000); calculative loyalty in Poland (mean=0.80, standard deviation=0.77, test statistics=0.170, p (two-tailed)=0.000); affective commitment in Poland (mean=2.47, standard deviation=0.91, test statistics=0.142, p (two-tailed)=0.000).

Source: Author's own computations based on the survey data

H2: Employees who took part in the online training programs are less loyal than the ones who took part in traditional training.

Based on the data survey three groups of employees were analyzed: those, who participated exclusively in e-learning, those who participated in any other type of traditional training (i.e. OJT, internal specific and not bank-specific training) and those, who participated in both traditional and non-traditional initiatives. Due to the non-normality traits of distribution, Kruskal-Wallis test was performed. Conducted test showed that no statistically significant difference between loyalty, affective commitment, and calculative loyalty among employees who were trained by e-learning, those trained in a conventional way, and those trained through both methods was observed (Table 3).

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Table 3. Average values of loyalty, calculative loyalty and affective commitment depending on conventionality of the training type and country

	Traditional training only	E-learning only	Both traditional and e-learning training initiatives	Test statistic	df	Significance two-tailed
Loyalty in Russia	2.05	2.09	2.10	0.076	2	0.963
Calculative loyalty in Russia	1.05	1.13	1.17	0.702	2	0.704
Affective commitment in Russia	3.00	3.05	3.01	0.528	2	0.768
Loyalty in Poland	1.72	1.52	1.62	3.587	2	0.166
Calculative loyalty in Poland	0.91	0.77	0.77	1.831	2	0.400
Affective commitment in Poland	2.54	2.25	2.47	5.663	2	0.059

Source: Author's own computations based on the survey data

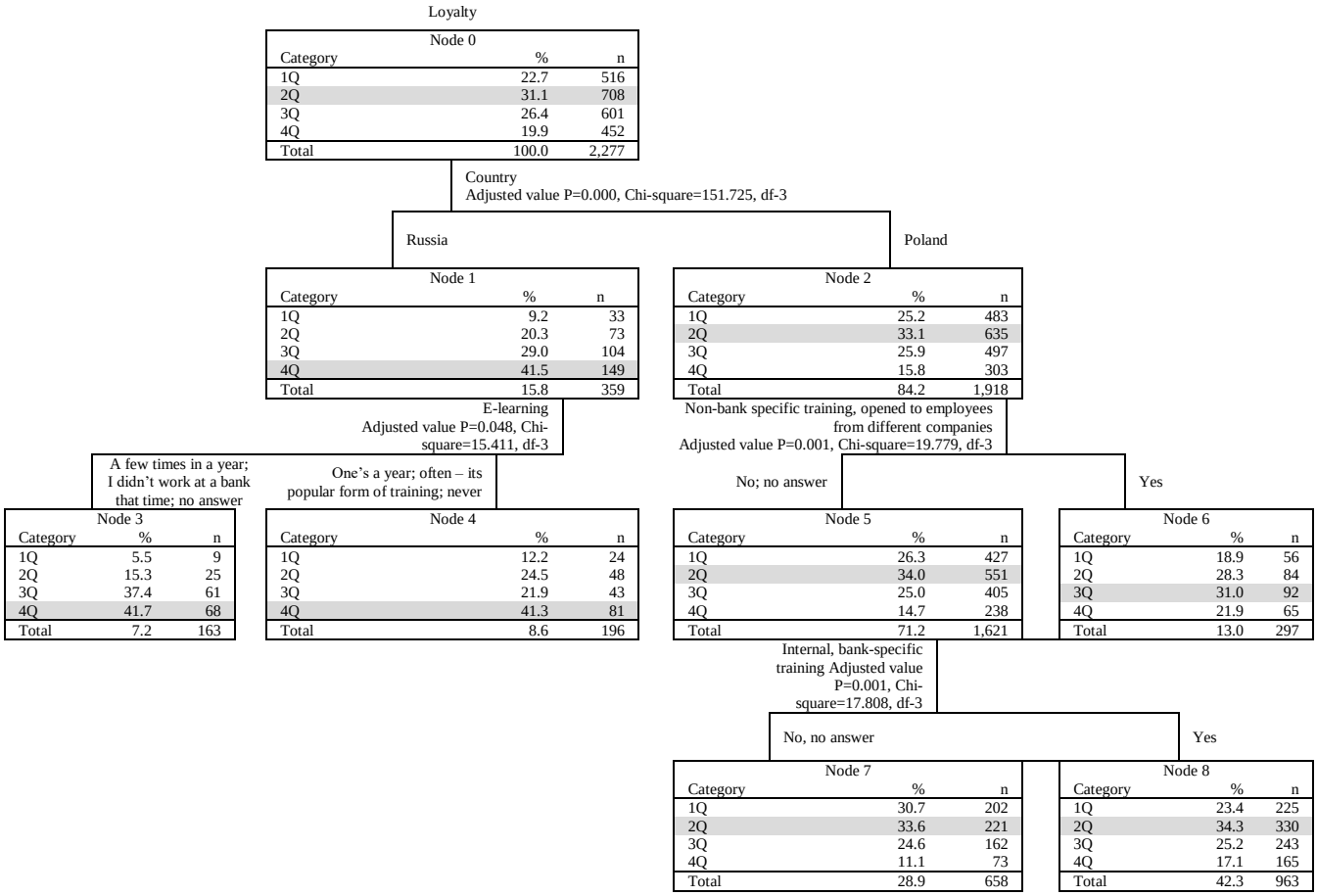

Figure 1. Loyalty index answer tree (CHAID method).

Source: Author's own computations based on the survey data.

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Since statistic tests have different values for subgroups, we also presented these relationships in the form of a decision tree. We defined the loyalty, calculative loyalty and affective commitment indices from the interval resulting from quartile borders (respectively: 1.33/1.67/2.17; 0.33/0.67/1.33, 2.0/2.67/3.0). According to the decision tree analysis (Figure 1-3), the most important factor determining varying levels of loyalty, calculative loyalty and affective commitment, was the country in which the data was collected. In Poland the group with highest levels of loyalty (15.8%), calculative loyalty (24.5%) and affective commitment (19.1%) was relatively smaller than in Russia (respectively 41.5%; 41.6%; 45.7%), and the group with lowest loyalty (25.2%), calculative loyalty (23.6%) and affective commitment levels (30.4%) in Poland was respectively much larger than in Russia (9.2%, 12.3%, 15.0%). These differences were statistically significant and sometimes amounted to as much as doubling the percentage size of the group.

Level of loyalty in Poland was the most impacted by participation in non-bank specific training (Figure 1). It pushed the distribution to the right, and increased the size of the most loyal employees (from 14.7% to 21.9%) and decreased the number of the ones with the lowest loyalty level (from 26.3% to 18.9%). On the other hand, Polish employees, who did not participate in neither non-bank specific training nor internal, bank-specific training exhibited lower loyalty levels than those, who participated in at least the latter ones. Thus, for loyalty in Poland the traditional, open, non-bank specific training and traditional internal bank-specific training initiatives are the most important. In case of Russia, the main differentiator was participation in the e-learning courses. The most beneficial to the loyalty level was sporadic participation in such training, i.e. few times a year. The Bell curve or the reverse U-shape relation between e-learning and loyalty levels can be connected to employees' perception of such training. Potentially, if they take place too often, employees become weary or overtired what leads to a decrease in loyalty level. Similarly the employees participating in e-learning less than once a year were characterized by low loyalty levels. Perhaps they feel unappreciated. Therefore, we suggest that an optimal level of learning initiatives exists, and after crossing this point, increased participation in learning leads to lower loyalty.

To summarize, the biggest share of employees characterized by the lowest loyalty consisted of Polish employees that did not participate in neither non-bank specific training nor internal bank-specific training (30.7%). In contrast, the biggest share of employees characterized by the highest loyalty consisted of Russian banks' employees (41.7%) who took part in e-learning training few times.

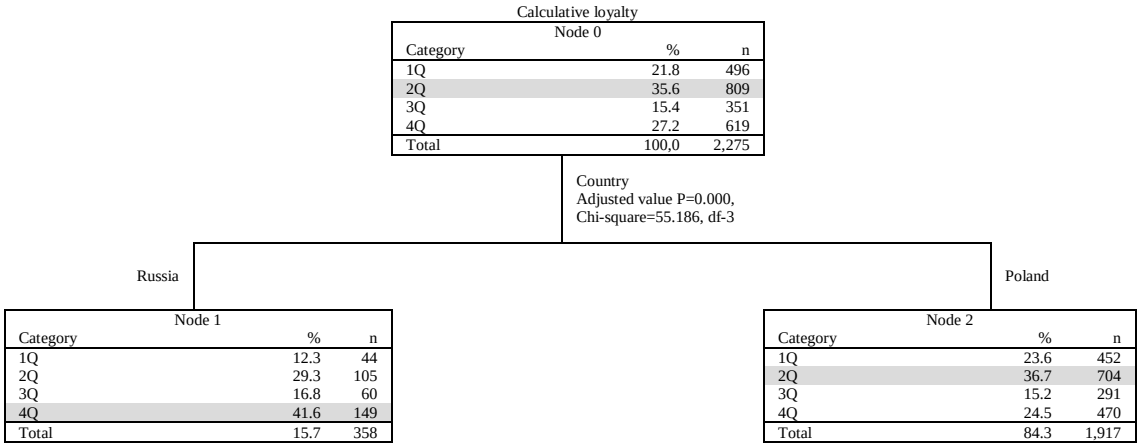

Figure 2. Calculative loyalty index answer tree (CHAID method).

Source: Author's own computations based on the survey data.

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Calculative loyalty did not depend on participation in training (Figure 2). It hold true for both Poland and Russia. It could be hence suspected that employees' rational calculation is a basis for assessing their situation on the labour market. Perhaps due to the extent to what their job involves risk valuation and estimated value of different investments, bank employees approach their job market prospects from a similar perspective. If the market provides them with rationale for that, they are willing to change their employer. Similarly, lack of stability, lack of possibility to change the current employer for a better one and access to information may make them more loyal to the current employer. Loyalty seems to be only a natural extension of career management.

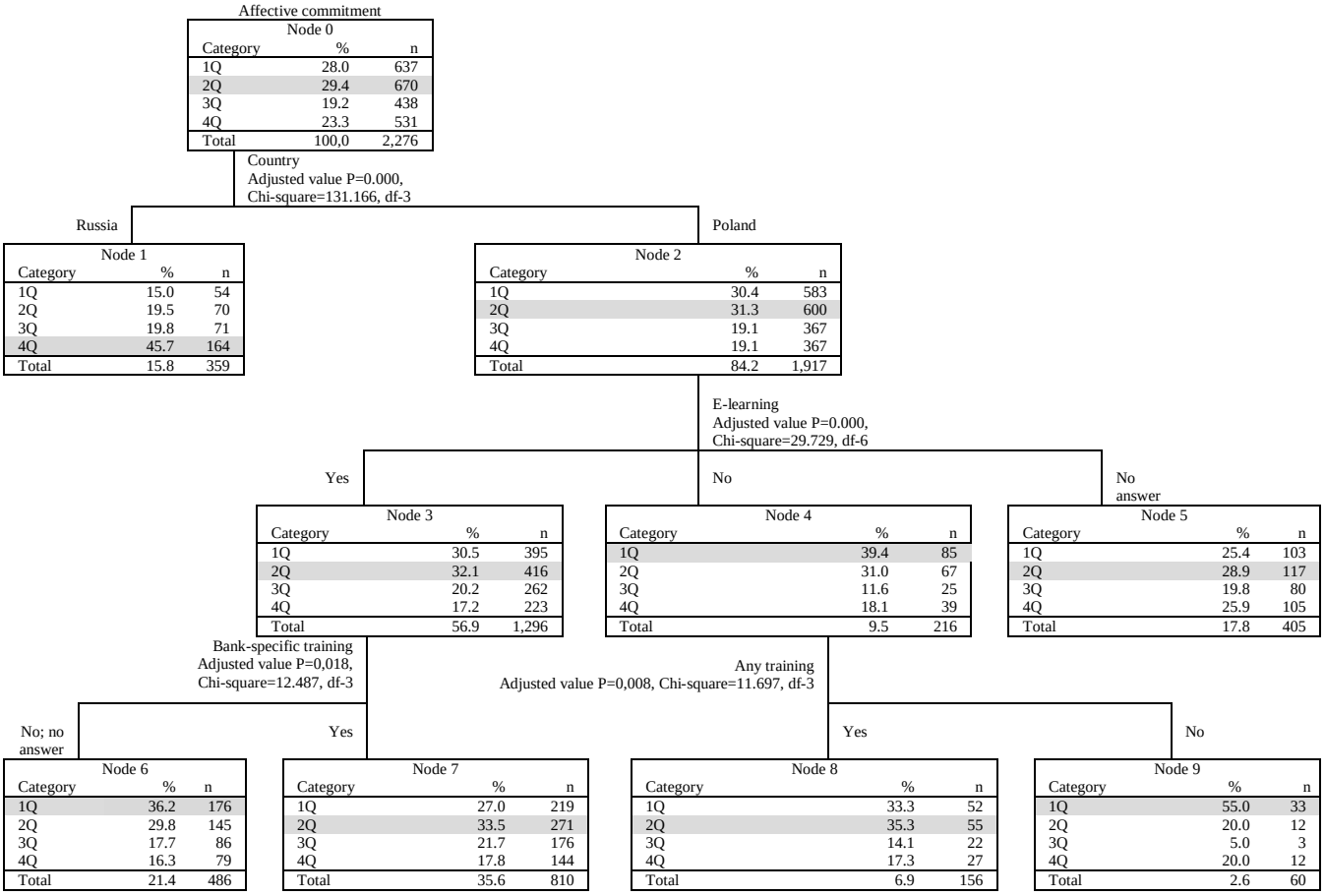

Figure 3. Affective commitment index answer tree (CHAID method).

Source: Author's own computations based on the survey data.

Affective commitment in Russia was not dependent on participation in training (Figure 3). In Poland e-learning participation slightly increased affective commitment. Furthermore affective commitment in Poland depended on first, participating in internal, bank-specific training and second, participating in any type of training. The first one decreased the share of disloyal employees (from 36.2% to 27.0%). No training participation whatsoever led to a significant reduction in loyalty levels, i.e. increasing the share of the least loyal employees (from 33.3% to 55.0%). To sum up, the biggest group that exhibited the lowest affective commitment levels were not-trained Polish employees (55.0%). The biggest group that exhibited the highest affective commitment were Russian employees (45.7%).

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With loyalty being beyond control of employer, an aspect that can be influenced by them is emotions and satisfaction with work (Kaźmierczyk & Wyrwa, 2017). However, it should be noted that even the highest levels of happiness with a team and tasks performed may not protect the employer from losing their employees. It could be assessed that loyalty shares similar characteristics to motivation according to the Herzberg's theory (Herzberg et al., 2011) theory. Job stability and career management can be seen as hygiene factors, and any real increase in loyalty can be shaped by an employer in the affective commitment area.

Conclusions

Poland and Russia were analyzed intentionally. They are both post-socialist countries that after fall of the socialism and the Soviet Union chose completely separate development paths. However, they are still relatively homogenous and similar societies belonging to the Slavic cultural sphere. A differentiating factor between the two is individualism. Russia represents a more traditional culture with values leaning towards a collective approach. The next question to be asked is which aspect of culture belongs to the global context and which has a national character. A stronger market-orientation among Poles is observed and perhaps this is why it is easier to adopt Western organizational norms and labour market values there than in Russia. That being said the Russian employees are also afraid of their future because of the undergoing structural changes in the banking system.

With high turnover and recruitment costs, retention through loyalty may appear to be a more cost-effective alternative. However, impact of loyalty is complex and apart from obvious benefits, it can also lead to negative consequences. One of them is limited mobility. While there could be two opposite effects, in general intuition suggests that employees will strengthen their commitment to employers after the latter ones invest in the human capital of the former.

This paper considered various factors that could potentially impact the loyalty levels. Among them intuitively the following were the most important: country of origin, age, participation in any type of training, participation in non-bank specific training, participation in internal (bank-specific) training, participation in on the job training, and participation in e-learning. The main factor correlating with loyalty level was country of origin. Despite outlined similarities among Polish and Russian economies and cultures, it turns out that the level of loyalty in banks in Russia differs significantly and is higher than in Poland. Polish labour market shows convergence to western markets where employees look for better options on the market. In bad economic conditions, job insecurity is an important channel strengthening loyalty. Moreover, there is a possibility that Russian employees feel pressure to report higher loyalty. In Poland participation in traditional forms of training is statistically significant for the loyalty level. The authors suppose that such traditional forms of training create an environment beneficial to strengthening relationships between employees. A potential criticism of findings could be based upon the geographical concentration of the Russian results, however, other studies show similar differences between Poland and Russia.

The uniqueness of the article is based on applying two research methods to testing suggested hypotheses. Both of them provided converging results. Loyalty comparison is an important field that could potentially inform research concerning lifelong learning. This comparative study is the first one that investigates the differences in loyalty levels that was carried out on a sample of Polish and Russian bank employees and took into account the influence of training. Loyalty as a complex construct constitutes an interesting research field, especially for those who deal with the problem of relational orientation in management.

In conclusion, it should be underlined that especially for customer-facing services loyalty among employees needs further scrutiny. Banks should naturally constitute an important part of this growing field, especially given the issue of trust in their functioning on a macro and micro level, as represented by banking secrecy and morally

objectionable management practices that ultimately led to the Great Recession. Despite banks' natural tendency to guard their sensitive information, the study manages to elaborate on the results of an original large survey conducted in both Poland and Russia.

The novelty of the paper could be summarized in the fact that it confirms reasoning behind breaking up general loyalty concept into affective commitment and calculative loyalty. The factor analysis showed that this approach is the recommended one when analyzing big datasets. Significant differences between affective commitment and calculative loyalty were observed. Training does not impact employees' rational choices. However, employers can strengthen loyalty by using instruments influencing employees' emotionality. Calculative commitment is only moderately affected as a result of training. An aspect that could be effectively impacted by training is affective commitment. In case of Poland participation in traditional, open and non-bank specific training and in internal, bank-specific training was the most correlated with high loyalty values. On the job training and e-learning methods should be organised with caution, given that quite often they do not represent significant value for trainees and can be perceived as a dull obligation rather than an actual investment in human capital, especially when they take place too often. The problem of the subjective and objective effectiveness of various training initiatives requires further study, similarly to the loyalty and impact of training among the youngest and the least-experienced employees.

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Appendix

Table 4. Mann-Whitney test for differences in loyalty for employees trained in some way and those not trained at all

	U Statistics	W Wilcoxon	Z	Asymptotic significance (two-tailed)	Glass rank coefficient
Loyalty in Russia	4106.00	4602.00	-1.73	0.084	-
Calculative loyalty in Russia	4465.50	4961.50	-1.05	0.292	-
Affective commitment in Russia	**3941.00**	**4437.00**	**-2.05**	**0.040**	**0.22**
Loyalty in Poland	**108746.00**	**118616.00**	**-2.36**	**0.018**	**0.12**
Calculative loyalty in Poland	120856.50	1677586.50	-0.28	0.777	-
Affective commitment in Poland	**102287.00**	**112157.00**	**-3.41**	**0.001**	**0.17**

Source: Author's own computations based on the survey data

Table 5. Mann-Whitney test for differences in loyalty for employees trained in open, non-bank specific training programs targeted at employees from different sectors and institutions and those not participating in this particular type of training

	U Statistics	W Wilcoxon	Z	Asymptotic significance (two-tailed)	Glass rank coefficient
Loyalty in Russia	4070.50	4395.50	-0.01	0.993	-
Calculative loyalty in Russia	3922.50	4247.50	-0.29	0.772	-
Affective commitment in Russia	3796.00	57097.00	-0.58	0.564	-
Loyalty in Poland	**197750.00**	**1468965.00**	**-4.53**	**0.000**	**0.17**
Calculative loyalty in Poland	**211022.50**	**1480643.50**	**-3.00**	**0.003**	**0.11**
Affective commitment in Poland	**207847.50**	**1479062.50**	**-3.37**	**0.001**	**0.12**

Source: Author's own computations based on the survey data

Table 6. Mann-Whitney test for differences in loyalty for employees trained in internal, bank-specific training programs and those not participating in this particular type of training

	U Statistics	W Wilcoxon	Z	Asymptotic significance (two-tailed)	Glass rank coefficient
Loyalty in Russia	14951.00	32529.00	-0.41	0.686	-
Calculative loyalty in Russia	14949.50	32527.50	-0.31	0.756	-
Affective commitment in Russia	14428.00	32006.00	-0.97	0.334	-
Loyalty in Poland	**391443.50**	**689049.50**	**-3.47**	**0.001**	**0.09**
Calculative loyalty in Poland	416153.00	712988.00	-1.31	0.190	-
Affective commitment in Poland	**388020.00**	**685626.00**	**-3.78**	**0.000**	**0.10**

Source: Author's own computations based on the survey data

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Table 7. Mann-Whitney test for differences in loyalty for employees trained in On-The-Job Training initiatives and those not participating in this particular type of training

	U Statistics	W Wilcoxon	Z	Asymptotic significance (two-tailed)	Glass rank coefficient
Loyalty in Russia	15392.50	30617.50	-0.01	0.995	-
Calculative loyalty in Russia	15190.50	30943.50	-0.13	0.989	-
Affective commitment in Russia	15283.50	30508.50	-0.12	0.902	-
Loyalty in Poland	430289.00	749889.00	-0.51	0.610	-
Calculative loyalty in Poland	**407763.50**	**727363.50**	**-2.43**	**0.015**	**0.07**
Affective commitment in Poland	422699.00	1019477.00	-1.17	0.244	-

Source: Author's own computations based on the survey data

Table 8. Mann-Whitney test for differences in loyalty for employees trained in e-learning courses and those not participating in this particular type of training

	U Statistics	W Wilcoxon	Z	Asymptotic significance (two-tailed)	Glass rank coefficient
Loyalty in Russia	**2926.00**	**3361.00**	**-2.36**	**0.018**	**0.27**
Calculative loyalty in Russia	3193.50	3628.50	-1.75	0.08	-
Affective commitment in Russia	**2902.00**	**3337.00**	**-2.44**	**0.015**	**0.27**
Loyalty in Poland	132981.50	156417.50	-1.18	0.238	-
Calculative loyalty in Poland	135396.50	975852.50	-0.67	0.501	-
Affective commitment in Poland	**124879.50**	**148315.50**	**-2.56**	**0.01**	**0.11**

Source: Author's own computations based on the survey data

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JAPAN'S DIGITAL ADVANCE POLICY TOWARDS PERFORMANCE IN MULTILATERAL ASEAN'S INNOVATION BUSINESS*

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Abstract. This paper examines issues relating to Japan's digital advance policy (DAP) for ASEAN countries during the period 2015 - 2019, which aimed at broadening the spectrum of digital economic growth. The study sought to gain insights into the impacts of respective policies of ASEAN, Japan Council for Science, Technology and Innovation (CSTI), Japanese digital foreign direct investment (FDI), and Japanese enterprises. The study also examined workflow structure processes to explain how Japan's DAP contributes to ASEAN's innovation business. This research is categorized as a reconnaissance study, based on empirical analysis of pertinent existing evidence, complemented by 74 in-depth interviews with key experts from ASEAN, JICA, CSTI and major digital enterprises from 5 ASEAN countries. The findings indicate a need to redirect the innovation business of Japan's DAP as well as ASEAN's innovation business and to enhance their mutual alignment. Four key entry points are proposed: (1) policymakers, (2) private sector businesses, (3) goalkeeper science, and (4) innovative infrastructure. This paper also provides guidelines and support to validate key performance indicators of Japan's DAP in ASEAN countries. The studies how Japan's digital holistic platforms could be transferred to ASEAN countries under the DAP. It also examines the relationship between key performance indicators of Japan's outward FDI in ASEAN digital businesses and growth in ASEAN's innovation business.

Keywords: open innovation; entrepreneurship; innovation business; ASEAN; Japan; foreign direct investment

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1. Introduction

Urbanization has historically been both a key driver and a result of national economic development (Bairoch, 1988; Gallup *et al*., 1999). The relationship between modernization and sustainable economic growth is important, particularly in the context of diffusion of innovations in developing countries. Consequently, digital policies can carry significant direct impacts on sustainable national economic development. In addition, digital economic integration represents a longer-term permanent development rather than a short-term development as asserted by free market fundamentalists (Hankle and Isaak, 2011; Belz et al., 2019). However, the risks associated with technological investment can be high (Martin *et al*., 2018; Limba et al., 2020).

The rules of digital globalization are set by wealthy countries; they are extremely complex and present significant barriers to entry for developing countries, including those within the ASEAN region.

ASEAN is the world's 7th largest economy, with a combined GDP of USD2.5 trillion. By 2030 it is expected to rise up the rankings to the world's 4th largest economy (Malaysian Global Innovation & Creativity Center, 2019). Moreover, the economies of six ASEAN Member States (Indonesia, Malaysia, Philippines, Singapore, Thailand, and Vietnam) are all expected to cross the USD 3,000/capita barrier (Asia-Pacific Economic Cooperation, 2018). Recognizing this burgeoning economic expansion among its neighbours, Japan has been actively investing in a wide range of technological innovations, including new innovative institutional modalities to support collaboration and research partnerships among universities, R&D laboratories across the ASEAN region. Today, key drivers of the global economy face market saturation and limited natural resources (Raghuvanshi and Garg, 2018). Japan itself, with limited natural resources of its own and a rapidly aging population, is highly vulnerable to these challenges to continuing growth. There are indeed a number of emerging signals of crisis in Japan, which if ignored, will slowly lead to a decline in the country's core business and economic growth (Yukawa, 2018). A sustained recovery will require policies that to foster wage growth and technological investment for the future (Okubo, 2019). Hence, investment in ASEAN countries is core to Japan future economic trajectory, as articulated in the country's Digital Advance Policy (DAP) in ASEAN countries.

In recent times, Japan and ASEAN have enjoyed close economic cooperation and growing levels of FDI, particularly in the ASEAN+3 countries (Japan, China and the Republic of Korea) as well as in their respective production networks. Since the 1960s, Japan has become a major investor across the entire Southeast Asia region (Ratna and Sharmar, 2016). However, ASEAN has continued as the main target for Japanese FDI. Japanese enterprises are expanding their operations in ASEAN, establishing subsidiaries, R&D, production lines, and other business functions. Japan is now the largest investor in the region (METI, 2013). Moreover, in 2019 Japan reclaimed its status as Southeast Asia's top trade partner (Li, 2019). Japan's FDI policies have taken an increasingly long-term view, focusing on development of strategic infrastructure that will drive business growth (Afzal *et al*., 2018). The focus of FDI is also gradually shifting from the ASEAN-5 countries toward the CLMV countries (Cambodia, Laos, Burma, and Vietnam) (ODI, 2019). Japan's digital policy is positioned with the aim of "advancing partnerships for sustainability" in the ASEAN region, emphasizing cooperation and transfer of skills and technologies to enable their trade partners to prosper in the digital economy.

The purpose of this paper is to explore the success and challenges inherent in Japan's DAP in ASEAN countries, with the aim of ascertaining its broader impact on digital economic growth and implications for the future economic trajectory of ASEAN countries in the digital age. The study began with the main research question: What is the direction of ASEAN's innovation business and DAP? The results of this study show four key entry points are proposed: 1) The policymakers in ASEAN. 2) Private sector. 3) Goalkeeper science of ASEAN member. 4) International authority and innovative infrastructure. This paper also provides guidelines and support to validate key performance indicators of Japan's DAP in ASEAN countries.

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2. Rationale, background and economic status of ASEAN countries

2.1 Rationale: ASEAN's digital economy is accelerating

Innovation policy has served as the core driver underpinning policies for research, science and technology, with their respective linkages to investment in knowledge creation and economic activity (Berry *et. al.*, 2014). As highlighted by Potts (2016), who extend the use of three concepts of national innovation policy interaction to representing a global strategic engagement with the world correspond to positions of autarky, cooperation or innovation system (EU/OECD approach), and competition or the race for global comparative advantage (USA/East Asia approach). Under autarky (as a state of self-sufficency), national innovation policy has no strategic value, either because of deliberate isolationism (minimizing cross-border trade flows), or because the nation sees itself as sufficiently large, dominant or unique.

There has traditionally been a tendency to focus more on technological process innovation and goods product innovation than on service, solution and business innovation (Windahl, 2015). However, new technologies and innovations are already disrupting and transforming markets, businesses, culture and societies at an ever-accelerating pace. A sound understanding of the dynamics of this rapid technological advancement and its wider impacts is therefore urgently needed. How does innovative technological investment create new opportunities and disrupt established innovative business modalities? Businesses are racing to rethink their business models to sustain competitive advantage even as digital markets erode their traditional market share. Innovative business concepts have become essential for new firms to secure investment, identifying and catching the latest wave in emerging market opportunities (Tor *et. al*., 2018). Technology offers a rich source of market opportunities that provide the necessary incentive for investment. Digital transformation has fundamentally transformed the industrial and business landscape at global as well as national and local levels (Table 1).

These technologies have powered the emergence of new domains in technology and business, including robotics, artificial intelligence, machine learning. data analytics, cloud computing, fintech, energy and the Internet of Things (IoT). Convergence among these enabling technologies opens up a breathtaking array of possibilities with far-reaching consequences for business, society and our cultural identities. Understanding and adapting to digital realities are therefore fundamental to sustain competitive advantage in the digital era. ASEAN's digital business has been increasing fast in recent years and continues to expand, financed both by governments and venture capital, which have focused on building a world-class digital infrastructure.

2.2 Japan's Foreign Investment of digital business in ASEAN countries

According to the Government of Japan (2019), Japan is determined to lead global economic growth by promoting technology and innovation, achieving both economic growth and reduction of disparities, and contributing to the development agenda and other global issues with the United Nations Sustainable Development Goals (SDGs) at its main strategies. ASEAN has enjoyed significant investment growth in the innovation and digital economy, including e-commerce, financial technology, digital infrastructure e.g. internet services and data centres (UNCTAD, 2018). Foreign and ASEAN digital multinational enterprises (MNEs) and ICT companies are now increasing attention on the region (Nanterme, 2016).

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Table 1. Digitalization of the global economy

Digitalization of Global Economy	Context
Technology and Innovation	Technology Innovation related with new technology and emerging technology. That reflects the business consideration of improving business value by working on technological aspects of the product or services.
Telecommunication	The exchange of information, voice or data, per time per space by electronic means.
Information Technology	The application of computers and internet to store, retrieve, transmit, and manipulate data, or information.
Internet of Things Platforms	Provides operate diverse business models to cater for the manifold requirements of the IoT. Includes combines the mobile and internet network.
Digital Content	Digital content (digital media) is any content that exists in the form of digital data. Includes information that is digitally broadcast, streamed, or contained in computer files.
Digital Multinational Enterprises	Performing activities based on or strictly linked to the internet. Markets and MNEs are migrating to cyberspace that grows rapidly.
E-Commerce	E-commerce is a term for any type of business, or commercial transaction, that involves the transfer of information across the Internet.
Digital Solutions	A series of a solution provided by a digital marketing agency or consultant that to establish a successful business and help it grow online.
Digital Energy	The digital energy represents an energy flow that is transparently measured in real time at a number strategic locations in the energy grid.
Digital Health	Digital health is the convergence of digital technologies with health, healthcare, living, and society to enhance the efficiency of healthcare delivery and make medicines more personalized and precise.

Japan's DAP focuses on three areas: (1) Areas where interdisciplinary opportunities are enlarging; (2) Areas where traditional markets can benefit from innovation; (3) Emerging markets that are attracting investment. Japan has identified several areas with potential to make vast impacts on reducing GHG emissions, including sustainable energy as a fundamental pillar for 'Society 5.0'. R&D into prioritized technologies will be promoted in the medium-to-long term, while identifying and addressing DAP challenges (Japan Council for Science, Technology and Innovation, 2016). Japan also aims to foster startups in Southeast Asia with venture capital investment (Southeast Asia Tech Investment, 2018). With its population of 267 million, Indonesia is identified as one of Japan's key markets. To succeed and mitigate business risks it is essential to establish business partnerships with leading domestic companies with established supply chain networks (Munshi *et. al*., 2018). Japanese enterprises and Japanese FDI foster such collaboration. Meanwhile, Thailand's 'Thailand 4.0' initiative aims to incubate digital development to realize its goal that the digital economy will contribute 25 percent of the country's GDP by 2027 (Trinidad, 2018). Thailand 4.0 focuses on three areas: e-commerce, digital infrastructure and the innovation ecosystem, where Japanese companies can contribute through advanced technology via Japan's DAP (JICA, 2018).

To modernize its industry and drive global competitiveness, Malaysia is making efforts to acquire innovation and know-how from overseas companies (Sukma and Soeya, 2015). To attract such businesses, the government has established a Digital Free Trade Zone (DFTZ) and is also supporting domestic start-ups and entrepreneurs

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(GECS, 2017). Japan's DAP aims to achieve a free flow of data with suppliers in digital business and since the early 2000s has strengthened its investment in Cambodia and the Greater *Mekong Subregion* (Beeson, 2016). The Cambodian government is currently developing an ICT policy with the purpose of providing universal service and access to ICT infrastructure and the broader digital economy (UNCTAD, 2018). According to Japan External Trade Organization (JETRO), Lao People's Democratic Republic recently implemented a national strategy and regulatory framework to foster ICT and the digital economy. The country has mostly applied ASEAN's ICT platform and IoT related frameworks (JETRO, 2018). Laos and Japan are also collaborating to promote expansion of digital financing and cooperation in economic development, reflecting the strengthening of the friendship and trading relationship between the two nations (ASEAN Secretariat, ASEAN FDI database, 2018).

The global competitiveness scores of ASEAN countries shows record levels of Japanese FDI in Myanmar for a second consecutive year. The government of the Union of Myanmar issued an economic policy focusing on investment and human resources development and includes a strategy for digital government (Hsu, 2017). To support this goal, Japan wants to support Myanmar in its human resource development, as well as provide technical assistance and financial support for development of the SME sector (UNCTAD, 2018). Brunei Darussalam has established a long-term road map know as the 'Brunei Vision 2035, which includes the digital sector to diversify the innovation business and includes a strong commitment to training R&D by Japanese enterprises (World Economic Forum, 2017). Vietnam's unprecedented economic growth has captured the world's attention (Yoshimatsu, 2017). Currently, many Japanese companies are investing in and establishing bases in Vietnam, with support under Japan's DAP (Japan External Trade Organization, 2019). Japanese IT firms are also expanding their investment and operations in Vietnam *(Ministry of Vietnam Internal Affairs and Communications, 2019)*. Recognizing the importance of reliable and sustainable digital infrastructure as an essential economic foundation for growth, Japan is implementing the 'Expanded Partnership for Quality Infrastructure' to provide financing for infrastructure projects across the world by 2021 (World Economic Forum, 2019). The initiative seeks to establish give-and-take accommodations and long-term relationships with partner countries through contributing to their development.

3. Methodology

This research paper is based on empirical analysis of pertinent existing evidence and literature covering the period 2015-2019, and was undertaken over a two-year period from August 2018 to April 2019. The study was coordinated with the cooperation of ASEAN, Japan International Cooperation Agency (JICA) and the Japan Council for Science, Technology and Innovation (JCSTI). The study drew on the databases of the Japan Council for Science, Technology and Innovation (CSTI), Japanese digital foreign direct investment (FDI) and included a structured foresight study to explore how Japan's DAP contributes to ASEAN countries and ASEAN's innovation business. The main objective was to gain an understanding of key issues in Japan's digital advancement policy in ASEAN countries, that could be used to support projections for the future growth and competitiveness of ASEAN's innovation business. The literature review was complemented by in-depth expert interviews to gain insight into Japan's DAP and ASEAN in order to answer the research question: "What are the directions of ASEAN's innovation business and DAP?", focusing on relevant policies and the existing dynamic digital economic, business and regional sectors. The interviews used the in-depth interview technique as a qualitative research tool. The main criteria are as follows: 1) Based upon official DAP projects covering the period 2015 to 2019 in ASEAN. 2) Based upon Japanese organizations and companies in ASEAN. 3) Based upon research units of Japan Foreign Direct Investment in ASEAN. 4) Based upon the innovation-related strategies and activities of Japanese digital enterprises in ASEAN.

The study authors conducted 74 interviews between August 2018 and April 2019 (see Table 2 for details), and analyzed 240 official DAP projects covering the period 2015 to 2019. Representatives from a total of 56 well-known Japanese digital enterprises active in Southeast Asia were also interviewed. From the total 74 interviewees,

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4 (5.40 percent) were officers from ASEAN headquarters in Indonesia and Thailand, 4 (5.40 percent) were from JICA in Thailand, Singapore, Malaysia and Philippines, 3 (4.05 percent) were officers from Japan CSTI. 11 interviewees (14.86 percent) were from research units in Thailand, Singapore and Malaysia, and 52 interviewees (70.27 percent) were staff members from digital enterprises in Singapore, Malaysia, Thailand, Philippines and Vietnam). The scope of the interviews covered Japan's DAP, Japan's FDI outflows, economic trends within the ASEAN community and three main research questions. The average duration of the interviews was approximately 1 hour. The interviewees were senior executive strategists, senior directors, researchers, government officers and head officers in their current projects, selected to provide an appropriate diversity in terms of relevant background, experience, tacit and explicit domain knowledge relevant to the study.

The study also analyzed the innovation-related strategies and activities of several large multinational enterprises (MNEs) in ASEAN (Sahadev and Hoontrakul, 2015). With the entry into force of the ASEAN+3 (Japan, China and the Republic of Korea) Free Trade Agreement, it is now much more viable for firms to enter into technology partnerships and leverage economies of scale through operating at the regional level.

Table 2. Main interviews and 240 official projects

Organization	Interviewee	Percent	Country	Timeframe	Number of official projects (Related with DAP)
ASEAN	4	5.40	Indonesia Thailand	2015 - 2019	24
JICA	4	5.40	Thailand Singapore Malaysia Philippines	2015 - 2019	52
CSTI	3	4.05	Japan	2015 - 2019	37
Digital Enterprises	52	70.27	Thailand Singapore Malaysia Philippines Vietnam	2015 – 2019	102
Research Units	11	14.86	Thailand Singapore Malaysia	2015 – 2019	25

Japan still leads in Southeast Asia's infrastructure race through Japanese-backed projects in the region's six largest economies (Indonesia, Malaysia, Philippines, Singapore, Thailand and Vietnam). The Asian Development Bank (ADB) estimates that Southeast Asia's economies will need continuing investment in technology and innovation until 2030, in order to maintain momentum and stimulate continuing economic growth. Meanwhile, across all Southeast Asia and by number of projects in 2018, growth pushers in Southeast Asia are moving from resource development and exports to consumer spending, digital business and infrastructure investments (Shimato, 2018).

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4. Results

The findings of this study reveals that Japan's DAP in the Southeast Asia focuses on three priority issues: (a) sustainable economic growth by promoting Japanese business and technological investment; (b) adapting to change in the business cycle, and (c) establishing and entering geopolitics in Southeast Asia (Figure 1). ASEAN countries are adopting the concept of innovation and integrating it into national policies; however, such policies often confuse innovation with R&D and endogenous business. A clear understanding of the dynamics of innovative business policy and innovative business performance is critical to designing and configuring the development of appropriate Science Technology and Innovation (STI) indicators that are relevant to monitor and respond to the dynamics of technological and digital business. Furthermore, it is important that officials do not reduce STI and R&D (Manyuchi and Mugabe, 2017).

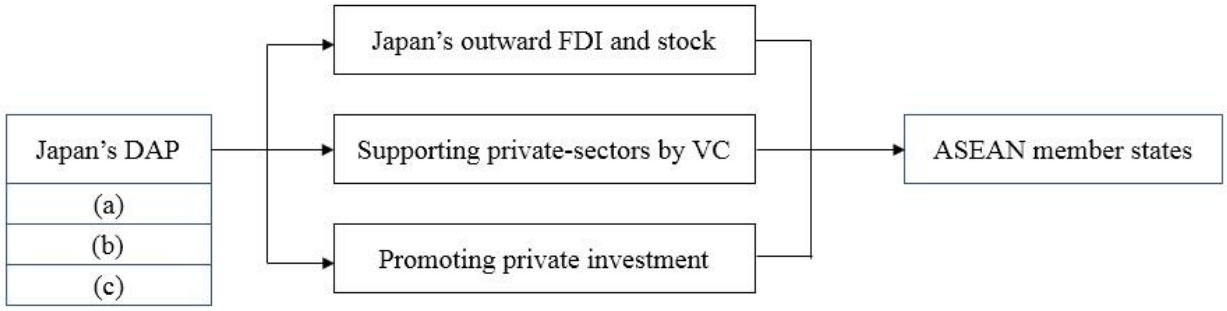

Figure 1. Japan's DAP workflow in ASEAN

Japan, Korea, China, and Singapore offer examples of successful implementation of digital innovation policies, as measured by key performance indicators (Uhm *et al*., 2018). They have all set and (in different ways) achieved their own goals for innovation by systemically formulating and implementing highly focused and targeted innovation investment policies (Arrow, 1962 and Ambashi, 2018). The key performance indicators for Japan's DAP in ASEAN countries are listed below.

4.1 ASEAN's innovation business has been developing speedily that go along with Japan's outward FDI, stock and its proportion to ASEAN capacities

After China and India, ASEAN has the third largest number of Internet users in the world. The region's energetic participation in digital development, joint ventures and promotion of investment in ICT infrastructure are major drivers of this growth. Japan will require the right DAP and regulatory framework to encourage further participation and investment by the private sector. According to Japan's outward financing policy, the increase can be attributed to overall transaction with outward FDI in the international balance of payments and adjustments to accommodate movements such as discrepancies between balance of payment figures and foreign assets.

4.2 Cross-border venture capital and investment in the digital-social contract in ASEAN is rising

Cross-border ICT M&As have risen rapidly, and venture capital investments with exposure to the digital economy result in a particular social contract. Indeed, the very fabric of society is always based on some sort of deal between citizens and the State. As with all transformative innovations, digital innovations can have social

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consequences, for better and for worse. Japanese enterprises are increasing use of M&A as a means of rapid scale-up, to access new technology and human capital, and expand networks in the ASEAN region**.**

4.3 The digital revolution is disrupting and transforming innovation industries, fueled by venture capital

The venture capital industry is growing rapidly, particularly in Malaysia, Thailand, Singapore and Indonesia, partly driven by expansion in its exposure to the digital economy. Many businesses, particularly delivery of goods and services in ASEAN have innovated their way to success, supported by Japanese venture capital. The digital economy has also generated opportunities to accelerate development by increasing business efficiency and productivity, widening access to new markets, and facilitating participation in global venture capital (GVC). Japanese enterprises are the one of key players as the GVCs. The DAP is broad-reaching, affecting many industries including fintech, retailing, e-commerce, payment systems as well as digital content and digital solutions. Financial institutions, including venture capital and private equity funds, contribute to the digital revolution not only by funding digital initiatives, but also by facilitating access to financial services and support through digital innovations.

4.4 Social reality creates a new typologies of players

Diverse stakeholders are all contributing to the development of various components of ASEAN's digital economy, from enabling national policies and incentives, modern ICT infrastructure, private sector R&D and private capital. Digital enterprises (providing technology and e-commerce) and ICT MNEs (providing digital infrastructure) are active in different segments, including digital value chains, infrastructure, funding and startup incubation. However, the players can also be categorized in terms of their network cohesion. Across the ASEAN region, with a few exceptions domestic companies typically participate through joint ventures with overseas digital MNEs in development of telecommunications infrastructure in the region, which provide the foundation for the digital economy.

Meanwhile, national policy offers a significant enabling tool to support digital ecosystems. They provide a regulatory framework to clarify rules for operation of cross-border enterprises and start-ups, and thus foster subsequent investment, expansion and internationalization. Although the VC industry in ASEAN is still nascent compared to that in China or the United States, opportunities in the region's digital industry are increasingly attracting international firms and supporting the expansion of ASEAN-based funds. The most active VC companies in terms of their digital investments in the region are from ASEAN (mostly in Singapore), China, Japan and the United States.

5. Contributions

The strengthening of the DAP process within the ASEAN will be essential to strengthening businesses based on innovation convergence. ASEAN's innovation business should therefore address three interlinked questions as listed below.

5.1 Is ASEAN heading in the right direction of DAP?

As a regional bloc, ASEAN strives towards greater consistency and coherence among its member states by advancing the region towards a more connected digital business and facilitating cross-border commerce and investment. ASEAN countries have been energetically advancing and incubating an empowering environment for

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investment in the digital economy. The current study found (a) that ASEAN members have been successfully advancing their digital and telecommunication industries, and are actively promoting private capital investment to drive the transformation towards a digital economy. Most ASEAN members also have articulated and launched enabling policies and incentive programmes relevant to priority industry sectors, and are collaborating to deepen regional integration and cooperation on digital connectivity. Meanwhile, countries have also adapted international policies addressing issues such as taxation of digital cross-border enterprises, skill development, public investment systems, and authorized institutions to stimulate investment in digital industries.

5.2 Can Japan's integrated digital platforms be transformed to ASEAN member states?

It is important to understand the differences in capabilities and stage of advancement of digital business sectors across the region. Accordingly, Japan's DAP is based on systemic assessments of the trajectories of national systems and policies. The current study found that Japanese enterprises may be categorized into two main groups: platform providers (e.g. development of digital infrastructure), and users (e.g. technology and innovation businesses). The impacts or influence of Japan's DAP for selected ASEAN member states are summarized in Table 3, and reflect the prevailing stage of advancement of digital readiness and rollout of digital businesses in each country.

As might be expected, the study indicates that Singapore is the only ASEAN member to have reached the 'Evolution Synthesis' stage of innovative development and digital capability. Singapore today has acquired the interdisciplinary skills to achieve global competitiveness through high-tech collaboration with R&D institutions. Malaysia on the other hand, is categorized in the 'Approximate' stage, with its digital innovation and technological capability at mid- to-high level. Malaysia can cooperate effectively as a partner in technology transformation and in strong technology-based R&D, supported by DAP. Thailand is classified in the 'Pace' stage, as it still needs interdisciplinary expertise, effective innovation policies and expansion of private sector innovation to drive digital businesses, supported by DAP. Thailand's continuing political uncertainty has posed a major challenge to growth and inward investment, and sharply increasing levels of income inequality are also problematic. However, if Thailand is able to successfully address these issues, it could rapidly be reclassified in the 'Approximate' stage. Indonesia, Philippines, and Vietnam are classified as in the 'Apprentice' phase, characterized by the studying process of digital & innovation capability. These countries are estimated to have key potential to upgrade their innovation capability as their economies and populations grow. Meanwhile, Vietnam has improved its national education, extending its potential for future leadership. Myanmar, Cambodia, and Lao PDR are in the 'Pre-incubation' stage, which means they still need to establish national infrastructure and essential institutions in order to build up a significant digital and innovation capability. These countries need strong FDI to support these processes. Finally, Brunei Darussalam is in the 'Unique' stage, Brunei has its own economic model, supported by its abundant natural resources. However, Brunei is increasingly aware of the need for transformation through digital innovation.

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Table 3. Consequences of Japan's DAP in ASEAN countries

COUNTRY	STAGE	ASEAN CONSEQUENCE	SOCIAL CONTRACT	JAPAN DIGITAL FDI AND HOST COUNTRY
Singapore	Evolution Synthesis	Singapore can synthesis the interdisciplinary to deep technologies, and international competitiveness in high-tech collaboration with R&D and Japan's DAP can manage their own investment.	Singapore developed a new social compact to address the challenges of social mobility and social mixing.	Japan has entered the following Bilateral Investment Treaties (BITs). That makes it diversified, flexible and very open to Japan FDI functions. High value-added sectors (such as ICT, finance, chemistry and pharmaceuticals) are very well developed.
Malaysia	Approximate	Malaysia is in the 'Approximate' stage and its digital & innovation capability is relatively almost high and middle technology.	In the Malaysian context, 'social contract' refers to the bargain in a political society between the state and its citizens.	Transparency has been a key policy of the government. Malaysia and Japan share a close bond and encourage the Japanese business community to reassess the long-term investment.
Thailand	Pace	Thailand still need the interdisciplinary, FDI systems by Japan's DAP and creative destruction activities.	Military coups has made policymakers too focused on political stability rather than foreign investment.	Japanese FDI in Thailand is increasingly technology intensive, consistent with Japan's aim to support the development of the next-generation auto sector in Thailand.
Indonesia, Philippines, and Vietnam	Apprentice	These countries are in the 'Apprentice' phase, which is characterized by the studying process of digital & innovation capability.	Labor laws and sanctity of social contract issues. Includes the economic equivalent of this political conflict (Except Vietnam).	Japanese investors continuing to lead the countries and territories having investment projects in these countries.
Myanmar Cambodia, and Laos	Pre-incubation	They still require to set the nation infrastructures and essential institutions to set up their digital & innovation capability.	Open and liberal foreign investment regime with relatively involving a concession social contract or real estate development project.	They still require to set the nation infrastructures and essential institutions to set up their digital & innovation capability.
Brunei	Unique	Brunei has own economic model driven by natural resources.	Brunei's legal system is based on a combination of British common law and Indian penal code.	Brunei is now aware of the necessity for industrialization through digital & innovation. Japan has a good relationship and FDI with Brunei.

5.3 What are the right directions of ASEAN in DAP?

Investments under Japan's DAP have fallen into two broad categories: (a) underlying technologies and innovation business, and (b) innovative ICT infrastructure. In order to enlarge connectivity through innovative infrastructure, Japan's alliance with other countries covers a wide range of sectors and includes technical assistance in technological industries and R&D management. The Japan International Cooperation Agency (JICA) has used DAP to help build national infrastructure and economic development across Southeast Asia through participation in multiple development projects. These workflows are meant to support development and integrated strategies. Meanwhile, cross-border intra-regional initiatives between and among ASEAN Member States are emerging, requiring new regional coherence on promotion, regulation, financing and taxation of digital businesses. Singapore has taken a more focused approach in driving digital development and in leveraging digital convergence to create a regional hub.

It will be important to evaluate the success of DAP interventions that go beyond firm-level internal return on investment to evaluate macro-level performance indicators. Apart from Singapore, the digital economies of ASEAN countries are still under-developed, and policies, legal and institutional and regulatory frameworks vary significantly. However, Singapore, Malaysia and Thailand are already implementing inclusive strategies including development of digital industries, while others are at an earlier stage of digital development and are focusing on building digital infrastructure. The contributing of Japan's DAP and open innovation and best practices on digital development at the regional level can be useful to early-stage digitization in ASEAN member states, and can serve to attract new FDI into their respective digital economies. Regional as well as national policies are required to facilitate effective long-term sector development and economies of scale across the region.

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Conclusion

The gap between innovative and non-innovative countries in ASEAN is being well-organized by their government and private sectors. The uncertainties economic from the uncertainties politic is reflected in statistics on global FDI for the ASEAN developing countries. In the process of Japan's DAP; Cambodia, Laos, Burma, and Vietnam (CLMV) can gain short-term advantages from their capital investment. The direction view of DAP, ASEAN countries have been energetically advancing and incubating an empower environment for investment in the digital economy. The research found that ASEAN member states have been prevailing their digital and telecommunication industries, that actively promoting private investment to enhance and coverage digital economy. Other approaches include ASEAN countries' strategies that allow Japanese's FDI by attractive resourcefulness and investments in e-commerce, e-payment solutions and other areas of the innovation business.
The strengthening direction of the holistic process within both the Japan's DAP and ASEAN's innovation business must be adjusted and convergence. However, ASEAN countries are adopting the concept of "innovation" and dropping it into their national policies but very often they confuse innovation with R&D and endogenous business. As the world economic perspective is increasingly unsteady and turbulent economy. Keys to overcome those obstacles are the four elements. The first, the policymakers in ASEAN should be considered Japan's DAP as the measurement methods. The second, private sectors must be scope in the business venture capital and joint venture. The third, goalkeeper science of ASEAN member states should be connected to interdisciplinary technologies and international competitiveness. The finally, international authority and innovative infrastructure must be developed digital economy in Southeast Asia, through involvement in digital business. It is important to understand at what innovation stages and digital business capability are. Accordingly, step by step of Japan's DAP which based on effective strategic and ASEAN countries' systemic policies.

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SUSTAINING INNOVATIVE CAPABILITIES OF LIGHT EMITTING DIODE (LED) MANUFACTURERS THROUGH DYNAMIC ENTREPRENEURSHIP*

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Abstract. This study aims to explore how dynamic entrepreneurship would contribute to an organisation's innovative capabilities. Using samples from the Malaysian Light Emitting Diode (LED) manufacturing industry, this study conducted semi-structured interviews with four local companies, involving 17 respondents holding various designations and levels. Data collected were transcribed and content analysis was conducted to group the themes and categories. The findings indicate that entreprenurial attitudes and ethusiasm, corporate culture and empowerment, cross-functional teams, customer integration, supplier integration, communication, trust resource and knowledge sharing as some of the important domains emphasised in order for a company to reap the benefits of dynamic entrepreneurship. The findings of this study could help the local companies to understand how, as entrepreneurs, they could move forward from small scale to contract manufacturers by addressing the innovation capabilities through dynamic entrepreneurship. This is important, as failure to satisfy these requirements, may lead to them being excluded from the global supply chain.

Keywords: dynamic entrepreneurship, innovative capabilities, supply chain collaboration, light emitting diode, developing country

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1. Introduction

Light emitting diode (LED), which is made from semiconductor chip represents one of the important technological revolutions in the lighting industry, which support the sustainable development goals (SDG). The LED consumes lesser energy, does not emit high heat loss and is made from recyclable materials, which can be dismantled and reused. Since LED could last more than 20 years, it requires lesser replacement, which leads to lesser use of natural resources. Considering the characteristics of LED, it is therefore, not surprising that many governments around the world have started to use LEDs, as an alternative (Khorasanizadeh, Parkkinen, Parthiban, Moore 2015), leading to its growing market demands. As reported by Mordor Intelligence (2019), the growth of the LED industry globally has reached USD 51.8 billion, and is expected to climb to USD 112.15 billion by 2024, with major portions generated by Asian countries. Within the Asian continent, China appears to be the dominant player in the LED value chains. As the country possess rare-elements resources required in the production of LED, their local manufacturers are able to compete aggresively in the global market, by offering cheaper products (Levy, Meisner Rosen, Iles 2017). This situation creates a challenge to the neighbouring countries, including Malaysia, calling them to configure their operations strategy. To survive, the Malaysian local manufacturers could not be the "follower", by offering the "me too" products, since they will be trapped in the crowded market and quick declined of the price of final goods. Hence, for a local manufacturer to stay afloat, it is assumed that innovation is important. This element is not only being associated with new product development and enhancement, but also related to process improvement, which in turn could help reducing operational costs (Kim, Chai 2017; Vargas 2015).

Whilst being innovative is seen as pertinent to sustain competitiveness, yet, in order to be innovative, firms need to know how the innovation process works. Within the literature, early works on innovation process seems to emphasise on the research and development (R & D) activities and market pull-view as means to support innovation (e.g. Pavitt, Robson, Townsend 1989; De Luca, Verona, Vicari 2010). Despite this, the relationships are argued to be influenced by various other factors; and are not linear (Anning-Dorson 2016). In a simplest word, an increased on a firm's financial allocation on R & D may not assure proportional growth in returns. Additionally, merely responding to the market alone, may not results in path-breaking innovations, which are important in the technological industry, such as LED. As firms are moving towards global competitiveness, they need to look beyond their organisational boundaries; and identify as well as evaluate how the resources and capabilities of their supply chain partners can be optimised to create exceptional values (Kim, Chai 2017; Zimmermann, Ferreira, Carrizo Moreira 2016). These processes are driven by dynamic entrepreneurs, who are known as a risk bearer, innovator and opportunist (Schumpeter 2017).

Built upon these arguments, this study attempts to investigate how four LED manufacturers in Malaysia build their innovative capabilities through dynamic entrepreneurs. It seeks to explore how dynamic entrepreneurships promote supply chain collaboration and innovative capabilities in the organisations, based on the dynamic capabilities theory. This study will contribute to the limited literature that attempted to explore this phenomenon by looking at the dynamic entrepreneurs. In this study, we also focused on Malaysian as the contextual setting. As a middle-income nation, Malaysia appears to stuck in the middle, whereby they are unable to compete with low-wage nations, yet at the same time not being able to enhance the skills and knowledge required for higher value added production and services. Dominated by multi-national firms which having lack of public interest for the betterment of education has led to the slow improvement in meeting the demands of highly skilled workforce (Doner, Schneider 2016). Literature seems to emphasise that in this kind of country context, dynamic entrepreneurs play important role for private sector development, in which they have promoted innovative culture of many Asian countries. This in turn helps them to surpass their middle-income status.

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2. Literature Review

2.1 Innovations

Innovation is referred to a process of generating new ideas, processes or products that could add values to the customers as well as the organisations (Druehl, Carrillo Hsuan 2018). It is well recognised that the ability of an organisation to innovate help firms to grow and survive, particularly in the era of globalisation. For contract manufacturers, especially those in the key manufacturing sectors such as electronics and automotive, innovation appears to be the indicator of their ability to respond to the increasing demands from customers (Song, Fang, Johnston 2017). This is because innovation is expected to facilitate value analysis and value engineering approaches, which drive new product development.

Whilst various literature seems to emphasise the importance of innovation in sustaining an organisation's competitiveness (e.g. Kiveu, Namusonge, Muathe 2019; Coad, Grassano, Hall, Moncada-Paternò-Castello, Vezzani, 2019), innovation does not always lead to success. In fact, it is risky, involve uncertain process and consume huge resources. Often time, innovation failed due to the heavily relying on R & D team in generating ideas, or new products/process, and producing "me-too" products/services (De Luca, Verona, Vicari 2010). There are also organisations which tend to resist ideas from external parties, and focus more on "internally generated ideas" (Camisón et al. 2016). For these organisations, they are often trapped in obsolete technology, fail to see the market trends, and take a long-time to introduce new products/process to the markets. These literature indicate that partial views of what innovation process involved will results in an organisation producing products/services which are not only fails to meet users' needs and expectations, but also fails to generate internal knowledge, resources and capabilities.

2.2 Dynamic Capability Theory

Teece (2018) argued that for an organisation to achieve competitive advantage, it needs to demonstrate the dynamic capabilities, which could be referred to an organisation's ability to build and reconfigure internal as well as external competencies to survive in the turbulent environments. It is associated with organisations' learned patterns of collective activity and strategic routines, through which operating practices are modified to achieve a new configuration. In the era of globalisation, organisations may face higher chances of supply chain disruptions due to the market conditions which are more prone to uncertainties, due to varying institutions, cultures, market, demand requirements and political and socio-economic realities (Weerawardena, Mort, Liesch, Knight 2007). This situation requires them to be responsive by sensing new threats or opportunities emerging in the environment, and reconfiguring and realigning their resources as a means to alleviate the risks and rebound to the original position. In this condition, static resources may not be able to generate favourable organisational performance. This suggests that organisations need to continuously develop new capabilities to ensure that the processes, skills and routines are attuned with the changing needs. Various studies in the area of strategic management have adapted this theory. They include Madanmohan, Kumar, Kumar (2004), Rashid, Jabar, Yahya, Samer (2015) and Albino, Dangelico, Pontrandolfo (2012). Their studies illustrate that having a dynamic entrepreneur could help gain benefits from the supply collaboration which has led to dynamic capabilities and performance.

Dynamic entrepreneurs refer to the ability of a company's leader to discover, creates, seize and exploit opportunities ahead of their rivals (Kuratko, Hornsby, Hayton 2015). It exists in organisations where leaders and the culture works together to generate impetus to innovate, take risks and pursue new opportunities (Dess Lumpkin, 2005; Hsu, Tan, Jayaram, Laosirihongthong 2014). In an organisation with a high dynamic entrepreneurship, the leader acts as a gatekeeper, and always finds ways of how to optimise internal resources to attain success (Eggers, Kraus, Hughes, Laraway, Snycerski, 2013). A corporate leader who exhibits dynamic entrepreneurial behaviour tends to create a work environments and corporate culture that stimulate and support

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creativity. It is widely recognised that the keys impacting innovation successfulness are resources. One perspective to obtain resources for innovation has been to incorporate the supply chain collaboration strategy with innovation process (Simatupang, Sridharan 2008). In a collaborative supply chain, organisations involved share resources and capabilities to create synergy and meet their customers' needs. They use their core competencies to handle change and deal with adaptive challenges (Soosay, Hyland, Ferrer 2008). The role of supply chain collaboration in innovation process is becoming crucial owing to the growing outsourcing practices (Gereffi, Lee, 2012). This is particularly true for those that are coming from emerging market. On one hand, these organisations commonly lack of financial and technological capabilities for innovation projects. On the other hand, the innovation process consumes substantial amount of financial resources since funds are needed not only to develop new products or processes, but to also offer training, user-support and marketing campaign explaining the merits of innovation. Hence, to support the success of their innovation, they collaborate with key supply chain partners. Through inter-organisational linkages, they could obtain access to related resources and capabilities that are difficult to create on their own (Zimmermann, Ferreira, Carrizo Moreira 2016).

3. Research Methodology

This study employed semi-structured interviews to investigate how the organisations use dynamic entrepreneurship to develop innovative capabilities. This method carries more weight as it can give powerful and detailed insights, since it could elicit the respondents' views and experiences as compared to surveys (Chetty, 1996; Yin 2003). To supplement the information obtained from the interviews, internal reports and documents were also reviewed. Prior to the interview sessions, the questions asked were assessed and evaluated by an independent Malaysian researcher who majors in supply chain strategy.

The sampling frame for this study was drawn from the list of LED manufacturers registered with the Federation of Malaysian Manufacturers as of August 2018. The total number of registered manufacturers was 241. This study selected every tenth manufacturers from the list provided. They were initially contacted through telephone calls to determine that they have performed innovation activities and shown dynamic entrepreneurship behaviours. This is to ensure that the samples selected are appropriate and have experiences in the area of study. Of the 24 manufacturers contacted, only four of them were found to satisfy the above conditions, and willing to participate in the study. During this initial contact, emphasis was also made to indicate that the data collected would be exclusively used for research purposes only and that the manufacturers' participation would be kept private and confidential. Anonymity was applied and so their voluntariness to participate in the study served as their consent for participation. They were also given opportunities to discontinue their participation at any point of the study should the need arises. The distribution of the respondents interviewed within the four companies is shown in Table 1. A total of 17 respondents were interviewed, and were considered appropriate, as in line with Guest, Bunce, Johnson (2006). As indicated by the table, the respondents seem to have various roles with different levels and functions in the respective organisation. To ensure the quality and validity of the responses gathered, the managers interviewed were asked to verify the interview reports.

Table 1. Respondents' Profiles

Company	Respondents	Years of Establishment	Position/Level	Functions
A	1	19	Manager	Product Design & Development
	2		Manager	Technical Specialist
	3		Senior manager	Research & Development
	4		Manager	Operations
B	5	16	Manager	Supply Chain
	6		Senior Manager	Product Design & Development
	7		Manager	Procurement
	8		Manager	Project Management
C	9	21	Manager	Procurement

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	10		Senior Manager	Operations
	11		Manager	Marketing
	12		Senior Manager	Product Design & Development
D	13	14	Assistant Manager	Quality
	14		Manager	Project Management
	15		Manager	Operations
	16		Senior Manager	Technical Specialist
	17		Deputy Senior Manager	Procurement

A semi structured interview was conducted during the last week of August 2018 and the first week of November. Each interview session last for 20 to 40 minutes, with the main focus to draw the interviewees to comment and describe how corporate entrepreneurship and supply chain integration were practiced in their organisations. The samples of questions asked were provided in the Appendix 1. All the interviews were conducted in English and recorded using a voice recorder. Following the interviews, data were listed accordingly and then placed into respective envelopes for easy identification. This was then followed by the transcribing process where the recorded interviews were played several times until the entire interview was completely transcribed. In the analysis stage, the organised materials were read line-by-line several times. The content of each interview were then further analysed so as to gain a deeper descriptive structure of the responses. The relevant quotes from the transcript were marked and coded accordingly. The quotes identified were contrasted with each other to provide a more balanced view of the contribution of each participant. This process was conducted continuously through several repetitions until there was no significant insight that could be obtained from the analysis.

4. Research Findings

Analysis of the response related to how dynamic entrepreneurship affects innovative capabilities is detailed in Table 2. The following sections discuss the findings further.

Table 2. Research Findings

Categories	**Sub-Categories**	**Respondents**																
		1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**
Dynamic Entrepreneurship	Entreprenurial attitudes and enthusiasm	/	/	/	/					/	/	/	/					
	Corporate culture and empowerment	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
	Cross functional teams	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
	Customer integration	/	/	/	/	/	/	/	/					/	/	/	/	/
	Supplier integration	/	/	/	/	/	/	/	/	/	/	/	/					
	Communication	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
	Trust	/	/	/	/					/	/	/	/	/	/	/	/	/
	Relationship	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
	Resource sharing					/	/	/	/					/	/	/	/	/
	Information knowledge sharing	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/

Company A was established by two founders for about 20 years ago, who had previously worked at multinational firms in the technological industry. Their career change decision came from their own intrinsic motivation to be entrepreneurs. After seven difficult years, the company has started to grow every year, and now is not only become the "follower", but also strives to offer innovative solutions. One of the company's senior managers, Mr. X, stated that:

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> *"We are always looking for new opportunities. It is very important to be able to see new trends and opportunities if we want to survive for a long-time. We cannot always provide products at cheaper price, because the market can get saturated….we have to move fast, see how we can use and configure our resources. What can we make from what we have is very important"*
>
> [Respondent 3]

This shows that Company's A manager possess entrepreneurial attitude towards innovation. The leader or the head of department demonstrates the importance of continuous search of opportunities. He is always looking for more effective innovative procedures to carry out new product development or process improvement. This is also supported by the employees interviewed, who mentioned:

> *"Both the founders of this company keep on looking for new things every day. For now, they are interested in the area of sensors, smart devices, IoT and automotive sectors. They see these areas as the new industry that they could focus to spearhead the growth of LEDs"*
>
> [Respondent 2]

> *"The top management, especially our chief executive officer (CEO) is always looking for improvement, and new ways of doing certain things, although it's only a small improvement. He always pushing the business all the time. ..we strive for 15 per cent of growth every year"*
>
> [Respondent 11]

The leaders' enthusiasm on innovation has also been translated into the culture of the organisations. In Company D for example, the management, either at the strategic or operational levels are encouraging their sub-ordinates to generate ideas by enforcing "no-criticism rule", although the ideas provided sometimes, could be wild and seem to be impractical. As indicated by one of the respondents from Company D:

> *"… at our unit, we are invited to make any suggestions. Any proposal or ideas put forwarded, are collected and processed by our head or sometime project leader… when we are working in a group… although these ideas are sometimes seem to be "small", "minor", "unimportant", they are being recognised by our top management… we get rewarded when we suggest something."*
>
> [Respondent 17]

At company B, it is found that the aim of empowerment is not seen as a means to tackle problems, but it could also encourage personal development, as every individual in the organisation can exercise creativity. The respondent highlighted that:

> *"Empowerment help spread out the problem solving activity across the organisational boundaries. We can understand, share and learn from each other"*
>
> [Respondent 6]

In this study, we found that all organisations studied used cross-functional teams to promote creativity. The respondents from Company A reported that:

> *"New product-development process in our company is smoother now as compared to before. With the use of cross-functional team, we can now expect and know the effect of changing*

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certain process on other departments or functions performed by other…not like before, we used to spend lot of time working on something, and then find out the idea doesn't pan out. With the use of groups, we can know whether the idea is possible or not immediately, rather than to do it and then down the road, it's not feasible to do"

[Respondent 2]

"We normally work in a team to develop products. We can compare, communicate the products that we are developing more effectively. Sometimes, we can even identify whether the various products will sit together as a complete product range .Similarly, the products that do not sell well in the market can also be communicated easily to production team, so that those product lines can be stopped or reduced, and replace with another that sell well. This helps in speeding up replenishment times and reducing inventory"

[Respondent 3]

At Company C, it was highlighted that they have reconfigured their purchasing process, by centralising the function. In the new process, the purchasing activities are conducted collaboratively between the purchasing team and product development team. This practice helps ensuring successful innovation process, in which it enables the company to control exposure to supply chain risks due to failed product design. As indicated by the respondents from Company C:

"We used to leave the process [buying the materials] with the individual managers involved. But we ended up with huge supplier base and unattractive product range…this process has been made better when they [i.e. the purchasing department and product development teams] work together. We have to take this direction, considering that product design is our core value"

[Respondent 9]

In this study, we found that all organisations perceived design capabilities as the main source of their innovativeness. This function is found to be handled by not only the New Product Development (NPD) teams, but also the companies' supply chain partners. This practice is seen to help them ensuring the product commercialisation and coordination.

At Company A, the managers interviewed highlighted that the company co-innovate with its customers, rather than performing it on their own. According to them:

"We are currently working with our US based customers in developing laser LED car headlamps. Previously, we used to work together with them in coming up with brighter LED module…we are also exploring how to combine semiconductor lighting with new technologies such as smart sensors and wearable technologies…at our company, we are encourage by the top management to work together with our partners…although it seems to be difficult, after several years now, we can see our company's direction."

[Respondent 2]

"…We have depended on our R & D experiences of producing dies for LED components when we move to produce LED components. Yet, over times, R & D experiences alone may not work. That's become the reason, why we are embarking on joint effort. Sometimes, we are not able to see the trends, the market when we work alone… So, yes, we are depending on our customers as well when we embrace on new project…willingness to share

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> *knowledge, resources and exploring new things are all that matters in this collabortion. Our leaders keep on insisting that we should work together, and need to be able to reap all the benefits that we could obtained from this partnership. "*
>
> [Respondent 3]

The integration between Company A and its customers also seem to improve its abilities to satisfy the customers' needs better. The respondent indicated that:

> *"…we can now give our customer what they want…when we break the barriers between our firm and customers, we can share information with them more accurately. Before this, everything was done based on the prediction, and not actual data. By setting up joint-venture between the company and customers, we can openly discussed what will work, what won't work, and develop solutions together"*
>
> [Respondent 1]

Similarly, Company B also demonstrated the same experiences. At Company B, however, the integration occurs between the company and its key suppliers. As stated by the respondents:

> *"…we are struggling in today's environment. The technology moves very fast, and there is no way we could keep up with the market, if we don't work together with our key suppliers…working with them [immediate suppliers] help improving designs…what is more important is, by forming such relationship, we can access to the external resources."*
>
> [Respondent 5]

> *"During the start-up period, we suffered a lot, we don't have the right materials, and we even have problems with our previous suppliers back then. But, when we start to integrate with suppliers... it's getting better…we tend to be more relaxed, we believe our suppliers are reliable. But of course, before we could reach to that point, we have to screen our existing suppliers, identify those who are important to our business…"*
>
> [Respondent 6]

> *"…we also source from local suppliers, and they sometime do not possess capabilities. So, what we do, we intervene with their process, assist them in developing certain skills. We invest in providing quality management training courses to help improve their process. And in return, the supplier offer advices and expertise in the design of LED components.*
>
> [Respondent 6]

This shows that in today's environment, where technology is rapidly changing, companies sustain themselves by nurturing innovations and creativity through collaborating with suppliers. Although the supply chain collaboration does help the companies interviewed in nurturing their innovativeness, it is found that such practice is not without hurdles. For example, one of the respondents highlighted that:

> *"…individualistic, competitive and lack of communication and information visibility may not support innovation culture. We for example, need to know what the end-customers are buying, how well the products produced are accepted and etc…this information will help us in coming up with the new products that will be well-accepted in the market"*
>
> [Respondent 15]

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Notwithstanding these, the respondents also indicated that in order to successfully implementing a supply chain integration practice, that will benefit the organisations in terms of innovativeness, they have to forgo their silo mentality and nurture trusts. The respondents from both companies stated that:

> *"…before we proceed with building electronic infrastructure to facilitate information sharing with our customers, we ensure that we have a good relationship. We need to assure that our partners can be trusted. This is important as we do not want to invest our resources, and then further down the road, find that our partners are not behaved as what we expected."*
>
> [Respondent 11]

> *"…committing resources for integration can consume a lot... there is a need for us to build a good and long-term relationship in order for it to be successful. The switching cost could also be higher, if we invest, without having good relationship..."*
>
> [Respondent 12]

> *"… a close relationship with customers facilitate us in sharing knowledge about consumer preferences and desired product features. This will help us to enhance our innovative capabilities and develop new products…"*
>
> [Respondent 2]

5. Discussion

Considering the rapid development of the LED industry, and technology/knowledge intensive firms in emerging markets, such as Malaysia, the case studies evaluate how a manufacturer is likely to survive in the globalisation era through innovation.

In examining how the companies develop their innovation and creativity through dynamic entrepreneurship, three points stand out. First, the cases highlighted the importance of having a leader, manager or owner who has dynamic entrepreneurial orientation. As highlighted by the cases studied, the founders' abilities to identify opportunities arisen, and transform them into business activities will drive the company's innovative capabilities. In this type of organisation, the leaders are found to willingly support creativity and experimentation. They encourage their employees to "think out of box", and are more open to any ideas generated. By promoting this organisational culture, employees feel more empowered to try out new practice based on their own initiative. In relating to this, it seems that the employees trained in MNC affiliates could become the seed bed for the emergence of home-grown companies. As indicated in the case, Company A's founders appear to have worked with the MNCs before, which have provided them ample experiences and related training. Having leaders who have worked in the MNCs facilitate the companies to drive the strategic innovations better in which they extract creative ideas from market insights and promote them within the company, provide support and access to resources. These findings are found to be inline with prior works by Tan (2006) and Inkpen, Tsang (2005).

Secondly, in this study, we found that a dynamic entrepreneur often encourage the use of cross-functional teams, where individuals from different departments work together. With this approach, it appears that everyone in the organisations is learning from other prior experiences, and seeking out opportunities to learn, and self-developed. This practice will also help people across the organisations to understand and share the holistic view of processes in the company. As demonstrated by Company A, people in the organisation works together in finding ways of how the production costs could be reduced by altering the design. They can even identify if products across all sections will sit together as a complete product ranges offered by the manufacturing firm. In the case of Company B, the product development team's responsibility is also found not to be restricted on the product design process per se, but the team is also linked to the purchasing process, where they could make final decision on the product specifications that should be supplied by the suppliers. The case demonstrates that by allowing the team to be part of the final purchasing decision, the company is able to reduce supply chain risks due to failed product design.

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The linkage of various departments goes beyond the problem solving. Infact, the use of teamwork facilitates in sharing and exchanging ideas, and breaking down communication barriers among divisions. This approach also seems to support open-ended learning behaviour in the organisation, which is expected to lead to creativity and innovative capabilities. This is expected since in a high-technology business environment, high levels of collaboration and teamwork are important, whereby many innovations were carried out by a "teams of experts" rather than "lone hero" (Di Benedetto, Calantone, VanAllen, Montoya-Weiss 2003).

Third, the cases examined highlights that the coordination and collaboration that are practiced under the dynamic entrepreneurship are not only limited within the organisation. In fact, they go beyond the organisational boundaries. From the cases studied, it is safely to say that an entrepreneur needs to be able to identify opportunities that arise from the external parties, in this case the supply chain partners. Being a medium size companies, they are notably lack of internal resources to embrace on innovations. Instead, they have to co-innovate with their supply chain partners, whereby they share knowledge and technology (Welbourne, Pardo-del-Val 2009). As demonstrated by the findings, the shortage of funds to seek for differentiation strategy has forced the entrepreneurs to jointly invest with its customers to develop new range of LED chips, three-dimensional imaging modules and multi-port sensors. With supply chain collaboration, they have also ventured into other areas that are based on LED technology. They have gradually explored the future direction of the industry, specifically in the area of smart sensors and wearable technology, through working cooperatively with its customers. In maintaining the effectiveness of the collaborative efforts, it was found that the entrepreneurs are willing to share information and knowledge with their customers and suppliers. The extent of their willingness to openly shares information and knowledge can facilitate new product development.

Implications and Conclusion

This study has focused on how the local manufacturing firms in the LED industry build up their innovative capabilities through dynamic entrepreneurship. The findings of this study contribute to the limited literature exist to explain how dynamic entrepreneurship stimulate innovativeness from the emerging country's perspective, specifically Malaysia.

The findings of this study suggest that in the context of developing countries, such as Malaysia, dynamic entrepreneurship appears to encourage innovative capabilities. Of particular interests are, the role of top management or leaders of the companies in motivating and shaping entrepreneurial behaviours in organisations. In order for the employees to be creative and innovative, the managers need to create an environment that promotes freedom to experiment without fear of reprisal, when initiatives taken do not lead to desired results. Although basic knowledge in science and technical competences may seem to be fundamental to technological industry, yet, when it comes to innovation, basic knowledge and skills are insufficient. The employees need to be creative; and the creativity can only be unleashed in an organisational environment that promotes freedom of thinking and self-direction.

The findings of this study also reinforced the importance of dynamic capabilities towards supply chain collaboration. The leaders of the local companies need to be able to identify and reap the opportunities arise from the collaboration practice with the supply chain partners. As demonstrated by the cases, the abilities of the entrepreneurs in working together effectively with their supply chain partners in designing new products or enhancing existing processes, have offered opportunities for them to venture into markets that have not been explored before. This is because, through having dynamic entrepreneurships, they are able to reconfigure their internal as well as external resources and create synergies in the collaborative practice. This is particularly true for those manufacturing firms that are found to be small, as they are notably lack in resources to move forward.

Whilst it is conventionally argued that the innovative capabilities of manufacturers in emerging countries tend to be heavily supported by favourable institutional policy, the case studied suggests that the home-grown company can also survive by relying on its internal resources. Driven by internal capabilities such as dynamic entrepreneurship, they are able to develop innovative capabilities, and sustain their competitiveness. In a competitive environment, a manufacturer needs to differentiate their internal capabilities from competitors to achieve competitive advantage. This case study demonstrates that manufacturers can remain competitive when they align human resource management with technological innovation; develop internal organisational culture, work processes and activities that promote creativity.

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TOBACCO EXCISE TAX POLICY IN INDONESIA: WHO DOES REAP THE BENEFITS?

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Abstract. In Indonesian tobacco, excise tax policy never decrease every year. As a result, the number of tobacco industries sharply declines, however the prevalence of tobacco smoking steadily increase since 1995. Therefore, this research aims to estimate the increase of tobacco excise tax and its impact on cigarette consumption, government revenue, and the possibility of cigarette sold illegally. There are two analytical model, Logit and Tobit. Logit model is used to estimate the impact of cigarette price towards the probability of household member to smoke or not, and Tobit model is used to estimate the impact of price change towards the amount of cigarette consumption. Tobit model is employed since it include non-smoker household, covering 40% of total household. The estimation is based on SUSENAS published on March 2017. The result suggests increasing cigarette prices does not lessen people desire to be smokers; indicating that most Indonesian consider cigarette as basic needs. Consequently, the increase of tobacco excise tax leads to the growth of government revenue and number of illegally sold cigarette. Therefore, it conclude that large-scale industries benefit the most, when this result is linked to the decrease of tobacco industries data. Meanwhile, Indonesian people may get the benefit, if the government revenue is appropriately allocated to stimulate economic and development.

Keywords: Tobacco Excise; Tax Policy; Prevalence of Tobacco Smoking; Logit; Tobit

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JEL Classifications: D1, D4, H2, L1, L2

1. Introduction

Since the issuance of the Law on Excise in 1995 and its renewal in 2007, Indonesia decrees cigarette as a limited and supervised goods. Basically, Indonesia applies two simultaneous regulation on excise control policy, by: (i) market interventions; for instance, creating excise tariff structure based on production capacity; or (ii) non-market interventions; for example, establishing a smoke-free area. Both policies aim to reduce cigarette consumption, to increase government revenue, and to control illegal cigarette in the market (Levy, Yuan, & Mays, 2018; Rosser, 2015; Mackay, Ritthiphakdee, & Reddy 2013; Chaloupka, Yurekli, & Fong 2012; Chaloupka, Straif, & Leon, 2011; Barber & Ahsan, 2009; Ranson et al., 2002; Wakafield & Chaloupka, 2000; Hu, Sung, & Keeler 1995). Therefore, the policy is considered effective if it is successful in reducing cigarette consumption, optimizing

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government revenue, and preventing the possibility of illegal cigarette (Bhatnagar et al., 2019; Smith, Thompson, & Lee 2019; Hiscock et al., 2018; Ho et al., 2018; Van Hedger et al., 2018; Levy, Chaloupka, & Gitchell 2004; Lantz et al., 2000). However, empirical evidence shows an anomaly, in which the yearly increase of cigarette excise tariff is not followed by significant reduction of cigarette consumption. This is as shown in Figure 1 (on the left) that shows the increasing cigarette excise tariff since 2011. Meanwhile, Figure 1 (on the right) shows that Indonesian cigarette production and consumption are above 300 billion sticks per year. This data hints that the cigarette excise policy is not effective in reducing cigarette consumption.

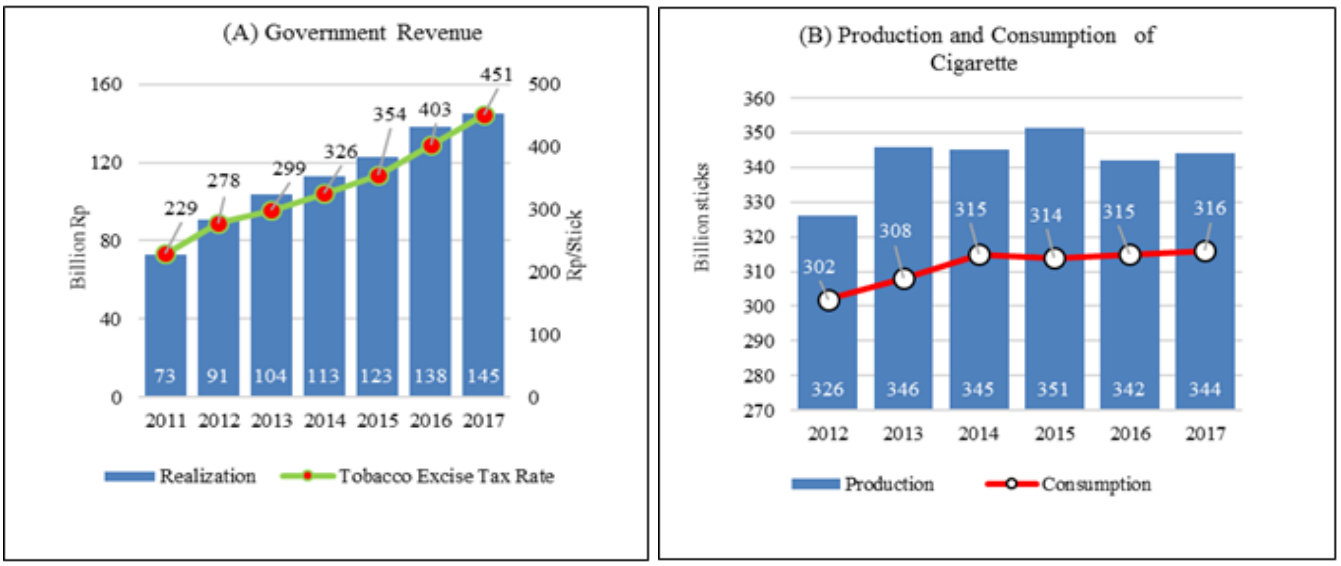

Figure 1. The Evolution of Cigarette Consumption, Government Revenue, and Cigarette Industries Production Scale
Source: Data Processed from Ministry of Finance in Indonesia (2019)

However, empirical evidence shows an anomaly, in which the yearly increase of cigarette excise tariff is not followed by significant reduction of cigarette consumption. This is as shown in Figure 1A that shows the increasing cigarette excise tariff since 2011. Meanwhile, Figure 1B shows that Indonesian cigarette production and consumption are above 300 billion sticks per year. This data hints that the cigarette excise policy is not effective in reducing cigarette consumption. Therefore, it is interesting to find out who get the most benefit from cigarette excise policy. Therefore, this study aims to estimate the impact of increasing excise tariff towards (i) cigarette consumption; (ii) government revenue, and (iii) illegal cigarette circulation.

2. Materials and Methods

There are two concepts in consumer behaviour theory, relevant with person's decision to smoke. First, consumer is assumed to make a decision based on rational choice; thus, price and income become the main factors that affect them in purchasing something (Albers & Nancy, 1999; Acton, 2000; Ham & Hope, 2003; Jamison & Myers, 2008; Joshi & Rahman, 2015). Based on that concept, the increase of cigarette price will reduce the cigarette consumption by reducing the purchasing power (De Beyer & Yurekli, 2000; Sunley, Yurekli, & Chaloupka 2000; Adioetomo & Djutaharta 2005). Therefore, if the cigarette price is increased and the income is assumed to remain constant, people tend to reduce cigarette consumption, possibly stop smoking altogether.

Second, on the other hand, consumer is considering non-price factors like taste, social, and cultural reason (Ang, Cheng, & Tambyah, 2001; Eisend & Schuchert, 2006; Furnham & Valgeirsson, 2007). This opinion states that the increasing price of cigarette will not reduce its consumption, maybe even increase. This phenomenon is caused by

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two reasons: (i) cigarette is considered as a basic needs so that an increase of its price will not reduce people intensity to smoke (Rahman et al., 2015), and (ii) cigarette is considered as a luxury goods that support consumer lifestyle. Therefore, price can not force smoker to reduce their intensity to smoke (Cheung and Prendergast, 2006).

Based on the two mentioned framework, the analysis model employed in this research consist of two equation.

Firstly, Binary Analysis Model used to estimate the probability of a person's smoking decision. The binary model specification is as follows:

$$C_i^* = X_i'\gamma + \varepsilon_i,\ where\ C_i = 1\ if\ C_i^* > 0, 0\ otherwise \quad (1)$$

Here, C_i=1 is a smoker and C_i=0 for non-smoking person, thus this equation can be said as the probability of a person's tendency to be smoker. While X is vector matrix for factors affecting person tendency to be a smoker. Here, there are two main factors, which are cigarette pricing and household income.

Secondly, when the probability of a person's tendency to be smoker influence consumption of cigarette, thus the equation of cigarette consumption should be estimated by treatment-effect model. Therefore, the treatment-effect model specification is as follows:

$$Y_i = X_i'\beta + \gamma C_i + E_i \quad (2)$$

Where Y is the amount of cigarette consumption. This equation is a simultaneous estimation, due to the error term (E) in equation (2) is highly influenced by the error term (ε) in equation (1) (Greene, 2003; Abadie & Imbens, 2006).

The estimating models use secondary data from SUSENAS (National Social and Economic Survey) released by Central Bureau of Statistics in Indonesia (BPS RI) in march 2017. SUSENAS data consists of 297.726 household, where 40% of it is a non-smoker household, which means that none of the household members are smoker. Furthermore, the results from both models are used to estimate the impact of cigarette excise tariff on cigarette consumption, government revenue, and illegal cigarette circulation.

3. Results

3.1 Controlling Tobacco Products through Excise

In the beginning, excise tax is separated in several ordinance and not made into a law, such as kerosene excise, distilled spirits excise, liquor excise, sugar excise, and tobacco excise. Implementation of those ordinance are discriminator, as evidenced by uneven imposition of import excise. On the other hand the regulation objects is limited, even though the national development require a substantial income source. Hence, the excise tax is expanded in order to explore the potential excise tax object and to increase government income from excise tax. As the result, Law No. 11/1995 on Excise is issued in Indonesia. The law is expected to simplify the law enforcement on excise tax. Afterwards, in 2007 Law No. 37/2007 on Amendment of Law No.11/1995 is issued in Indonesia due to three main reason.

First, there are many aspects that have not been accommodated in the application of Law No. 11/1995 on Excise in Indonesia. In order to optimize excise tax as one of government income source, an amendment corresponding to social and economic development is needed. Second, a firm excise boundary is needed as a law basis on excise object expansion. Third, the Law No.37/2007 will act as an improvement of excise levy administration system

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and enhancement of law enforcement efforts in accordance with good governance improvement. In the Law No.39/2007, Excise is defined as a government levy on a specific type of goods which: (i) consumption needs to be controlled; (ii) circulation needs to be supervised; (iii) usage may cause negative impact on living environment; and (iv) usage need to be imposed by tax fairness and balance. In Indonesia, excise tax is under responsibilities of Directorat General of Customs and Excise, Ministry of Finance. Excise is a form of indirect tax that serves as government income source, other than taxes and State Owned Enterprises (BUMN) profits.

The dutiable goods set by the government are including: (i) etyhl alcohol or ethanol; (ii) beverage containing etyhl alcohol or ethanol; and (iii) tobacco products. On tobacco products, there are two levy system; that are ad valorem and specific system. Ad valorem excise is imposed based on percentage from total sales value, while specific system excise is imposed per stick of cigarette. There are three aspects in excise that give excise an exclusive nature. First, excise is selectively imposed. Excise is only imposed to several goods, especially on tobacco products and alcohol. Moreover, the tariff level is also separately determined for each goods. In fact, each of tobacco product may has a different excise tariff level depends on the product type and specification.

Second, there are unique justifications in excise levy, which are: (i) controlling the consumption of a certain type of goods (Schafferer et al., 2018; Shang et al., 2019; Bridge et al., 2020); (ii) internalizing negative externality (Alvarez, 2019; di Bella et al, 2019; Quiggin & Wang, 2019; Nwadialor & Agbo, 2020; (iii) increasing the efficiency of resources (Akhmetshin et al., 2019; Becker et al, 2019; Sugiyama & Koonsed, 2019); (iv) creating jobs (Friske & Cockrell, 2019, Kitchen et al., 2019; Nguyen et al, 2020); and (v) increasing government income; among others (Ross et al., 2017; Alsukait et al., 2019; Luong & Vu, 2020). Those reasons make excise tax different with any other tax, since normally government income is used as the main justification in every tax levy.

Third, excise implicitly indicates a physical control on some goods and enforce obedience on the law. Based on that, excise function is as the regulator, that oversee, control, and limit the usage and circulation of a goods. However, it can not be denied that excise has an important role as government income source (Laković et al., 2019; Kovaleva et al., 2020), since government income from excise in Indonesia is known to increase from year to year.The tobacco excise system in Indonesia has changed several times. Before 2005, Indonesia employs ad valorem excise system, then between 2006 and 2009, Indonesia shift to specific excise imposed per stick of cigarette, since its thought to be simpler compared to the ad valorem system. In fact, using specific excise is not simpler than the specific excise used in Indonesia since the tariff is based on retail selling price layers.

The following Table 1 shows the evolution of Indonesia excise tariff in 2010, 2017, and 2018. Since 2010, cigarette product is classified into three main categories: (i) SKM (Sigaret Kretek Mesin/Machine-Rolled Kretek Cigarette); (ii) SPM (Sigaret Putih Mesin/Machine-Rolled White Cigarette); (iii) SKT (Sigaret Kretek Tangan/Hand-Rolled Kretek Cigarette). Those three categories are further classified into seven classes with each excise tariff; thus in 2010 there are 18 layers of excise tariff. Government plans to reduce this layers into 12 in 2017, and further into 10 layers in 2018. Figure 2 also signifies that Indonesian government control cigarette consumption by imposing excise tariff and simplifying tobacco product excise tariff. Excise tariff structure is the number of excise tariff for SKM, SPM, and SKT, based on tobacco type, producer class, and Retail Selling Price (RSP).

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Table 1. Development of Cigarette Excise Tariff in Indonesia

TIP Type	Class of Production	Production Limits (2010)	Production Limits (2017)	2010			2017			2018		
				Retail Selling Price Limit	Excise Taxes	Percentage of Excise Duty on Price	Retail Selling Price Limit	Excise Taxes	Percentage of Excise Duty on Price	Retail Selling Price Limit	Excise Taxes	Percentage of Excise Duty on Price
		(Sticks)	(Sticks)	(IDR/Stick)	(IDR/Stick)	(%)	(IDR/Stick)	(IDR/Stick)	(%)	(IDR/Stick)	(IDR/Stick)	(%)
Cigarette Clove Machine (SCM)	I	> 2 billion	> 3 billion	660	310	46.97%	1120	530	47.32%	1120	590	52.7%
				630-660	300	46.51%						
				600-630	280	45.53%						
	II	≤ 2 billion	≤ 3 billion	430	230	53.49%	820	365	44.51%	895	385	43.0%
				380-430	195	48.15%	655-820	335	45.42%	715-895	370	46.0%
				374-380	155	41.11%						
Cigarette Filter Machine (SFM)	I	> 2 billion	> 3 billion	600	310	51.67%	1030	555	53.88%	1130	625	55.3%
				450-600	275	52.38%						
				375-450	225	54.55%						
	II	≤ 2 billion	≤ 3 billion	300	200	66.67%	900	330	36.67%	935	370	39.6%
				254-300	165	59.57%	585-900	290	66.29%	640-935	355	45.1%
				217-254	105	44.59%						
Cigarette Clove Manual (SKT)	I	> 2 billion	> 2 billion	590	215	36.44%	1215	345	28.40%	1260	365	29.0%
				550-590	165	28.95%	860-1215	265	25.54%	890-1260	290	27.0%
				520-550	145	27.10%						
	II	500 million-2 billion	500 million-2 billion	379	105	27.70%	730	165	22.60%	470	180	38.3%
				349-379	95	26.10%	470-730	155	25.83%			
				336-349	90	26.28%						
	III	< 500 million	< 500 million	234	50	21.37%	465	100	21.51%	400	100	25.0%
							400	80	20.00%			

Source: Ministry of Finance in Indonesia (2019)

Simplification of excise tariff is regulated on Article No. 17, Ministry of Finance Republic Indonesia Regulation No. 146/PMK.010/2017 on Tobacco Product Excise Tariff. The regulation aims to: (i) optimize the income of tobacco excise; (ii) enforce the obedience of tobacco product producer and importer; and (iii) simplify the administration system of excise. These three aims are expected to facilitate government in overseeing cigarette circulation and to make a cost efficient system, such as: suppresing excise tape cost, facilitating easier market operations, reducing fraud in excise payment, as well as increasing administration effectiveness in cigarette excise tax.

3.2. Producer Responses on Cigarette Excise Policy

Prior to the estimation, author observes the producer behaviour in responding the cigarette excise policy reflected on ceiling Retail Selling Price (RSP). Observation result indicates two strategies of Market Transaction Price (MTP) applied by tobacco industries, which are: (i) establishing MTP above RSP, which generally used by large company; and (ii) establishing MTP under RSP, which generally used by medium and small company.

Essentially, the sales price strategy is used by large cigarette company to increase its profit through increasing sales turnover. Figure 2A illustrate the strategy of establishing MTP higher than the RSP appointed by the government, where the RSP, set in Rp937,- per stick, creating cigarette demand as much as 'A' stick. It turns out that large scale companies are responding it by assigning MTP as much as Rp1.120,- per stick. Certainly, the producer expect an increase in cigarette sales volume by 'B'. For large scale producer, this strategy can be interpreted as an instrument to limit new competitor. On the other hand by establishing MTP below SRP, small and medium producers also aim to increase their profits by increasing sales value, rather than increasing sales volume. Figure 2B illustrate the strategy of establishing MTP below the government stipulated RSP. This strategy

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actually reduce the volume of cigarette sales. However, its sales value is increased, reflected in the rectangular area illustrating the the multiplication results between the cigarette price and the sales volume.

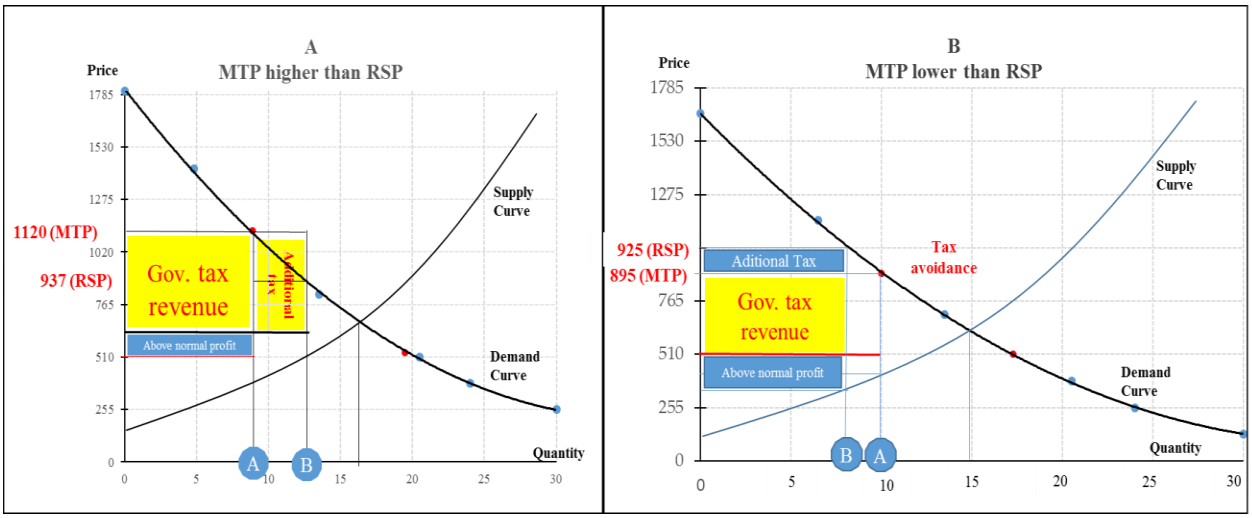

Figure 2. Cigarette Industries Responses on Excise Policy
Source: Illustration of Primary Data Analysis Result (2019)

3.3. Consumer Responses on Cigarette Excise Policy

Consumer responses to cigarette excise policy can be found from two analysis: (i) consumer smoking participation; and (ii) consumer smoking intensity.An individual decision to smoke is determined by their income and cigarette price. In accordance to the obtained result in Table 2, an increase in income tends to encourage an individual to smoke, while increase in cigarette price tends to discourage an individual to smoke.This results is quite reasonable since individual income reflects purchasing power. An individual purchasing power is increasing if his/her income is rising higher than than the rise of cigarette price or the cigarette price is constant. The increase in purchasing power can be illustrated from Figure 3 that shows the probability to smoke shifted from point D. While the decrease in purchasing power can be indicated from the shifting smoking probability from point D to point C, under the condition that cigarette price is constant.

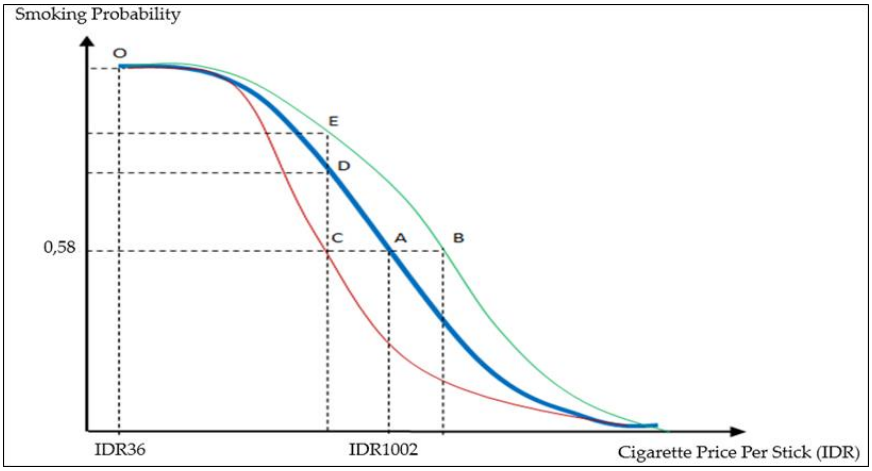

Figure 3. The Correlation between Price and Smoking Probability
Source: calculated by the authors

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Meanwhile, the cigarette price per stick reflects the individual Willingness to Pay (WTP). WTP is said to be increased if the price that must be paid is smaller than the Ability to Pay (ATP), and vice versa. This increasing WTP can be illustrated from the shifting smoking probability, from point A to point D due to price effect. On the other hand, decreasing WTP is reflected from individual smoking probability that shifted from point D to point A.

Moreover, the estimation of cigarette consumption is explained in Table 2, and ilustrated in Figure 4. The existing condition of cigarette consumption is also determined by consumer income and cigarette price (see Figure 5).

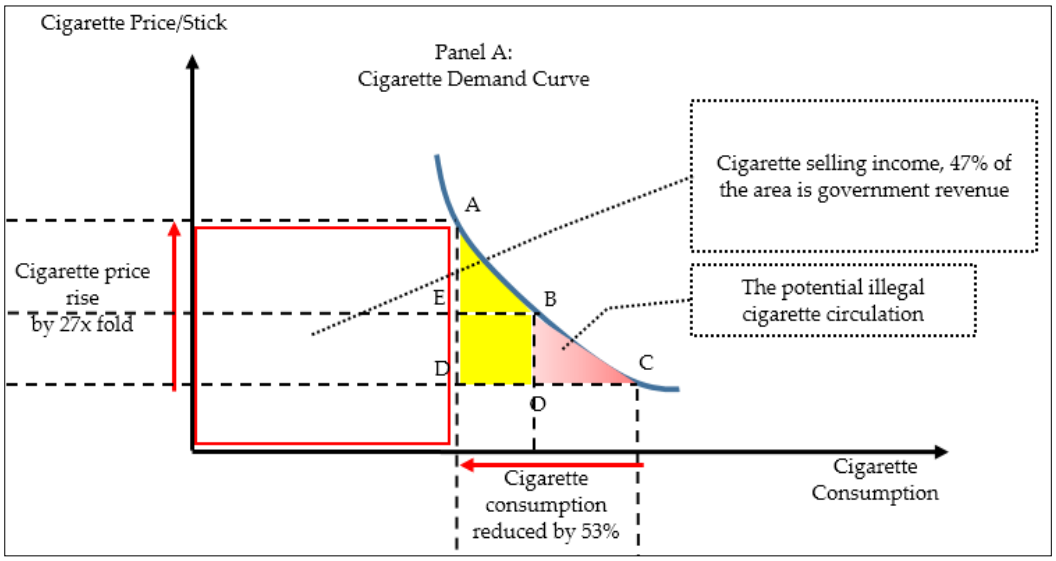

Figure 4. Correlation between Cigarette Consumption and Price
Source: calculated by the authors

Overall, it is known that every increase in cigarette price tends to decrease cigarette consumption. However, the percentage of cigarette price increase is higher than the percentage of cigarette consumption decrease, indicating that cigarette consumption curve is inelastic. In accordance to Figure 4, if the cigarette price has reached point A, the decrease in cigarette consumption become smaller, even remains the same (consumption curve become vertical after point A). Moreover, there is a tendency that higher cigarette class will have higher elasticity; or realtively, cigarette consumption become more responsive towards cigarette price.

Equation 1 in Table 2 indicates the role of factors affecting people's decision to be a smoker. In the equation, every increase of household income causes an increase in one's tendency to be a smoker. Conversely, increase in the price of cigarettes reduces a person's interest in becoming a smoker.

Meanwhile, equation 2 indicates the amount of cigarette consumption, where the potential consumption of cigarettes is estimated to be around 14.25 billion cigarettes per week or 684.23 billion cigarettes in 2017. Cigarette excise tax policy in 2017 makes the average cigarette RSP of IDR1002 per stick, with a consumption level of 316 billion sticks. Thus it can be interpreted that the cigarette excise tax policy can reduce about 53% of the total potential cigarette consumption.

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Table 2. Result of Estimation

Equation 2 (Amount of Weekly Cigarette Consumption)	**Coefficient**	**Std. Error**	**P > z**
Dummy of smoking decision = 1; 0 for the other	14.2549	1.9078	0.000
Cigarette price per stick	-0.0181	0.0025	0.000
Dummy of cigarette price for Class I = 1; 0 for others	-0.1429	0.0026	0.000
Dummy of cigarette price for Class II = 1; 0 for others	-0.1672	0.0030	0.000
Dummy of cigarette price for Class III = 1; 0 for others	-0.3023	0.0049	0.000
Weekly Income Per Capita	8.9909	0.1981	0.000
Dummy of low income = 1; 0 for the others	0.00007	0.0000	0.000
Dummy of medium income = 1; 0 for the others	0.00002	0.0000	0.000
Constant	171.6626	1.3794	0.000
Equation 1 (The Probability of Smoking)	**Coefficient**	**Std. Error**	**P > z**
Average cigarette price per stick	- 0.8268	0.0825	0.000
Cigarette price per stick	- 0.6919	0.0816	0.000
Dummy of cigarette price for Class I = 1; 0 for others	- 0.6482	0.0817	0.000
Dummy of cigarette price for Class II = 1; 0 for others	- 0.8307	0.0818	0.000
Dummy of cigarette price for Class III = 1; 0 for others	0.4373	0.0090	0.000
Weekly Income Per Capita	0.0220	0.0019	0.000
Dummy of low income = 1; 0 for the others	0.0454	0.0011	0.000
Dummy of medium income = 1; 0 for the others	4.3319	0.1719	0.000

Source: calculated by the authors

The estimation results in Table 2 above can be illustrated in four curves. Figure on panel 5A illustrates the cigarette demand curve. Figure on panel 5B illustrates the relationship between one's decision to smoke and the intensity of cigarette consumption. While figure on panel 5C is the probability curve of person's interest to become a smoker, and finally, figure on panel 5D is a reflection curve of cigarette prices which serves as an explanation of the relationship between the probability curve and the intensity of cigarette consumption. There are three interesting findings based on the illustration in Figure 3, which are:

1. The policy of increasing cigarette excise tariffs is actually less effective in reducing cigarette consumption. Figure on panel 5C shows that the highest existing RSP is Rp1.002 per stick, with a probability level of 0.58, meaning that at the existing average RSP the probability of households to become smokers is 58%. Thus, any increase in cigarette excise will reduce the interest of household members to smoke. However, Figure 5A indicates that the demand curve for cigarettes with RSP above Rp1.000 per stick is close to a perfect inelastic. That is, any increase in cigarette prices will not significantly reduce cigarette demand.
2. The policy of increasing cigarette excise tariff is very effective in increasing governemt revenues. Figure on panel 5A shows that the gross income of tobacco industry before excise is estimated at Rp316 trillion, which is obtained from the multiplication of Rp1.002 with 316 billion sticks. Whereas 47% of the tobacco industry's gross income is government revenue. Moreover, the demand curve for cigarettes above Rp1000 per stick is inelastic, so that any increase in cigarette excise tax rates does not significantly affect the reduction in cigarette consumption, but it has a significant impact on increasing government revenues.
3. The policy of increasing cigarette excise tariff is not effective in suppressing the circulation of illegal cigarettes. Based on SUSENAS data, there are households that purchase cigarettes below Rp100 per stick and while the lowest price paid by consumers is Rp36 per stick. Meanwhile, the lowest RSP stipulated by the government was Rp165 per stick. Thus, the price of cigarettes under Rp165 paid by consumers can be assumed as illegal cigarettes. If so, then the distribution of illegal cigarettes is estimated at 33.8% of the demand for potential cigarettes (OC line in figure on panel 5A), or about 231 billion cigarettes. Thus, increasing excise tariffs has the potential to increase the circulation of illegal cigarettes.

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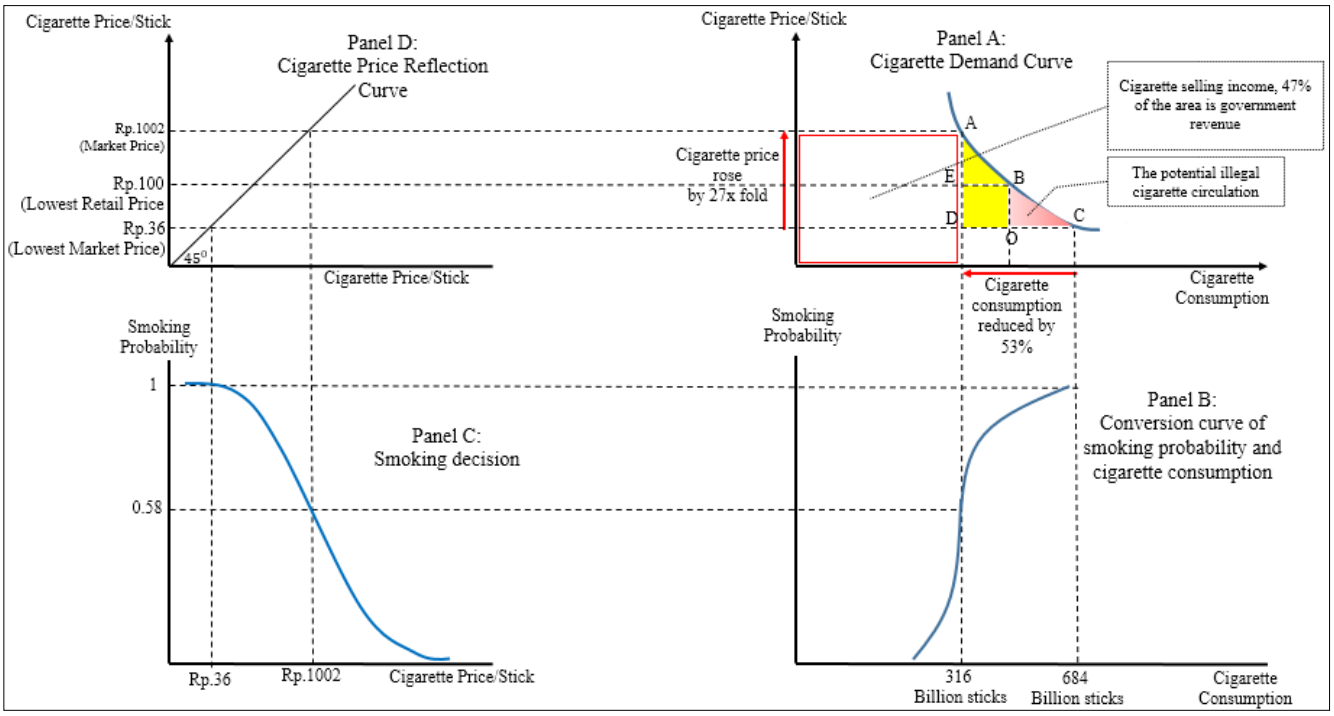

Figure 5. Impact of Cigarette Excise Tariff Policy on Cigarette Consumption, Government Revenue, and Illegal Cigarette Circulation
Source: Illustration based on Logit and Tobit Estimation (2019)

3.3. Who Does Reap the Benefits?

Law No. 39/2007 on Excise mandates that the excise tax policy does not only contain a mandate to limit the distribution of cigarettes. The policy also contains the principle of equality for all parties participating in the cigarette industry (fairness in balance). Therefore, the government is obliged to ensure that the regulations made do not cause distortions which result in an unfair business competition climate. Furthermore, the determination of the excise tax rate is regulated in a ministerial regulation by considering optimizing state revenues and paying attention to industrial conditions and aspirations of industry players. Since 2009, the excise tariff structure was 19 layers and then simplified into 10 layers in 2018, and even planned to be 5 layers left in 2021. Based on the treatment-effect model estimation results, simulation of the cigarette excise structure simplification at unchanged tariff rates was not significant affecting the amount of cigarette demand and government revenue. In fact, this policy actually has a significant effect on the magnitude of the illegal cigarette circulation. With a fixed excise tariffs as in 2018, the planned excise structure simplification in 2019 will result in the increase in illegal cigarettes to 0.06%, or around 4 billion cigarettes. Thus, the tax structure simplification policy has an impact on increasing the circulation of illegal cigarettes.

Furthermore, simulations are carried out under the scenario of delaying the excise structure simplification policy and dividing it into three strata quota, namely:

1. Producer of more than 3 billion sticks cigarette with excise tariffs of 57% of MTP,
2. Producer between 1-3 billion sticks cigarette excise tariff of 50% of MTP;
3. Producer of below 1 billion sticks cigarette with excise tariffs of 35%.

As it turns out, the simulation results with this scenario show that the amount of illegal cigarette distribution has decreased by 0.9% or approximately 6 billion cigarettes. Furthermore, cigarette consumption decreased very little,

which was less than one million cigarettes, while state revenues experienced an increase of around 20% from 2017.

The policy that refers to this latest scenario has considerations that refer to the fate of the small and medium cigarette industry, especially associated with the role of the industry in absorbing labour. Small and medium-scale tobacco products industry have a large role in creating jobs (Conceição et al., 2018; Nguyen et al., 2020) which means accelerating the inclusive economic growth in Indonesia. Moreover, allowing small industries to be excluded from competition means eliminating opportunities for people who have limited capital to become entrepreneurs (Cooney et al., 2019; Sun et al., 2019), unless the government is able to provide other businesses that are better. The policy of simplifying the excise structure further strengthens the dominations of large industries. In the study of Gilmore, Branston, & Sweanor (2010), in 2009, the five largest cigarette companies in Indonesia controlled 76.10 percent of total sales. While in 2017 refers to market research conducted by Nielsen, the same five cigarette companies increased their share of sales to 88.77 percent. Still referring to Nielsen's data, in 2017, the five largest companies were actually able to sell well above the average production limit of 38.55 billion. On the other hand, the number of cigarette factories in 2012 amounted to 1320 units and continued to decline drastically to 754 units in 2016. Considering that cigarette entrepreneurs, especially small-scale businesses, currently have mobilized all their capacity to develop tobacco businesses, the government needs to be responsive and solutive in making policies that are able to solve the problem of the small and medium cigarette industry (including aspects of the factors of production).

Conclusion

Simplification of excise has hitherto not made a significant contribution to the creation of a "fair" industrial competition climate. Based on these facts, there are indications that small industries are increasingly pressed while large companies are increasingly enjoying abundant profits. That is, the policy of simplifying the structure of cigarette tax rates in Indonesia has not shown a more "fair" business climate improvement. If so, the formulation of excise policies must be addressed carefully. In order to create "fair" business competition, the government must continue to accommodate the interests of small industries for two reasons. First, the small and medium scale cigarette industries plays a large role in the absorption of labor, compared to large scale industries. Second, we must understand that small scale cigarette entrepreneurs do not have much better choices to switch to other businesses. The simple reason is that they have already turning all the capacity and skills in the cigarette industry. So that it is unfair for the small scale cigarette industry if they has to fight with the top five cigarette industries.

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CONFIGURING THE SUSTAINABLE STRATEGY OF INTERNET CAFE IN YOGYAKARTA, INDONESIA, TO REMAIN POPULAR IN NOWADAYS*

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Abstract. This paper deals with examining through analysis of the sustainable strategy of internet cafe to remain popular in nowadays. This research aims to examine the case study of the two internet cafe business chains in Yogyakarta, Indonesia. In particular, previous studies about internet cafe highlighted local and global consumption which relied on internet connection. Here this paper provides the discovery that consumers use internet connection only as a complement in the internet cafe. Besides, this paper considers that shifting an image for internet cafe is very important. This research applied the interdisciplinary approach. To conduct the research, the authors employed several methods: observations in the period of January to June 2018, in-depth qualitative interview with managers and consumers for supporting the analysis. The results of this paper indicate that internet cafes in Yogyakarta are successful in creating a strong local brand. They created line product categories with the concept of internet cafe regarding internet services as a place for hangout, co-working space, high-speed wifi connection, and access to almost all digital content provided free of charge. The role of global strategies is adopted to build a strong brand. It can be seen that the impact on customers who have a positive perception to gauge the benefits of internet cafes. The intersection between global strategy, standardization, and adaptation is an effective strategy to increase the sustainability development of internet cafe nowadays.

Keywords: Indonesia; internet cafe; sustainable strategy; warnet; Yogyakarta

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1. Introduction

Internet cafe first appeared in 1985 in Santa Monica, California under the term "Electronic Cafe Network Project" as part of the Olympics festival Arts in Los Angeles (López-Bonilla et al, 2016). It was a non-profit project in supporting online collaboration and cultural research to develop into an international cultural research laboratory with more than 40 affiliates worldwide as Electronic Cafe International (Hanley 2002; López-Bonilla et al. 2016, p. 15). Only in 1990, internet cafe established in several cities of the world as a business that allowed people to rent a computer for internet access (Mancebo 2003; López-Bonilla et al. 2016). In 1994, a new phenomenon emerged with the presence of the first internet cafe, called Cyberia in London as a public space provided with computer and internet access, and a cafe (Liff & Laegran 2003; Mutula 2003; Laegran 2009).

In the Indonesian context, since 1996, internet cafe was commercialized also as a place to access the internet, but we called it as *warnet* (local term in Bahasa Indonesia). Not less than 1996, in Indonesia, especially Yogyakarta, the internet had been open access and marked with banners (Hill & Sen 1997). The internet at that time had transformed in a unique way in Indonesia through the structure of local power to access information (Lim 2003a) even with slow, unreliable, and inefficient internet speeds (Hill & Sen 1997).

In 1995 until the end of 1999, *warnet* increasingly developed and became a high-tech home industry. This also affected the ownership. At first, the ownership of *warnet* was owned by individuals, then, individuals also owned a small *warnet* business chain in a city (Hill & Sen 2007). *Warnet* with the jargon "making the internet widely available for everybody, especially students" and "everything is provided here" succeeded in attracting consumers, especially students, and providing all their needs (eg printing machines, CDs, and scans). This corporate-owned *warnet* had succeeded in forcing some individual-owned *warnet* to shut down (Lim 2003b).

However, it is a common opinion that the internet cafe business is becoming old-fashioned technology because of the increased use of mobile technology that is cheaper and globally accessible (LeBlanc & Shrum 2017). This case is the same as the situation in Indonesia. The chairman of the Association of Indonesian Internet Cafes (AWARI) said that one of the causes of the decline in the popularity of *warnet* visitors because consumers were moving to use smartphones for internet access. On the other hand, internet subscription and the price of internet devices were increasingly cheaper. This affected the decline of *warnet* visitors in big cities (Karina 2011). However, that condition makes some *warnets* need to adapt if their business wants to thrive in the onslaught of mobile internet connections.

Therefore, to deal with the declining popularity of *warnet*, the internet business in Yogyakarta had changed from the form of *warnet* to internet cafe, including vast improvements in physical settings such as infrastructure, location, facilities, cafe presence, wifi coverage, and standardization branch. Borrowing terms from Chawla and Behl (2006), this type of internet cafe can be classified as the branded segment, which is a big player which creates a chain of internet cafes with certain standards and owned by corporations. This strategy was applied by the owners to thrive and to remain popular among consumers nowadays in Yogyakarta.

Nevertheless, the changing form of *warnet* did not automatically become an internet cafe, but there was also a contribution from global flow, such as design, cafe ambience, and infrastructure from internet cafe around the world. They (the owners) adopted the design for changes in the sector of infrastructure and cafes, but also in the sector of culture that was domesticated by the touch of local culture. By late 1997, the *warnet* changed using the concept of internet cafe and still thrived in 2019 by owning several branches of the internet cafe business and creating a strong brand in leading an internet business. In other words, there was a business extension, including the spread of several branches that contributed to determining regulation, price, facility, and to create an

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expansion of consumption patterns. To address the issue, this research discusses how the sustainable strategy is effectively applicable for the internet cafe to remain popular among people in Yogyakarta nowadays.

2. Research Methods

To do this research, the authors employed qualitative description methods from several paths to gather the data: observations, qualitative in-depth interviews (Pickering 2008) with managers, and qualitative in-depth interviews with consumers for supporting the analysis. For observations, a participatory observation was done in several internet cafes in Indonesia. We conducted this observation by becoming one of the consumers from January to September 2019. Data obtained from participant observations in the field were the overall technology offered, visitor activity, documentation, facilities, infrastructure, and the service system. Around 39 internet cafes around some big cities in Indonesia were selected by using purposive sampling. The samples were based on mapping internet cafes in some cities in Indonesia using Google maps by considering the review, popularity, and facilities provided. Those cities are West Java (Jakarta (8), Bogor (3)), Central Java (Semarang (4)), Bali (Denpasar (8)), East Java (Surabaya (2), Malang (2)), and Yogyakarta (12).

From those observations, we had found several criteria that finally made us decide as to why we chose Yogyakarta as a research location. Most internet cafes that we have visited (outside of Yogyakarta) have outlines of similar settings. Those are:

- internet cafe that provides a fast connection
- only focus on providing computers for online gaming purposes and supported by manufacturing company (such as Nvidia, Digital alliance, Team, etc.)
- computers supported by graphic cards and high processors to support online gaming or ESport (electronic sport).
- provision of hourly play package system based on computer specifications, the comfort of the chair, keyboard, mouse, and headphones.
- on the walls are usually displayed a background or poster of characters of a particular game.

We argue that the physical settings and atmosphere built for such internet design can be said to be more biased to an inevitable masculine dominance. Several studies support this finding that this kind of internet cafe provides facilities for male users in playing online games, such as Beavis and Charles (2007); Binark et al. (2009); Kristiansen et al. (2003); Laegran (2009); Liu (2009).

Based on the findings above, we find that the physical settings of the internet cafe in Yogyakarta are very different. We argue that most of the internet cafes in Yogyakarta are not like some cities in Indonesia which focus on creating an image of internet cafe for playing online games. Thus, this kind of internet cafe highlights online activities, where users need a high specs computer for being able to run certain online games. In contrast to this, an interesting finding of internet cafes in Yogyakarta is that consumers do not visit this place to use internet connections. Some of their online activities can be said only used to support offline practices. They create different needs for consumers when visiting an internet cafe.

Therefore, this research is limited to examine research objects on internet cafes in Yogyakarta. As we exposed earlier, we have found that internet cafes in Yogyakarta can be categorized into two chains of a branded segment of internet cafe. That list can be found in Table 1. Thus, we investigate these two chains as a case study. We present this case study, not in the realm of generally representing internet cafes in Indonesia, but it is intended to investigate what their effective strategies. Generally, these chains have the same physical settings, but they indirectly provide a variety options to consumers.

For this case, the novelty of the research method presented in this paper is this research applied the interdisciplinary approach to examine the sustainable strategy of internet cafe. This dynamical approach helped us

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to identify key factors in investigating why internet cafe thrives in mids of mobile technology. We consider the shifting of brand purpose and consumers' perception as elements of the study, including the physical settings. The data are supported by in depth-interview with consumers to qualitatively assess the application of the strategies adopted by managers as regulators of the business. We also applied random sampling for choosing the informants as the customers of these groups. The list of informants can be found in Table 2. In fact, to date, no research applies this method to study an internet cafe. Then, qualitative analysis helps to identify effective strategies implemented by an internet cafe to challenge the ubiquitous mobile technology nowadays.

3. Results

In this section, we present two chains of internet cafe which representing internet cafe in Yogyakarta. We do not pretend to distinguish these chains. Both represented the historical background of the existence of *warnet* and transformed into an internet cafe.

Based on interviews with manager group A, the embryo of the internet cafe in Yogyakarta started from its branch center, namely *warnet* A1 in 1996. In the following year, *warnet* A1 converted to apply the internet cafe concept by providing other facilities compared to an internet cafe in general, for instance, the availability of multimedia content (such as movies, mp3, antivirus, and softwares) and the existence of small spot for selling snacks and beverages.

Starting in 2000, group A built six branches that are spread out in almost bustling centers in Yogyakarta. In Indarti's (2004) research about internet cafe, the location of internet cafes that are close to schools, universities, or security forces has a positive impact on the internet cafe business. One reason is that they target students as a potential or niche market. Followed by group B, they built their first internet cafe in 2006 based on the crowded precedent of group A in the Northern area of Yogyakarta, because group A in that year only focused on the South area. Table 1 shows the branch list of internet cafe business chains in Yogyakarta. Group A has seven branches and B has four branches.

As producers, these chains create a new need or we call it as *a gigabyte need* (Wibowo, et al., 2020). This need covers digital contents, such as antivirus, MP3 songs or video clips, movies, series, TV shows, software, games, various e-books, and comics. They have their own team to always update these digital contents. The availability of that contents is free access for consumers. Furthermore, the added value of an internet cafe is a concept that combines places that provide internet access and cafe atmosphere. Physically, the internet cafe building is also built more modern to provide convenience for costumers. Thus, it answers the question of why *warnet* transforms into internet cafes, which is to keep costumers coming back as loyal consumers facilitated by several features and considering space as the expansion of consumption patterns.

Table 1. Internet cafe business chains and branches

Group A	Established in (Year)	Group B	Established in (Year)
A1	1996	B1	2006
A2	2000	B2	2009
A3	2007	B3	2010
A4	2009	B4	2016
A5	2009		
A6	2010		
A7	2013		

Source: Authors

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Both groups A and B have the same concept in creating the image of the internet cafe. They have the same format as well, namely the cubicle room and free space. A cubicle room is a space that provides a computer surrounded by booths or walls, while free space is a space designed for consumers who only want to enjoy the cafe's atmosphere as a modern hangout, high-speed wifi connection, comfortable sofa and work desks, and music in the background. This free space does not exist in a *warnet*, but it comes from the adoption of physical settings of internet cafes outside Indonesia.

Last, for supporting the data, the authors argue that consumers' perception will illustrate the success strategy of the internet cafe to thrive. The in depth-interview with informants will help the authors to understand deeper the position of internet cafe in consumers' life. Nevertheless, the authors believe that the data in Table 2 are dependent on the geographical location of each branch. But for internet cafes that have a business chain have predetermined standards (Chawla & Behl, 2006). In other words, there is no standard difference in facilities and experience offered by all branches. That is why, this research only focuses on the micro case study of the sustainable strategy of internet cafe which supported by consumers' perception.

Table 2. Profile of subject

Number	Code of subject	Education	Perception	Use of Internet cafe (Group)
1	A	Post-graduate	I think that I was more comfortable coming to the internet cafe and lazy to come back to the era of *warnet*. I think that internet cafes can offer thousands of digital contents (Korean and Hollywood movies and series) that can be accessed for free.	A, B
2	B	Post-graduate	Internet cafe is a cool place to update references for my job as an illustrator, because it provides animations that are difficult to be searched on the internet, such as silent animation and animation from France. I can also copy a variety of movies as entertainment in my boarding house.	A, B
3	C	Post-graduate	Internet cafe provides access to movies that I cannot watch in cinema or movies that I want to watch again. In addition, I can to copy various movies and serials.	B
4	D	Post-graduate	Internet cafe became a shortcut to access American serials. We do not need to download it, but just copy it on our hard drive.	A
5	E	Undergraduate	Internet cafe is a place like one-stop entertainment for unlimited access to various movies, especially box office movies and local movies.	A, B
6	F	Post-graduate	Internet cafe provides a modern and aesthetic place to hangout with my heartthrob to watch movies. In addition, I can access movies immediately without wasting my time to wait.	B
7	G	Undergraduate	Internet cafe has become a place that always leads to a nostalgia for accessing movies for free. I often go to there to copy movies and animation for my niece at home for family time.	B
8	H	Undergraduate	Internet cafe is a paradise for people to copy all Korean series. It is a comfortable place for the community to update Korean serials.	B
9	I	Undergraduate	Internet cafe provides game and software installers. I can install them on a computer at home. I do not have to wait long time and spend my quota when accessing them.	A
10	J	Undergraduate	After work, I usually go to internet cafe. I can copy the title of several movies in there for entertainment in the boarding house.	A

Source: Authors

Table 2 shows a summary of the general perception of all informants. According to John Urry (1995), a place is culturally constructed. Implicitly, the internet cafe is not a neutral place (p.2). An internet cafe business chain has been able to circulate images of internet experience as standardized and transferable, because the chain gives

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economic and cultural impact on internet public access (Wakeford, 2003). Internet cafe as a place is constructed and designed to attract customers, not only to access the internet, but also the space provided and the availability of cafe, including air-conditioned rooms, two stereo headphones, 24-inch LCD monitors, full music, sofa for two users, and the existence of prayer room, this space makes easy for some customers to worship. The existence of space that provides comfort makes customers feel at home to spend more time here.

In the addition to "consume" space, customers also consume the digital contents provided in their database for free. The space and digital contents have obscured customers with high prices that have become 'reasonable' for a one-hour access bill there. For an instance, a one-hour access bill in an internet cafe is 7500 IDR or 0.54$ (2018), very different from *warnet* which is only around 3000 IDR or 0.21$. Thus, this description is parallel with the customers' perception. It can be argued that there is a more detailed consumption practice in an internet cafe, namely the consumption of space and digital content.

4. Discussion

We begin the analysis of the results considering the transformation from *warnet* to internet cafe. Both groups provide a new level of consumption practice. First, the synthesis of previous studies in Table 3 illustrates that the internet cafe's space becomes a consumption site for customers. Several indicated words such as 'physical design', 'the existence of cafe', 'translocal images', 'domestic equivalent', and 'social space' contribute to the understanding that space has an important role to be on of the important elements of internet cafe. Therefore, we provide synthesis metadata or a critical interpretive synthesis of literature (Dixon-Woods et al. 2006; Wang et al., 2018) from previous studies about internet cafes around the world. This result can be seen in table 3.

Table 3. The previous internet cafe research

Author	Context	Theme Contribution
Lee (1999)	South East England	• Internet cafe provides internet access in public spaces that are almost the same as the domestic equivalent or home. • Internet cafes become a social place and a place to provide a public identity with fashionable and hyped technology.
Wakeford (2003)	England, London	• Internet cafe in a business chain provides a fundamental impact on the standardization of experience offered. • Internet cafe emphasizes the importance of physical design, making allies with fast food outlets for their cafe and advertised on their related brands on-screen. • There is less privacy when customers use a computer because the computer screen is visible for others.
Lægran & Stewart (2003)	Scotland and Norway	• There are a translocal images to offer a variety of internet cafe usage based on different interests, such as trendy, healthy, and nerdy. • Each of the internet cafes has its own criteria offered, for example, internet cafes for socialization with healthy food (healthy), game center (nerdy), or trendy interior / modern look (trendy).
Hyde-Clarke (2006)	South Africa, Johannesburg	• Internet cafe becomes a destination for people with lower income to improve local skills and knowledge of the benefits of ICTs used. • Internet cafes are dominated by male customers, where the main goal is to search for female companionship.
Räisänen (2006)	China, Shanghai	• Internet cafe has an image to be a center for certain uses, such as suburban gaming center, entertainment center, or cool time killer for spending time • Internet cafe emphasizes more on the orientation to entertainment, gaming, and socializing. • In engagements with a foreign culture, customers are almost youth. There is a process of negotiating identities, such as trendy and modern urbanities.
Laegran (2008)	Norway	• Internet cafe offers an urban atmosphere for playing games and as a social space. • There is a separated space but still in one room. They separate the cafe and a game

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		corner in the corner which is separated by a wall
Binark et al. (2009)	Turkey, Ankara	• Internet cafes offer several popular games and customers can sometimes earn money from the game. • Customers use internet cafe as a place to socialize offline and online.
LeBlanc & Shrum (2017)	Ghana, Accra	• Internet cafe as public internet access is not affected by the diffusion of mobile devices. • Internet cafes are not in a period of growth, but rather adapt to the added values of traditional business, such as making a game center or conference call center.

Source: Authors

From Table 3, in particular, the identification of the material and physical setting of internet cafe is based on the internet connection, the existence of the cafe, and the computer itself. Table 3 has highlighted that the center of consumption in an internet cafe and the existence of cafe rely on local consumption and virtual consumption which refers to global consumption that made possible through an internet connection, for example, online activities such as checking email, online shopping, online transactions, searching information, and playing online games. Here we report the discovery that can be said to be different from previous studies related to image formation introduced by internet cafes in Yogyakarta.

As stated by manager group A dan B, they affirmed that the existence of the cafe is intended to provide flexible access for consumers, especially in the current era, consumers prefer to come to bring their laptop and require high-speed wifi access. Internet cafe has free space to provide comfort such as work in a group or working space, doing assignments, social place, meeting, and spending time to play a game using a smartphone, because the majority of customers are targetted towards university students. As the manager A said, the cafe (free space) was originally only a complement of cubical rooms and may only have a 30% market, but now (2018) it has reached 60% and 40% for cubical rooms.

Next, in cubical rooms, we found different activities with the past results from previous studies, namely the internet cafe as a place to socialize offline and online. In our case, the authors did not find that relationship between offline and online or playing online games on a computer, but customers merely focus on the screen to access digital contents. All internet cafes provide digital contents on the local server, host-to-host. It needs to be understood in the context of the practice of copying digital content; consumers duplicate (copy and paste) digital content from the local server or databases to consumers' devices (hard disk). Some categories of digital contents stored in databases are various, such as antivirus, mp3 or video clip songs, movies, drama series and TV shows, software, games, e-books, and comics. This condition suggests the fact that the internet connection in internet cafe is not merely essential or as complement because consumers use the internet are only used to support offline activities. The internet is only used to search movie references in Google Search. The customers only prefer to check email, chatting, and play online games through their smartphone or laptop. This fact can be indicated that the hard disk becomes an important property for customers when visiting internet cafe. Most of the new generation tends to access entertainment, especially watching movies. They prefer to stream and download movies (Tirto 2017). We should refer to 'Popcorn Time', whereby consumers are faced with an easy, free, and simple to access millions of digital contents on a torrent (peer-to-peer file sharing access), pirated television shows, and movie files that are freely accessible to streaming with a variety of subtitles through consumer-owned screens (Strangelove 2015). In this paper, digital content is the key factor where computers in internet cafes are still popularly accessed by consumers. They create a giga byte need.

In that case, there is a commodification process. Commodification is a transforming process from use-values for marketable products into exchange-values (Mosco 2019). The practice in copying digital files has implications that something new can be explored. If previous studies mention that the billing is based on online activities, the

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billing precisely will be forged in the activity of copying digital content from the local server to customers' harddisk. Digital contents that are provided free of charge give an impact on the length of time computer access.

Local Narrative to Incrase Customers Engagement: Adopting Global Strategy

Compared with cafes in general (e.g. Starbucks), all managers said that to differentiate from a cafe, they provide foods and beverages that are almost the same as the menu at the cafe but with cheaper price supported with a faster wifi connection. This narration leads to different context with the study from Venkatraman & Nelson (2008) and Grinshpun (2018), they explore the transformation of consumption patterns in Starbucks from servicescape to consumptionscape. Yet, this kind of cafe emphasizes the physical designs to provide material for consumptionscape created by consumers for private experience. If Starbucks is a part of the role of global chains that is adapted to local culture (glocalization), in this research, we argue that internet cafe in Yogyakarta has adopted the distinctive global characters and domesticated to build a new local brand.

Brand image engages the consumer audience to give their trust to buy a product or service. Thus, a brand succeeds to give a meaningful experience that will determine the loyalty of consumers and give share values from their experiences (Wijaya, 2013). Today, a great product is not enough to attract consumers to buy (Kapferer 2008; Wijaya et al. 2016). A brand has to apply development strategy by maximizing resources to support business development in adding value to entrepreneurship (Wijaya 2013; Wijaya et al. 2016). A brand is a tool that is integrated with the product or service offered. A brand is also a differentiate tools through values (tangible and intangible) (Kapferer 2008).

In this context, the two internet cafe business chains try to create a strong brand in the local area. They created line product categories with the concept of internet cafe as a place for hangout, co-working space, high-speed wifi connection, and access to almost all digital contents provided free of charge. However, groups A and B have different goals in determining niche markets. Group A offers more values to focus more on developing the concept of an internet cafe as an internet learning cafe that seeks to adapt university students' inclination to use this space as a learning space. While group B emphasizes access to watch more premium movies and serials, which presents Netflix video streaming without additional subscriptions or payment when accessing a computer.

However, the difference in the target market helps groups A and B distinguish themselves. In addition, they adopted the global strategy of the internet cafe business chain to be adapted and applied locally. The effectiveness of this strategy gives an impact on customers. It can be seen in Figure 1; we try to give an illustration about consumers' perception toward the difference between *warnet* and internet cafe. Customers have a positive perception when they visit internet cafe and tend to avoid visiting *warnet*. They prefer to visit one place that can provide coziness and flexibility to do various activities. The authors agree with (LeBlanc & Shrum 2017) that internet cafe business in the current era is not in the realm of growth, but adaptation. They adapt to the development of mobile technology and changes in consumers' behavior.

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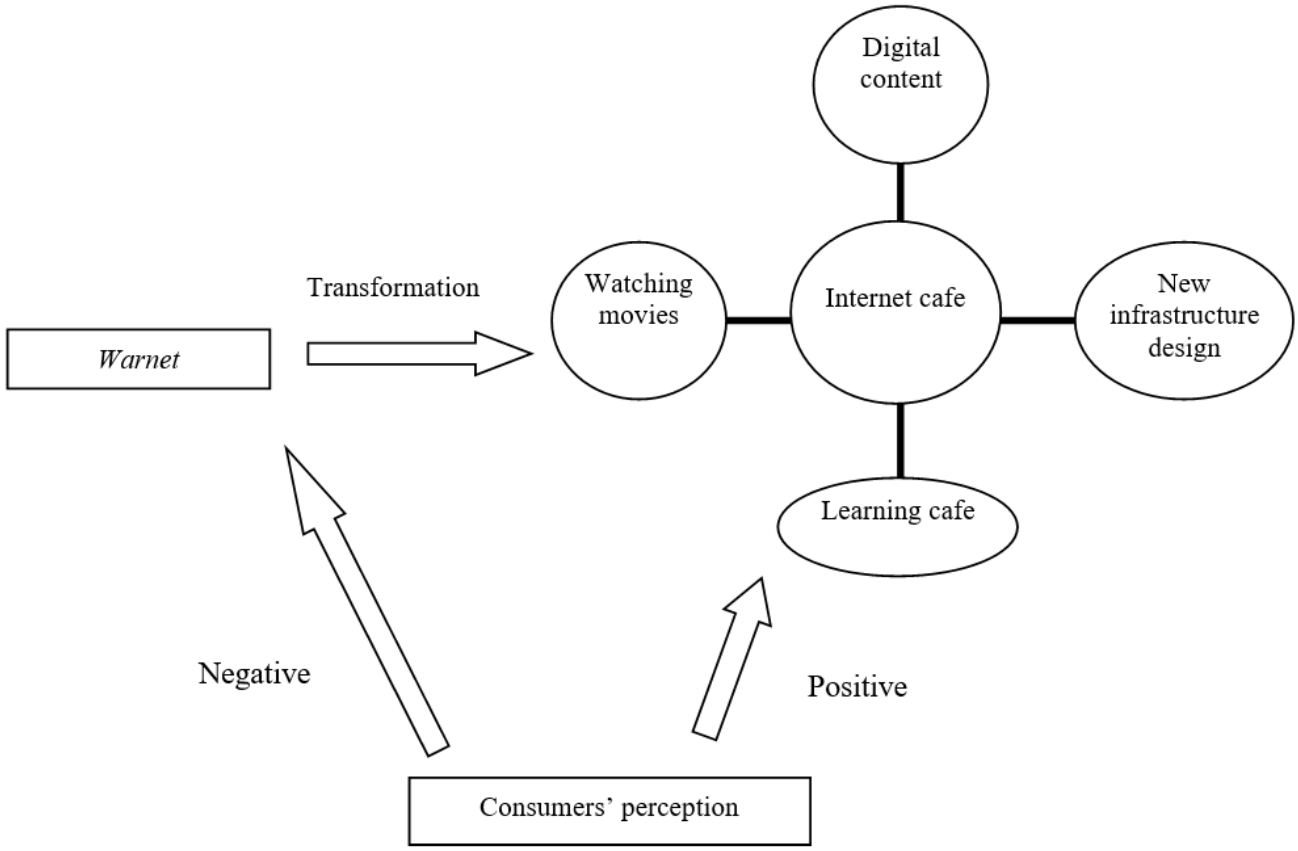

Figure 1. Reconstruction of the design of internet cafe
Source: developed by the authors
(based on interview data with managers and informants)

The purpose behind theming is for marketing purposes and businesses to increase sales, add value, and sell at a high price. This theming strategy tries to create a memorable experience and unique experiential value, to differentiate the services offered to consumers, and to compete in an increasingly crowded market (Åstrøm 2019). In other words, what is being sold now in internet cafe is not only services that are provided, but also but also as a place where consumers are able to create meaningful experiences when visiting internet cafe.

The development of internet cafes in Yogyakarta has survived by adopting the global strategy of physical settings of internet cafe, in terms of infrastructure and facilities and domesticated to local culture and target market. This condition gives the flexibilities for consumers to create his/her meaningful experience. A key to understanding internet cafes in this paper is that internet cafes in a particular city can thrive and be popular, because they construct new consumption sites that are standardized through their branches. Thus, they can maximize not only the business revenue through their value, but also cultural impact on the internet public access in that city.

Conclusions

This research shows that sustainable strategies employed by internet cafes in Yogyakarta are successful in building a strong local brand. It has been proven to raise an effective impact on customers who have a positive perception to gauge the benefits of internet cafes. Customers also have an awareness that they visit internet cafe

for hangout, doing assignments, meeting, or copying digital contents. In conclusion, internet cafe in this research is not in the realm of growth but adaptation. In line with the sustainable strategy implemented by both internet cafe business chains in Yogyakarta, they adopted the role of global strategies to develop in terms of infrastructure, cafe ambience, design, translocal images and facilities. In addition, internet cafes also create the expansion of consumption patterns through the presence of digital content provided on their local servers. It is parallel with customers' behavior as a young generation that has easy access and feature-rich interface to access digital contents (movies) and serials through their mobile-screen. Therefore, to be able to thrive and to remain popular in nowdays, the intersection between global strategy, standardization, and adaptation is an effective strategy to increase the sustainability development of internet cafe.

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DETERMINANT OF REGIONAL DEVELOPMENT BANK EFFICIENCY FOR THEIR SUSTAINABILITY ISSUES

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Abstract. Banking efficiency is the main factor that needs to be considered in creating banking competitiveness. This study aims to determine the efficiency of the Regional Development Banks (RDBs) in Indonesia. There are around 26 RDBs throughout Indonesia, however, due to the completeness of the data as the main criteria of this purposive sampling research, this study includes 19 RDBs in observations. This study adopts a quantitative analysis with multiple regressions. There are only 2 variables that significantly affect efficiency, namely the Operational Cost to Operational Income (OCOI) variable and the Loan to Deposit Ratio (LDR) variable, and the other variables do not have any significant effects on the efficiency. In general, the dependent variable can be explained simultaneously by the independent variables around 95%, and the remaining 5% is explained by other variables outside the model. Since only 7 RDBs are efficient, then it is necessary for the management of those banks to do hard effort to maintain efficiency and keep on as sustainable banking in this competitiveness era.

Key words: Efficiency; Regional Development Banks; Operational Cost to Operational Income; Loan to Deposit Ratio

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JEL: G20, G21, H21

1. Introduction

Indonesia has some kinds of commercial banks viewed in terms of ownership, namely Central-Government-Owned Banks or State-Owned Banks (SOBs), Provincial-Government-Owned Banks or Regional Development Banks (RDBs), National Private Banks (NPBs), Foreign-Owned Banks (FOBs), and Joint-Venture Banks (JVBs). All kinds of those banks are treated equally by the Indonesia Financial Services Authority (IFSA) or *Otoritas Jasa Keuangan* (OJK) in terms the compliance with the rules and regulations.

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Regional Development Bank is a commercial bank whose ownership is owned by the Provincial Government in various regions in Indonesia. For instance, *PT Bank Pembangunan Daerah Jawa Timur* (Bank of Regional Development of East Java Province Co.) or *Bank Jatim*, is a bank which its share-ownership is owned by the Government of East Java Province. *PT Bank Pembangunan Daerah Bali* (Bank of Regional Development of Bali Province Co.) or *Bank Bali*, is a bank which its share-ownership is owned by the Government of Bali Province. Similar to other banks, Regional Development Banks (RDBs) are assessed and evaluated by IFSA or OJK as well as their stakeholders. One of the performance measurements assessed is in terms of their efficiency. Banks which have high-efficiency score are presumed as competitive and thought as in demand by the public.

Bank efficiency at this time is still important in evaluating bank performance. Banks that are classified as efficient usually have good performance, because, with efficient bank management, the bank means that it has used the distribution of resources more efficiently than other banks so that the costs incurred are relatively smaller compared to other banks. If the cost of banking services increases it will cause damage to bank efficiency (Berger et al., 2001).

Measurement of efficiency performance in the banking industry is becoming more widely used by banks and banking regulators in the world, given that competition between banks occurs wider not only in certain regions, in certain countries but also in banks operating across countries. Banks that operate more efficiently are considered capable of winning competition wherever the banks operate. Efficiency can also be related to credit composition, such as for SMEs (Berry, Grant, 2004).

On the other hand, financing is the most familiar word in the financial industry because financing is an activity that will generate income and profits for financial institutions. Financing in the banking industry includes services on two conditions depending on the type of business operation. *First*, if a bank operates conventionally, financing means loans or credit. *Second*, if the bank operates by operating Islamic business, then financing means Islamic or Sharia financing, it can be in the form of *mudharaba, musyaraka, murabaha*, and other forms of financing products. The *first* uses the term interest-based in the calculation of income for lenders or banks. Thus, interest rates have become the main instrument for banks as a cost for their financing to borrowers. Meanwhile, the *latter* uses the term *profit-sharing* or *revenue-sharing* in the practice of *mudharaba and musyaraka* financing because the bank provides funds for customers who are considered partners in the business and uses *margin provisions* for *murabaha* cases because murabaha schemes are similar to banks that sell fixed assets such as houses, vehicle, etc. Thus, the margin is similar to sales profit.

This research focuses on RDBs' operations which generally operate conventionally so that the intended financing in this study is the provision of bank loans' facilities to its customers. The financing itself can be in the form of productive loans and consumer loans for borrowers.

Indonesia as a country in the category of emerging economies and middle-income countries is currently continuously carrying out economic development in various sectors both driven by the government sector and by the private sector in the hope that economic development can run sustainably (sustainable development) with conducive economic growth.

Research on efficiency is one of the most developed studies in the scope of financial institution management, especially banking today. The thing that underlies the importance of the research is that the financial industry is a highly regulated industry, where industry players must follow and comply with the rules imposed by policy-makers (financial services authority) and the success rate of a bank will depend on the quality service (service quality) provided. The Financial Services Authority applies strict and prudent rules because banks manage public

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funds, which of course must be protected, while service quality is important given that all banks have relatively similar products, the difference is the quality of service.

Regional Development Banks are a category of banks that are quite numerous and are expected to decrease, as expected by the OJK because OJK feels that the number of banks in Indonesia is already too much. The number of national commercial banks is 115, and some are expected to join with the ideal number of only 50-70 banks. Therefore, through conducting this efficiency research, it is expected that it can provide a recommendation that there are several regional development banks that can be merged because they do not have good efficiency.

This research focuses on Regional Development Banks (RDBs), which are the spearhead of banking in provinces in Indonesia. The efficiency of research with RDBs objects is still very rarely found so it is hoped that the results of this study can contribute to research.

2. Theoretical Background

Theoretically, research on efficiency was initiated by Farel (1957), which was then followed by subsequent researchers from various types of industries. Efficiency research in the banking industry has been conducted by many authors including Fethi et.al (2011), Shin and Kim (2011), Sufian (2010, 2011), Gardener et.al (2011), Kenjegalieva et al. (2009), Yao et al. (2008), Kao and Liu (2004), Drake and Hall (2003), Tvaronavičienė et al., 2018, Firtescu et al. (2019), Siddique et al. (2020). They generally use the financial data of commercial banks in various countries. While efficiency studies with objects of regional government banks are currently rarely conducted.

If we look at it in general terms, RDBs efficiency is part of the company's performance measurement for banking companies. As is known, the performance measure of banking companies can be seen from two sides, namely, financial ratio analysis and frontier analysis. Financial ratio analysis is a measure of financial ratio performance achieved by a bank. Some ratios that are used as a measure of bank company performance include liquidity ratios, capital ratios, problematic financing ratios, profitability ratios, and others.

Meanwhile, to complement the existing analysis, frontier analysis then emerges with a non-parametric and parametric approach to see and compare the efficiency performance of a bank with other banks in the industry. This analysis is very useful for policy-makers in assessing the performance of banks in the industry by looking at which banks operate efficiently and which banks are not yet efficient in their operations. Knowing this, bank supervisors or policy-makers can make treatment to banks that are not yet efficient to improve their performance to be efficient. In addition, the results of this analysis will also benefit the bank's management by taking tactical steps and making plans so that the bank can continue to improve its efficiency.

Efficiency itself can be seen from various types including technical efficiency (technical efficiency), cost efficiency (cost efficiency) and profit efficiency (profit efficiency). Technical efficiency can see how the existing inputs can produce optimal output (output orientation) or with the goal of producing certain outputs, how to use minimal inputs (input orientation). Cost efficiency explains how companies can minimize costs with specific output targets and profit efficiency explains the ability to produce certain profits with minimal costs. This study will use technical efficiency as a basis for estimating its efficiency with a non-parametric approach.

Efficiency with a non-parametric approach is an approach that uses deterministic techniques that calculate how much the level of output productivity and input efficiency that occurs in a company. The deterministic approach can be calculated with a mathematical approach and linear programming. The most popular efficiency calculation technique in the non-parametric approach is the data envelopment analysis (DEA) technique. In addition, the

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parametric approach to efficiency attempts to estimate efficiency based on an econometrics approach that estimates efficiency based on various factors that are thought to influence efficiency.

The concept of efficiency with DEA is closely related to the concept of productivity which is the ratio of the acquisition of output to the input used. Examples of "i" company productivity are as follows:

$$Ratio_i = {}^{\alpha' y_i}/_{\beta' x_i,} \quad i = 1, \ldots, N \qquad (1)$$

y_i is a vector of a number of M outputs and x_i is a vector of a number of K inputs. Then by entering the weights the function becomes:

Maximize α, β: $\alpha' y_i / \beta' x_i$ (2)
With the condition $\alpha' y_s / \beta' x_s \leq 1, s = 1, \ldots, N$ (3)
$\alpha_m \geq 0, m = 1, \ldots, M$ (4)
$\beta_k \geq 0, k = 1, \ldots, K$ (5)

In order to maximize the efficiency of the company with the condition that the efficiency of each company will be around a number less than and equal to one and all weights are non-negative, an optimal weight will be required. With transformation and simplification, the efficiency function becomes:

Maximize α, β: $\alpha' y_i$ (6)
With the condition $\beta' x_i = 1$ (7)
$\alpha' y_s - \beta' x_s \leq 0, \ s = 1, \ldots, N$ (8)
$\alpha \geq 0$ (9)
$\beta \geq 0$ (10)

and for minimum functions:

Minimize: $\theta_i, \lambda: \ \theta_i$ (11)
With the condition $\sum_s \lambda_s y_s - y_i \geq 0$ (12)
$\theta_i \ x_i - \sum \lambda_s x_s \geq 0$ (13)
$\lambda_s \geq 0$ (14)

Where θ_i is a technical efficiency score with input orientation for company i.

$$TE_{INPUT,i} = \theta_i \quad (15)$$

The measure states the ability of a company to reduce inputs assuming the same output, relative to other companies. In this way companies will get a score of 1 as efficient companies. In addition, companies that score less than one (θ_i≤1.0) are companies that are not yet efficient.

In addition to the input orientation as above, there is also efficiency with the output orientation. This second type of efficiency considers that the company can obtain greater output by using the same input. Companies that obtain optimal output are efficient companies.

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In estimating the efficiency value of a RDBs, we need to determine what approach is used in selecting inputs and outputs. There are two of the most popular approaches, namely the production approach and the intermediation approach. The production approach treats RDBs the same as other industries that produce goods or services so that it sees raw materials, capital and human resources as production factors to produce output. This approach usually uses general & administrative costs, labor costs and capital costs as input and makes the total loans received, total financing / financing receivables as output. While the intermediation approach sees the RDBs as an intermediary institution (financial intermediary) between the requester and the recipient of the financing so that it is different to place the loan received as an input as well as other resources used. Banking can be applied to a large range of financial institutions, Hafferman (2005). Banks as intermediary institutions are needed in financing, Gitman and Zutter (2012). Usually financing, equity, income can be used as output. This research will use an intermediation approach as a determinant of its input and output.

3. Research Objective and Methodology

Research is a systematic study; complete efforts are needed to be carried out sequentially, starting with the disclosure of the problems presented in the introduction. Then, it is necessary to submit a literature review and research method. The research method used in this research is descriptive verification. That is, the research will be preceded by an explanation of the findings that reveal the facts of the variable under study and verification of the resulting model.

This study uses RDBs as units of analyses covering a number of 26 RDBs throughout Indonesia. Thus, the study population is 26 RDBs. However, the sample members are 19 RDBs. These 19 RDBs are obtained based on the purposive sampling method with certain criteria, namely the RDBs used as included sample are only RDBs that have complete data from 2012 to 2017.

The analysis tool is done by using multiple regression, namely by using generalized least squares (GLS) regression analysis. The selection of predetermined variables is Capital Adequacy Ratio (CAR), Non-Performing Loans (NPL), Return on Assets (ROA), Operating Costs to Operating Revenue (OCOI), Loans to Deposits Ratio (LDR), Capital, and Asset. The variables are chosen based on studies from previous researchers, to determine efficiency performance.

The analysis is carried out in two stages. *First*, calculating the efficiency of RDBs by using the *Frontier Efficiency* approach, namely with the *Data Envelopment Analysis* (DEA) approach, and *Second*, creating a model that connects efficiency with banking characteristic variables. The basis for selecting a non-parametric DEA method for the following reasons: this method does not require certain distribution assumptions in data processing, data processing is simpler, and this method is suitable for small samples. Then, multiple regression analysis is used as a tool to form efficiency determinant models.

4. Result and Discussion

4.1 Descriptive Analysis of RDBS Efficiency in Indonesia

Indonesia has a form of financial institutions consisting of two forms, namely bank financial institutions and non-bank financial institutions. Bank financial institutions consist of central banks, commercial banks, and people's credit banks. Commercial banks are divided into several groups, namely national private commercial banks, state-owned banks, and regional development banks. The character of private commercial banks is different, from state-owned banks, and also different from regional development banks.

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The total number of banks in Indonesia is 115 banks, which are divided into 4 groups of commercial bank business activities based on the number of assets owned by banks. Due to competition with a large number of banks, there are many inefficient banks and as a result, the market share becomes smaller and costs become higher or banks become inefficient. The decrease in margins is related to the relaxation of competition conditions, and can cause inefficiency. Moudos and De Guovara (2004). Theoretical and empirical literature on bank margins has dealt solely with interest margins (Valverde, Fernandes, 2007).

Of the 26 RDBs studied, several descriptive explanations regarding RDBs efficiency have been obtained, and 19 RDBs can be presented below. Development of RDBs in 19 Provinces from 2012 to 2017, in terms of efficiency, there are 7 stable RDBs, and there are also banks that experience unstable or fluctuating efficiency of 6 RDBs.

There are a number of RDBs that during the study are considered inefficient, that is, as many as 6 RDBs. RDBs that experience inefficiency is 30% of the total 19 RDBs studied, and this shows that there needs to be attention from managers, and owners, so they try to make improvements, with improvements in good governance. As a bank owned by the provincial government, efficiency in management is important. The Provincial Government as the owner is responsible for steps to make it healthy, and sustainable, such as increasing the number of factors that cause inefficiency, Operational Cost to Operating Income (OCOI) of RDBs that is high enough to be one of the causes of bank inefficiency should be reviewed operational costs and operating income. Government ability has negatively affected bank efficiency while economic growth will not affect bank efficiency (Nguyen, Dau, 2020).

The following are detailed categories of the results of the description and RDBs names grouped according to their efficiency (Figure 1):

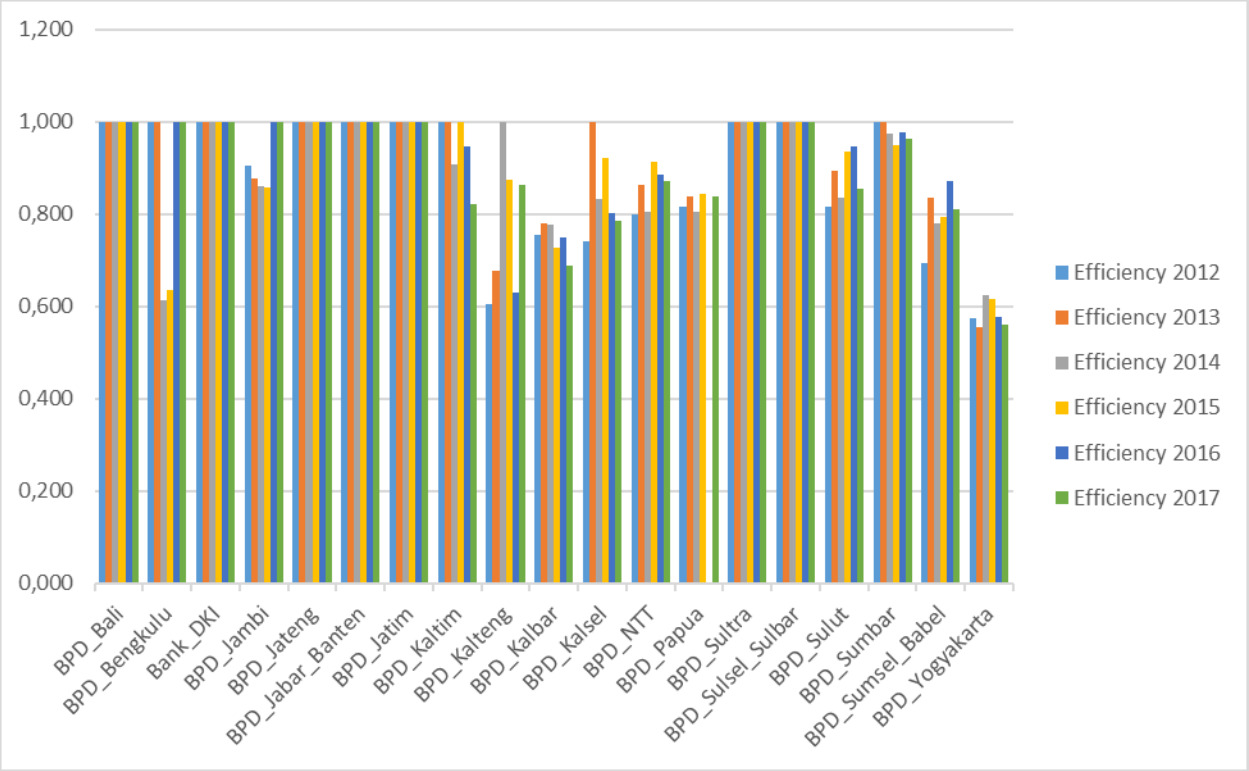

Figure 1. Graph of Development of RDBs Efficiency Levels in 19 Provinces in Indonesia in 2012-2017.
Source: processed data

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It is explained from the table above, that there are RDBs that experience a stable level of efficiency, namely RDB Bali, RDB DKI, RDB Jateng, RDB Jabar Banten, RDB Jatim, RDB Sultra and RDB Sulsel-Sulbar. Whereas some RDBs experience fluctuations but returned to efficiency in the last year are RDB Bengkulu, and RDB Jambi. RDBs which experience an efficient level in one year, but tends to be inefficient is RDB Kalimantan Tengah.

RDBs that experience a decrease in the level of efficiency were, RDB Kaltim, RDB Kalsel and RDB Sumbar. Inefficient RDBSs are RDB Kalbar, RDB NTT, RDB Papua, RDB Sulut, RDB Babel Sumsel, RDB Yogyakarta. The lowest level of efficiency was at RDB Yogyakarta in 2013 with an efficiency value of 0.556229. Descriptively, below is the result of processing descriptive statistics as follows (Table 1):

Table 1. Descriptive Statistic of 19 RDBs

	Total Equity (IDR Billion)	**Total Asset (IDR Billion)**	**ROA**	**ROE**	**CAR**	**LDR**	**NPL**	**Efficiency Score**	**OCOI**
Max	10,104.97	114,980.17	0.052	0.399	0.384	1.194	0.0565	1.000	0.980
Min	283.03	2,778.92	-0.006	-0.081	0.123	0.558	0.0003	0.000	0.280
Average	2,495.51	20,315.73	0.029	0.219	0.209	0.918	0.014	0.889	0.725
St.Dev	2,164.50	20,367.62	0.0093	0.0747	0.0508	0.1199	0.0141	0.1542	0.1269
Description:									
Max	Jabar_ Banten Bank 2017	Jabar_Banten Bank 2017	RDB_ Sultra 2012	RDB_ Sulut 2012	RDB Sulsel_Sulbar 2014	RDB_Sulsel_Sulbar 2017	RDB_ Kalsel 2017		Bank Jateng 2015
Min	RDB_Bengkulu 2012	RDB_Bengkulu 2012	RDB_ Papua 2016	RDB_ Papua 2016	Bank_DKI 2012	RDB_ Kalsel 2012	RDB_Bengkulu 2012		RDB_Kalsel 2012

Source: Processed Data

Some banking characteristic variables show that the variable that shows a good improvement is the CAR variable, where this ratio has exceeded the provisions of the regulator or OJK, which is above 12%, and indeed it turns out that the average RDBs has a CAR above 12%. Other variables that are quite good are ROA and ROE which have an average of 2.9% and 2.19% respectively. meanwhile, the average OCOI is 72.5%, although there are certain RDBs that are still high, especially those that reach OCOI 98%.

4.2. Analysis of Factors Affecting the Efficiency and Sustainability of RDBs in Indonesia

Efficiency and Sustainability of banks are important to note, efficiency concerns the ability of banks to manage the resources of banks, while sustainability is related to the ability of banks to be able to compete and adapt (Infobank 2016). Below will be discussed what factors cause a bank is said to be efficient. The regression model explains the dependent variable, namely RDBs' efficiency (Y) and independent variables, namely Capital Adequacy Ratio (CAR), Non-Performing Loans (NPL), Return on Assets (ROA), Operating Cost to Operating Income (OCOI), Loans to Deposits Ratio (LDR), Total Equity (TE), and Total Assets (TA).

Regression Model and Analysis

$$\mathbf{Y_{it} = a_{it} + CAR\ x_{1it} + NPL\ x_{2it} + ROA\ x_{3it} + OCOI\ x_{4it} + LDR\ x_{5it} + TE\ x_{6it} + TA\ x_{7it} + e_{it}}$$

Note:
Y_{it} = Efficiency
a_{it} = Constanta

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x_{nit} = Regression Coefficient
e = error
Where:
The Dependent Variable is **RDBs' efficiency (Y)** which is obtained by the estimation by Data Envelopment Analysis approach.

Meanwhile, **the Independent Variables** are composed of some variables, namely: **Capital Adequacy Ratio (CAR)** which reflects the adequacy of capital provided by the owner(s) of the banks. It is measured by the Bank Capital divided by Risk-Based Assets. **Non-Performing Loans (NPL)** which reflects the problem loans. It is measured by total problem loans to total loans. **Return on Assets (ROA),** is generated by the ratio of total profit to total assets. This ratio indicates the bank profitability. **Operating Cost to Operating Income (OCOI),** is calculated by dividing total operating costs to the total operating income of the bank. It is reflected the cost efficiency usage. **Loans to Deposits Ratio (LDR)** is the proxy for the level of aggressivity of the loan expansion and the liquidity of a bank. The ratio can be generated by dividing the total loans on total deposits**. Total Equity** is generated by the natural logarithm of Total Equity, and **Total Assets** are generated by the natural logarithm of Total Assets.

By using a regression analyst with generalized least squares (GLS) regression method, we get:

Table 2. Regression Results between Bank Characteristics Variables and Efficiency

Variable	Coefficient	Prob.
C	0.077565	0.8197
CAR?	-0.251995	0.1195
NPL?	-0.916924	0.1588
ROA?	0.126302	0.8714
ROE?	0.150548	0.1914
OCOI?	-0.136476	0.0007
LDR?	0.090688	0.0035
LOG(TE?)	0.033431	0.2426
LOG(TA?)	-0.002883	0.8921
R-squared	0.953844	
Adjusted R-squared	0.940051	

Note*: Capital Adequacy Ratio (CAR), Non-Performing Loans (NPL), Return on Assets (ROA), Return on Equity (ROE), ratio Operational cost and Operational income (OCOI), Loans to Deposits Ratio (LDR), Natural Logarithm of Total Equity (LOG(TE)), Natural Logarithm of Total Assets (LOG(TA)).*

Source: Processed Data

Based on the above results it can be said that:

a. if all coefficients of the independent variable are zero (0) then the dependent variable is 0.077 assuming the *cateris-paribus* assumption.
b. There are only 2 variables that significantly affect efficiency, namely the OCOI variable and the LDR variable, and the other variables do not have a significant effect on the efficiency variable
c. Each change in the independent variable (OCOI) by 1 unit will reduce the dependent variable by 0.136476 units assuming *cateris-paribus*. Each change in the independent variable (LDR) by 1 unit will increase the dependent variable by 0.090688 units assuming the ceteris paribus assumption

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d. In general, the dependent variable can be explained simultaneously by independent variables of 95%, and the remaining of 5% is explained by other variables outside the model.

Viewed on the model:

Y = 0.077565 -0.251995 CAR -0.916924 NPL + 0.126302 ROA + 0.150548 ROE
-0.136476 OCOI*** + 0.090688 LDR*** + 0.033431 TE -0.002883 TA

Note: *** Significant in 1%.

The model clearly shows the relationship between independent and dependent variables that as a whole indicate conformity with the theory relating to banking operations. CAR should have a positive relationship with efficiency, where the better the capital, the high the CAR will increase efficiency. In the equation above, a negative relationship can be seen, in this case showing that CAR in RDBs is already high, so with a high CAR because capital costs are higher than public funds (deposits) then it becomes a burden for achieving efficiency, in other words RDBs can utilize assets owned to be optimized to achieve better efficiency.

The higher NPL will reduce the level of banking efficiency, this is indicated by a negative sign on the coefficient in the model equation. With high NPLs, bank operational costs have increased from monitoring and collection (collection) of problem loans. In addition, with a high NPL, the potential for banks to expand credit will be hampered even though credit is the main asset that generates earning assets. RDBS must be careful with NPL problems, because high NPLs show RDBS's failure in effectiveness and efficiency in credit management.

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The profitability factor shows a positive sign on the variable ROA and ROE. This means that increased ROA and ROE will cause RDBs efficiency to increase. Profitability bank can increase efficiency (Kamarudin et al., 2019). With an increase in profitability, the bank will be able to increase its various activities both its main activity in the form of lending and increase in other bank services that will generate income from services (fee-based income). Improvements in credit management that will improve management and increase income through non-credit such as fee-based income, can increase the level of RDBs efficiency. While research conducted banks in China, The Capital Ratio is positively related to ROA, but negatively related to ROE (Qianqian, Lee 2020). European banks succeed in increasing their profitability despite a compression of their net interest income (Campmas, 2020).

OCOI has a negative coefficient sign, indicating that a high OCOI will cause a decrease in RDBs efficiency. RDBs can improve efficiency by lowering costs and increasing bank revenue. Activities that will reduce costs must be carried out and implemented as quickly as possible, and activities that will increase revenue must also be carried out as soon as possible by the RDBs, so that the RDBs has high efficiency, and has good competitiveness.

The Total Equity Factor (TE) has a sign of a positive coefficient that is different from the Total Assets (TA), this can indicate that the own capital from RDBs is still too little to be included. In contrast to Total Assets where TA has a negative sign. Total assets can be an indication for bank size, the higher the total assets will have an effect on bank profitability. Significant negative influence of bank size to profitability is found on models of Vietnam

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and Thailand and no significant effect on the model of Malaysia (Thi et al., 2020). This shows that the RDBs must quickly add its own capital, through the addition of the Provincial and Regency / City Governments to increase its placement capital so that efficiency increases due to the ability of the RDBs to increase due to increased capital.

While the efficiency of the Total Assets needs to be considered, where the sign of the coefficient is negative, this shows that the RDBs must be able to optimize its assets, so that the income of the RDBs increases. Increase of asset will increase of return (Ametefe et al., 2011). A negative sign indicates that at this time, assets owned by RDBs should be able to increase efficiency but instead actually reduce efficiency. In other words, RDBs in Indonesia have not been able to take advantage of the concept of economies of scale where when assets grow, the unity of operational costs will decrease which will ultimately increase efficiency. In the case of this RDBS concept was not proven.

RDBs technical efficiency performance has not reached the optimal efficiency level of 100 percent. While the analysis is based on asset groups, on average, large-scale RDBs are more efficient than medium and small-scale RDBS. If a large commercial bank with a low performance will cause a decrease in the quality of the loan portfolio (Miller, Naulas, 2010). Consolidation is sweeping the banking industry (Strahan, Weston, 1998). This research has important implications in order to optimize efficiency performance so that small and medium banks must merge and improve the banking intermediary function (Abidin, Endri, 2009). Attention to the competitive environment and corporate strategy will be able to maintain sustainability in performance, Hoque and Chia (2012).

The results of this study support the ongoing efforts made by the regulator to recommend mergers with banks, especially small and medium-scale banks. Banks that often merge are between several small banks (Peek, Rosengren, 1998). One of the concerns of regulators is the effect of small bank consolidation, namely on capital access and cost of capital (Scott, Dunkelberg, 2003). Other research shows that the efficiency rate of RDBS in Indonesia is in average 93.2%. A total of 12 banks from 26 RDBS throughout Indonesia have achieved 100% efficiency. While 14 other RDBs are not efficient (<100%) in carrying out their operations. Central Java Bank is the RDBS which has the lowest efficiency level of 78.6%. Interest expense is the cause of the most inefficient RDBs.

Conclusions

Some points that can be concluded in the results of the discussion above are as follows:

1. The efficiency of the RDBs shows a good direction, although in the midst of quite sharp banking competition.
2. Improvements to several ratios will further increase the efficiency to be achieved by RDBs. As two variables that provide a significant influence on the resulting model equation, namely LDR and OCOI. While another thing is the direction of the coefficient of several factors also need to be considered, such as CAR, and TA. With the implication that RDBS needs to increase their own capital.

Based on these results, there are several suggestions and recommendations for several related parties including:

1. For the management of RDBs banks, it is suggested that it is possible to pay attention to a number of internal factors that can improve bank efficiency performance including LDR and OCOI which are proven to be able to influence efficiency performance. By increasing the LDR and reducing the OCOI, it was proven to be able to improve the efficiency of RDBs.
2. For policymakers, in this case, the Financial Services Authority (OJK), it is recommended that it is possible to produce policies that are conducive to supporting the performance of banks in Indonesia, especially for RDBs. Some recommendations related to the results of this study are, the policy calls for credit expansion while still taking into account the level of collectability in accordance with a significant

positive relationship between LDR with efficiency and a negative relationship between NPL and efficiency.

3. For local governments as the main owners of RDBs, especially for banks whose equity capital is still low so as to increase their capital according to the positive relationship between capital and efficiency to a certain extent so that the CAR has been optimal, because if the CAR has passed the optimal limit, then it will reduce efficiency.
4. For the next researcher, it is expected to add data completeness for all RDBs in Indonesia by completing the data directly from the financial statements of these banks in addition to the Financial Services Authority.

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A REVIEW OF THE EUROPEAN UNION FINANCIAL INSTRUMENTS SUPPOTING THE INNOVATIVE ACTIVITY OF ENTERPRISES IN THE CONTEXT OF INDUSTRY 4.0 IN THE YEARS 2021-2027[1]

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Abstract. The new global wave of disruptive innovations, which is based on the evolution of the industrial sector towards Industry 4.0, requires support for investments increasing the indicators of digitization, automation and robotization of enterprises. That is why one of the most important contemporary challenges facing enterprises in the context of Industry 4.0 is finding sources of financing to support innovative activities. Although the literature is abundant in studies on Industry 4.0. development, relatively little attention has been paid to the ways of financing these ventures or to a political environment that would favor the financing of the Fourth Industrial Revolution. The purpose of this article is therefore to identify EU financial instruments promoting business innovation in the context of Industry 4.0 in the years 2021-2027. The article was based on a systematic review of the literature and documents of the European Commission. In line with the adopted methodology, the entire research process consisted of three stages: (1) isolating databases and a set of publications, (2) selecting publications, developing a database, (3) bibliometric analysis, content analysis and testing relevance of results for further research.

Keywords: EU financial instruments; innovative activity; financial framework 2021-2027; Industry 4.0, systematic literature review

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JEL Classifications: L16, O31, O33, O38

1. Introduction

Innovation in all forms is a key factor that allows the European Union (EU) to continue to ensure the prosperity of its citizens and to face future challenges. Implementation of innovations requires a systemic, cross-cutting and multi-faceted approach. Economic progress, social well-being and the quality of life in Europe are based on its ability to boost productivity and growth, which in turn depends largely on its innovativeness. Innovation is also key for addressing the main challenges facing the EU. Broadly understood innovation is crucial in planning EU development but is also challenging for EU institutions. Currently, innovation is marked by a significant increase in the use of new technologies as well as changes in productivity and efficiency. A system of institutional support for innovation has emerged in the EU, with EU innovation policy being implemented through a variety of financial programs and instruments. Innovation policy is the link between research and technological development policy and industrial policy, including aspects such as: strengthening links in the innovation system, shaping and developing the capacity to introduce innovations (in the technical and technological field, as well as for organization and education), optimal use of innovation as a base factor for economic growth, and increasing the number of sustainable jobs, making structural changes of technical, technological and qualitative nature within industry. In recent years, innovation policy has undergone an evolution in which goals were redefined and various instruments of influence were created. Implementing innovation policy, and therefore intervening in research and development and innovation, has traditionally been justified by market failures. Nowadays, however, it is emphasized that it is system failures standing in the way of shifting to new technological structures that give innovation policy a foothold. EU innovation policy is complex and multi-faceted, requiring the design (preparation) and use of a broad range of instruments which, based on their function, can be divided into those facilitating the spread of innovation, conducive to the process of creating and implementing new knowledge, and acting as support mechanisms. The advantage of EU innovation policy tools is primarily the creation of an integrated system to boost innovation and its diffusion between science and business.

Over the past decades, new markets of global outreach have emerged for healthcare, media, entertainment, communication and retail thanks to breakthrough innovations in ICT, biotechnology, green technologies, the Internet and the platform economy. This marks a new global wave of disruptive innovations that will be based on more advanced technologies (such as "deep tech"), among them: blockchain technology, artificial intelligence, genomics/multi-omics, robotics, and other technologies which also can be created by individual innovators and or a community of citizens. The common denominator of such innovations is that they cut across various scientific disciplines, technological solutions and economic sectors, offering radically new combinations of products, processes, services and business models; they also have the potential to open entirely new markets around the world.

Having said all that, innovations require special measures at EU level that will greatly improve the conditions and environment for developing European innovations, so that new ideas and technologies can be freely exchanged by actors in the innovation ecosystem and be therefore quickly transformed into products and services allowing the EU to achieve its goal. This poses a number of challenges for innovation policy, which should be able to respond flexibly to emerging issues and technological trends. Another challenge is the transformation of the economy towards what is referred to as "Industry 4.0", which takes into account the evolution of the industrial sector consisting in the increasing reliance on data that becomes a value-creating production resource. To that end, investments must be supported that increase the indicators of digitization, automation and robotization of enterprises (European Commission 2017). A new perspective on EU industrial policy was set out already in the

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Europe 2020 strategy (European Commission 2010a), and more specifically in one of its seven flagship initiatives entitled *An Integrated Industrial Policy for the Globalisation Era* (European Commission 2010b). In that document, the need is signaled to return to a strong industrial policy in the EU which would address manufacturing and by extension services, a proposal justified by the changing geopolitical situation and the need to recover lost industry against the rising production costs in the Far East. The same document also mentions the Fourth Industrial Revolution, postulating support for the creation of a solid and sustainable industrial base able to compete in global markets. The very term *Fourth Industrial Revolution* is a reference to other groundbreaking events in the socio-economic development of mankind such as: mechanization of production using water- and steam-powered machines (Revolution 1.0), the introduction of mass production based on the division of labor and the electrification of machinery and equipment (Revolution 2.0), and the use of electronics and IT for the automation of production (Revolution 3.0). The First Industrial Revolution, which began in the second half of the eighteenth and continued throughout the nineteenth century, introduced mechanical production equipment and initiated the use of water energy. The Second Industrial Revolution, dating back to the 1870s, involved the use of electricity and mass production in factories. The Third Industrial Revolution, also known as the Digital Revolution, can be traced back to the 1970s when advanced electronics and information technology enabled automation of production processes (Hermann et al. 2015, p. 5). The Fourth Industrial Revolution has its roots in the German Industrie 4.0 initiative from 2011 whose aim was to strengthen the competitiveness of the manufacturing industry (Issa et al. 2018, p. 973). The goal of the Fourth Industrial Revolution is operation at a higher level of automation, achievement of a higher level of operational productivity by linking the physical with the virtual world, and digitization of various production processes. This new revolution is marked by three particular characteristics (Paprocki 2016, p. 40): (1) universal digitization and ensuring constant communication (people among themselves, people with devices, and devices among themselves), (2) frequent implementation of disruptive innovations (allowing a rapid increase in the efficiency and effectiveness of the socio-economic system), (3) developing a generation of machines capable of autonomous behavior (through artificial intelligence used to control them). The Fourth Industrial Revolution is therefore assumed to have at its core the use of scientific and technological achievements to allow the emergence of Industry 4.0.

Industry 4.0 is an increasingly common topic of deliberations not only in business environments or in the context of economic policy, but also in scientific discourse, as evidenced by the rapidly growing number of publications in renowned journals (Oesterreich & Teuteberg 2016; Liao et al. 2017; Lu 2017). In the literature, the benefits of Industry 4.0 solutions seem to be emphasized particularly often, which – although in many case supported by real-life examples of successful projects – are indicative of a somewhat idealized state of harmonized digital transformation. However, some studies (e.g. Dmowski et al. 2016; McKinsey Digital 2016; PwC 2016; PwC 2017) clearly point to uncertainty among enterprises as to what the implementation of Industry 4.0 technologies actually requires on their part. Let us also note that the implementation of the Industry 4.0 concept will be supported mainly by innovative projects marked by a high level of uncertainty of outcomes, a complexity of implemented measures and an overall higher risk. To meet the upcoming challenges, organizations will have to find new ways of financing innovative projects – that is why raising funds will be one of the main challenges for them once Industry 4.0 has settled in. Although the literature is abundant in studies on Industry 4.0. development, relatively little attention has been paid to the ways of financing these ventures or to a political environment that would favor the financing of the Fourth Industrial Revolution. The purpose of this article is therefore to identify EU financial instruments promoting business innovation in the context of Industry 4.0 in the years 2021-2027. To achieve this goal, the following research question was posed: What is the current state of knowledge of the support instruments for improving business innovation in the new EU financial framework 2021-2027 in the context of the development of Industry 4.0? The article was based on a systematic review of the literature and documents of the European Commission. Systematic review methodology allows not only for a formalized and objectified synthesis of the current scientific achievements and the evaluation of existing research studies (Columb & Lalkhen 2005), but more importantly, it enables identification of both researched and unexplored areas (Levy & Ellis 2006). This, in turn, provides a framework for further research (Gimenez & Tachizawa 2012)

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whose future results can be generated in global literature. The article was structured so as to best achieve the research goal.

2. Methodology

The study used systematic literature review, which is defined as "a review subject to a clearly defined question, using explicit methods for the identification, selection and critical evaluation of relevant studies, and the collection and analysis of data from studies qualified for that review" (Booth et al. 2016). The advantage of systematic compared to traditional (often subjective and incomplete) literature review is the fact it poses research questions prior to commencing proper analysis, meaning it compiles beforehand a full list of relevant works along with the criteria for inclusion or exclusion of particular literature items. The structured form also generates new knowledge about the current state of science in the field at issue. This is particularly important when a necessity arises to account for the significant dispersion of publications in both printed periodicals and online sources. The systematic literature review procedure included the following stages (Rowley & Slack 2004; Piccarozzi et al. 2018): defining research purpose, separating and selecting primary literature, selecting publications, developing a publication database, analyzing content and testing relevance of results for further research (Fig. 1).

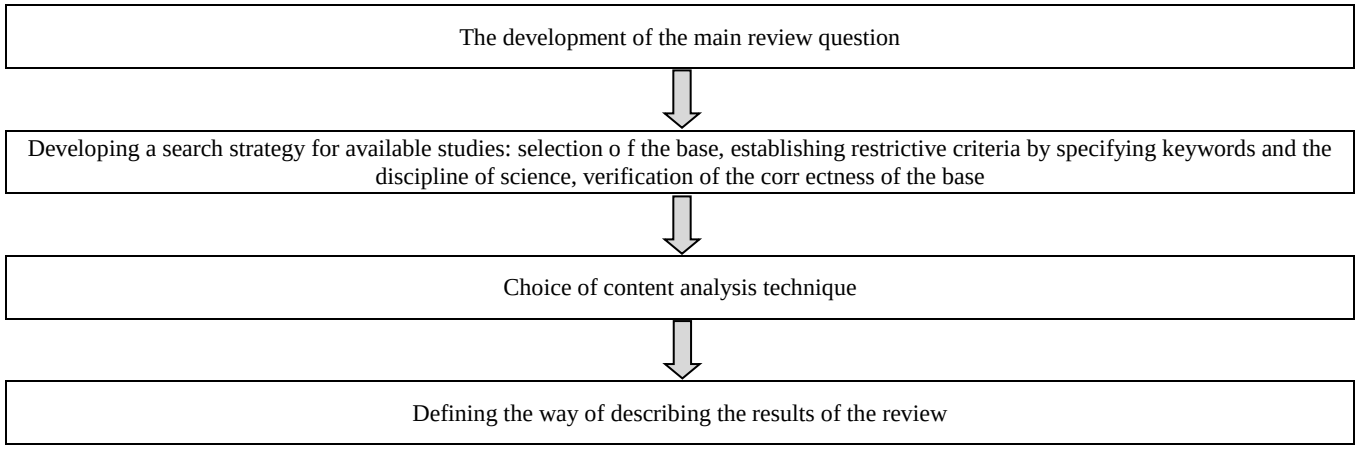

Fig. 1. Stages of literatur review
Source: own study based on: Bałandynowicz-Panfil 2019, p. 73

Given the adopted procedure, databases were selected and subsequently analyzed in the first stage. The process of creating the literature database was based on three international electronic databases: Ebsco, Proquest, and the Web of Science. These three databases contain journals and books by recognized international publishers and come equipped with advanced search engines where keywords can be filtered along with several additional criteria. The databases are a popular resource and many universities around the world have access to them. In addition, they are recommended for conducting systematic literature reviews in social sciences. It was assumed that the search criteria should be included in the title, abstract or keywords of the analyzed works. This assumption helped focus attention on those articles whose key slogan reflects an important research category rather than an accessorial one. The process of creating a literature database envisaged the use of a mixed approach in which academic literature indexed in scientific databases is reviewed alongside grey literature (Benzies et al. 2006). In doing so, an important possibility opened up of including European Commission documents and the latest publications of a less scientific nature. The following restrictions have been imposed on the identified publications: (1) full-text, peer-reviewed publications, (2) "EU financial instruments", "innovative activity", "financial framework 2021-2027" and "Industry 4.0" in the title and keywords, (3) pertaining to the field of social sciences. It was assumed that the selected literature would cover the years 2016-2020. The thus obtained database

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of publications was further analyzed. The collected literature database was thoroughly analysed. To describe the results, a narrative method was adopted whose main purpose was to indicate the pivotal areas of exploration of the subject matter at hand.

The use of systematic literature review sprang from the need to indicate the complexity of the issues raised. This method is justified when a research area has been strongly explored, which makes it appropriate to present a synthesis of the results of literature studies. Nevertheless, this approach to literature review has certain limitations resulting mainly from the imperfections of the analysis methods used. At the stage of creating the literature base, the adopted restrictions may have had an impact on the results obtained. Meanwhile, at the review stage, the restrictions concerned the imperfections of content analysis, namely the subjectivity of the content researcher. It should also be noted that the results of the query are merely a snapshot of the current state of knowledge at a given moment whereas knowledge as such is dynamic.

3. Literature review

The idea behind the Industry 4.0 concept

The term "Industry 4.0" was coined in 2010 during a project launched by the German government to identify and analyze the then upcoming groundbreaking changes of strategic importance to the German economy Defined as Industry 4.0, this German initiative comes from the general direction of changes in the EU's industrial policy and builds on concepts such as: the Industrial Internet of Things, smart industry, smart factories, resilient factories or advanced manufacturing. In 2011, at the Hanover Fair, the term was used for the first time in presentations debating on the future of industry. In 2013, the working group made up of German business, industry and science experts published a document containing recommendations for the implementation of what was called an *INDUSTRIE 4.0 Strategic Initiative*, providing a glimpse into a new cyber-physical reality shaped by revolutionary changes in industry. The term "Industry 4.0" was also used in the German government's technology development project *High-Tech Strategy 2020* whose one of the key areas was identified as "digital economy and society" (Astor 2016; Astor 2017; Astor 2019).

Industry 4.0 (Müller et al. 2017) is defined in many different ways in the literature and that is because it can be described and explained equally at micro- (enterprise), meso- (sector) or macro-level (the economy as a whole). A recurring theme in all these definitions, however, is the integration of people, machines and advanced communication and information technologies, enabling real-time interaction between the key components of a (manufacturing or service) enterprise, a sector and the economy (Młody 2019; Młody & Weinert 2020). Industry 4.0 technologies form an open set due to the combinations of solutions and their derivatives being permanently developed by manufacturers and users alike (Batkovskiy et al. 2019). When defining Industry 4.0, different approaches seem to agree on the important role the digitization of production (manufacturing) plays in all this, given that it involves a broad range of technical innovations in areas such as: generation, transfer and processing of data, analytics of large data resources, connection and integration of the virtual with the real world, new production technologies, new materials (Astor 2016). In broader terms, 4.0 should be seen as a collective term for technologies and concepts of value chain organization (Hermann et al. 2015, p. 11). Information and data correlation are used in Industry 4.0 all the time and everywhere. Industry 4.0 is a form of unification of the world of machines with the virtual world of the Internet (also the Internet of Things) and information technology (Gajdzik & Grabowska 2018, p. 223). Industry 4.0 binds machines into a network encompassing production resource management systems and production planning (Gajdzik & Grabowska 2018, p. 223). The resulting production system springs from the dissemination and distribution of automatic technology and online communication networks.

According to Castelo-Branco et al. (2019, p. 22) Industry 4.0 is a concept that represents "the adoption by industrial companies of techniques and processes allowed by digitization, cloud computing, the internet of things

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and big data to gain competitive advantages in domestic and global markets". Additionally, Barreto et al. (2017, p. 1247) argue that, in an organizational structure point of view, Industry 4.0 "includes horizontal integration through networks in order to facilitate an internal cooperation, vertical integration of subsystems within the factory in order to create a flexible and adaptable manufacturing systems and through-engineering integration across the entire value chain to enable customization of the product". In turn, Chiarello et al. (2018, p. 247) define Industry 4.0 in the context of Porter's value chain and point to the use of various technologies typical of Industry 4.0 in areas such as: production, internal logistics, orders, maintenance, external logistics, distribution and sales, as well as after-sales services. This last approach to Industry 4.0 shows that it is a concept that goes significantly beyond merely production to cover both organization and coordination of all processes within the value chain, including service processes.

The essence of Industry 4.0 is to create smart value chains based on dynamic, self-organizing and optimizing social-engineering systems known as smart factories. These factories will consist of spontaneously emerging virtual networks covering employees, machines, devices and supporting IT systems. Together they will form a dynamic network centered around a common object of cooperation and constantly reconfigured against changing goals and conditions. It is assumed that this new organization of work will ensure high flexibility and performance, while the virtualization of economic processes should enable access to group intelligence by initiating, creating and applying knowledge within informal knowledge networks (e.g. open innovation, communities of practice) and also to specialist knowledge without the need to hire external specialists. For Industry 4.0 to be implemented successfully, a makeover of industrial enterprises' operating model is inevitable (Bendkowski 2017, p. 24).

The concept of Industry 4.0 emerged with a view to fully tapping into the possibilities of the Internet and information technologies to create smart factories by enabling the manufacturing of individual units in accordance with customized projects or specific customer needs. Efforts are made to accelerate the adaptation of systems to changing market preferences and to minimize emergencies, increase the efficient use of resources and energy and extend the production process to include suppliers and recipients (in the supply chain) while effectively sharing employee knowledge, competence and innovation (based on new models of cooperation with partners). The combination of production resources, both internal and external, is intended to create a smart value chain network that can be autonomously controlled and in which smart processing of matter occurs. Therefore, the main idea behind the Industry 4.0 concept is a shift from mass production towards on-demand production aligned with customer needs. This is in response to the current needs of companies to adapt operations to customer requirements in terms of product customization (Niedbał et al. 2017, p. 559).

The concept of Industry 4.0 has been based on the latest digital technologies while its goal is to put forward a new industry model consisting primarily in the cooperation of several entities, i.e. not only between production plants themselves but across various actors involved in the entire cooperation chain - from product design to after-sales services. This model was inspired by the idea of creating a two-level interconnected area of operation, or a cyber-physical production system. In that model, physical production processes are reflected in digital reality to allow optimization of all activities from idea and design, through the use of raw materials and energy, to customizable production process control, logistics, marketing and recycling – all this while factoring in horizontal and vertical cooperation chains at different stages of operation with different entities that may be involved at any time and anywhere. The bridge linking these two worlds (physical and digital) is data transferred via the Internet from the level of physical activities to the sphere of digital reality, and vice versa, but also to and from other potentially involved external entities. Industry 4.0 is not just about plant performance; it goes far beyond that, spanning across the entire ecosystem of the production process thanks to digital transformation.

The Industry 4.0 concept is geared towards a high productivity of industrial systems and a high profitability of implemented projects. Particularly noteworthy among its potential benefits are increased production flexibility

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and organization of more customized production. This means that customer expectations - the customer being a product user - can be met without compromising the profitability of the production process by means of dynamic matching of the autonomous modules of the entire process of preparation, manufacturing and delivery of the product to the customer using IoT and information stored in Big Data and Cloud Computing (Chui et al. 2010). Industry 4.0 is therefore a combination of the benefits of customized production with the benefits offered already today by mass production. It may also significantly improve production performance through the use of material, manufacturing and employee resources from cooperating network partners with unused production capacity (Saniuk & Saniuk 2017, p. 13). The concept of Industry 4.0 fits perfectly into the European economic model. It will make it possible to maintain sustainable industry, develop employee qualifications, support energy transformation and adapt to a high level of customization. Industrial robots and information and communication technologies (ICT) will facilitate the integration of work from design, through supply and logistics, to final product whose quality will be the result of support and optimization programs cooperating with humans acting as "guardians of quality" on automated production lines (Stolarczyk 2017, p. 75). Industry 4.0 will also allow Europe to successfully compete with other regions. The high complexity and comprehensiveness of innovative processes related to Industry 4.0 will make it is necessary to introduce a holistic set of complementary financial instruments supporting the implementation of these novel solutions.

4. Results and discussion

European Union innovation policy instruments in the context of developing fourth-generation industry

Horizon Europe (European Commission 2018a) will be the most important financial instrument supporting the innovative activity of enterprises in the new perspective. In the opinion of the European Commission, this is the most ambitious research and innovation program in the history of the EU. Equally impressive is its budget for 2021-2027, which is set at EUR 100 billion. *Horizon Europe* will build on the achievements and successes of the previous Horizon 2020 research and innovation program and will ensure that the EU maintains a leading position in the world in this field. *Horizon Europe's* main goal is to strengthen the EU as one of the main global leaders in research and innovation. In particular, the Program's objectives include: (1) strengthening the EU's and the European Research Area's scientific and technological base, (2) increasing EU capacity for innovation, competitiveness and number of jobs, and (3) implementing citizens' priorities and maintaining the European socio-economic model with its underpinning values. Of the proposed budget of EUR 100 billion, EUR 97.6 billion is to be allocated to *Horizon Europe* (of which EUR 3.5 billion will be allocated to the InvestEU Fund) and EUR 2.4 billion to the Euratom program. The Euratom (European Commission 2018b) will fund research and training in the areas of nuclear safety, nuclear physical security and radiological protection. The program will be more focused on non-energy applications such as health care and medical equipment, and will support the mobility of nuclear scientists as part of the "Maria Skłodowska-Curie" Actions.

Horizon Europe is expected to bring new and broader knowledge, and also new and more technologies, as well as to promote scientific excellence and have a positive impact on growth, trade and investment, plus a significant impact on society and the environment. Every euro invested under this program can generate a return of up to EUR 11 of GDP over a 25-year period. It can be expected EU investments in research and innovation will lead directly to the creation of an estimated 100,000 jobs in the research and innovation sector in the "investment phase" (2021-2027). To reflect the great importance of combating climate change in line with the EU's commitment to implement the Paris Agreement and achieve sustainable development goals, *Horizon Europe* will seek to mainstream climate change at a political level, allocating for that purpose at least 35% of its total financial envelope.

The *Horizon Europe* framework program rests on three interconnected, mutually complementary pillars (Fig. 2.). Pillar 1, "Excellent Science", will support the excellence of research in the field of basic sciences and strengthen the scientific primacy of the EU, and will help develop high-quality knowledge and skills. Pillar 2, "Global

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Challenges and European Industrial Competitiveness", will support research on social challenges and industrial technologies in areas such as health, security, digital technologies and key enabling technologies, climate, energy, mobility, food and natural resources. The first pillar will be available only to the world of science, while the second pillar will target mainly enterprises and industry. Each research mission will contain a portfolio of research activities. Pillar 3, "Innovative Europe", will focus on increasing the number of disruptive and radical innovations by establishing a European Innovation Council (EIC) which will offer comprehensive services to high-potential innovators. The third pillar will be addressed in particular to the SME sector. New to the *Horizon 2020* Framework Program will be EU-wide research and innovation missions intended to reflect the impact of social engagement on research agendas. The missions comprise specific sets of interdisciplinary activities focusing on social challenges and industrial competitiveness. The *Horizon Europe* program has outlined five areas in which missions will be programmed under the "Global Challenges and European Industrial Competitiveness" pillar, drawing from contributions from the other pillars. Mission areas are: (1) adaptation to climate change, including social transformation, (2) cancer, (3) climate-neutral and smart cities, (4) healthy oceans, seas, coastal and inland waters, (4) soil health and food. In addition, institutionalized partnerships will be established under which public-private consortia will be created to carry out joint research and development aimed at strengthening specific industrial sectors.

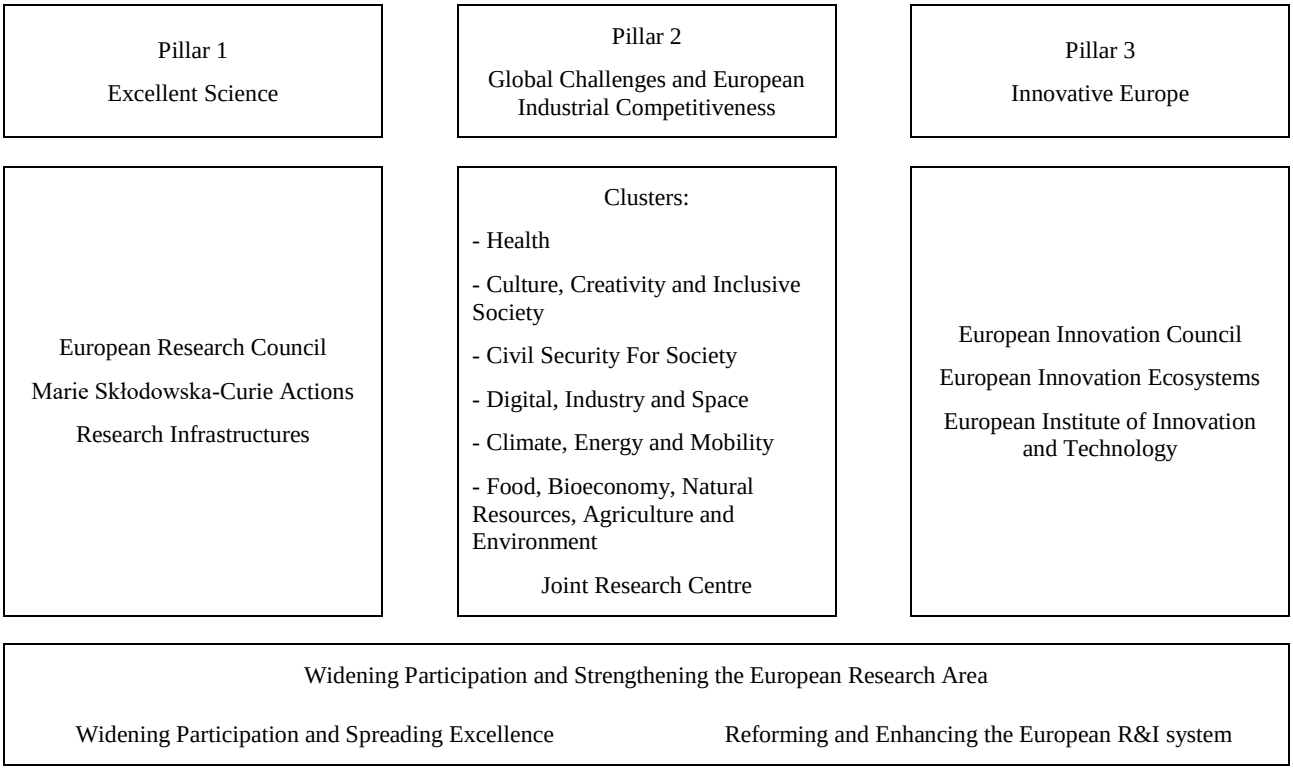

Fig.2. Preliminary *Horizon Europe* Structure – The Research and Innovation Framework Programme FP9 (2021-2027)
Source: European Commission (2019)

The EIC will become one of the crucial mechanisms supporting innovation under the *Horizon Europe*. The EIC will offer support in the quest for the EU to become a leader in innovation-creating markets. To this end, the EIC will act as a comprehensive service point for innovators producing disruptive technologies with high potential, as well as to innovative enterprises with growth potential. Depending on the structure, it will provide support to individual beneficiaries and multidisciplinary consortia. The EIC will primarily promote disruptive and revolutionary technologies and innovations, focusing to a large extent on market-creating innovations. The EIC

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will identify and finance high-growth, high-risk innovations who have the potential to create completely new markets, while supporting all types of innovation, including disruptive and radical innovations such as deep tech, that have the potential to become market-created innovations. In addition, the EIC will seek to rapidly expand the scale of operations of innovative enterprises, mainly SMEs, including start-ups, and, in exceptional cases, small mid-cap companies, at both EU and international level, on the path from the idea to the market. The EIC will work against a budget of EUR 2.7 billion in the pilot phase covering the 2018-2020 period. This is to help define and develop on a large scale dynamic venture innovations with huge potential to create entirely new markets.

The EIC will operate primarily via two complementary types of activities: the "Pioneer" instrument for advanced scientific research in the early stages of technological development and the "Accelerator" instrument in the field of innovation and marketing activities, including stages before mass commercialization and business growth. Under the "Pioneer" instrument, support will be provided to research conducive to transformation and potential market-creating innovations. The Pioneer will provide grants for innovative venture projects dealing with new fields and areas of deep technologies, in order to develop potentially radical innovative technologies of the future and create new market opportunities. The overall goal of the Pioneer will be to help transform breakthrough solutions into potential market-creating innovations and bring them to the demonstration or business justification stage, or to develop a strategy that enables their further implementation under the Accelerator or as part of another market entry solution. To this end, the Pioneer will support the earliest stages of scientific research and development in the field of science and technology, including design validation and prototypes for technology validation. The instrument will be implemented mainly through collaborative research and in close coordination with other parts of the *Horizon Europe* program, in particular with the European Research Council (ERC), the "Maria Skłodowska-Curie" Actions (MSCA), a part of Pillar 3 on the European ecosystem and the activities of Knowledge and Innovation Communities (KICs) of the European Institute of Innovation and Technology (EIT) to identify radically new ideas and concepts that have a breakthrough potential. Meanwhile, the Accelerator will mainly grant two types of support - mixed financing (combining subsidies with capital investments), and subsidies, optionally supplemented with capital backing. It will also provide access to loans and guarantees, especially those granted under the InvestEU program. If already during the pre-selection ("due diligence" analysis) it is recognized that a project will bring profits, or if the level of risk is sufficiently reduced, the Accelerator will facilitate access to debt financing (e.g. loans or guarantees) and for equity financing from the InvestEU program. The EIC's Accelerator will also provide support in the form of grants to SMEs, including start-ups, for a variety of types of innovation, ranging from gradual innovations to disruptive and radical innovations, whose aim is to increase the scale of operations.

The activities of the EIC will complement the work of the European Institute of Innovation and Technology (Wilkinson et al. 2017a; Wilkinson et al. 2017b; European Commission 2008; European Commission 2013; European Commission 2019a; European Commission 2019b; European Commission 2019e). The EIT is an independent EU body founded in 2008 to increase Europe's innovation capacity. The EIT is one of the three components of the "Innovative Europe" pillar. The aim of the EIT is to meet the most important societal challenges by improving the EU's capacity and results in innovation through the integration of the knowledge triangle covering education, research, and innovation. At the core of the EIC lies the creation of the so-called Knowledge and Innovation Communities (KICs), which are the EIC's operational units, and transforming research findings into economic effects. The EIT currently supports eight KICs bringing together enterprises, universities and research centers that together form cross-border partnerships. Innovative KICs emerging from the KICs at the EIT may be directed to the EICs to create a "production line" of not yet profitable innovations, while innovative high-potential enterprises financed by EICs that are not yet involved in any of the KICs at the EIT may get access to this additional support. The proposed EIT budget for 2021-2027 is to amount to EUR 3 billion, which represents an increase of 25%, or EUR 600 million, compared to the budget of the current Strategic Innovation Plan (2014-2020). This will help fund the existing and new Knowledge and Innovation Communities and also support the innovation capacity of 750 higher education institutions. With its proposed budget for 2021-

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2027 the Institute will boost innovation by supporting more than 10,000 graduates from its KICs' Master and PhDs, around 600 new start-ups and more than 7,000 existing ones. With a proposed budget of 3 billion, which represents an increase of 25% compared to the current Strategic Innovation Agenda (2014-2020), the EIT will fund activities of existing and new Knowledge and Innovation Communities (KICs) and support the innovation capacity of 750 higher education institutions (European Institute of Innovation and Technology 2019).

Another important EU initiative supporting the innovative activity of enterprises in the years 2021-2027 is "A Renewed Agenda for Research and Innovation" (European Commission 2018c). This agenda is based on the assumption that research and innovation resources are an investment in the future of Europe and will allow the Union to maintain its competitive position and a unique European social model on a global scale. The renewed agenda covers a number of specific measures to increase innovation and ensure a high quality of life. These activities result from the fact that, despite significant development achievements in the economy, new megatrends appear (e.g. artificial intelligence or circular economy) that bring about huge changes in the economy and society. In the opinion of the European Commission, Europe is in need of reforms in the system of financing important disruptive innovations.

The Renewed Agenda (European Commission 2018c) arose due to the fact that, even though Europe generates 20% of global investment in research and development (with 7% of the world population), publishes one-third of high-class scientific publications and is a leader in industrial sectors such as pharmaceuticals, electronics, renewable energy, bio-industry or mechanical engineering, EU companies invest less in innovation than China (1.3% of EU GDP vs. 1.6% in the PRC), the United States (2% of GDP), Japan (2.6% of GDP) and South Korea (3.3% of GDP). Another worrying indicator is the number of headquarters of start-ups with a market value above USD 1 billion in the EU compared to other countries (26 in the EU, 109 in the United States, and 59 in China). Therefore, maintaining the EU's competitive position depends on increasing its innovation potential.

Another important EU instrument supporting innovation is the "Stairway to excellence (S2E)", which will continue to provide customized support and expertise to regions that are lagging behind in terms of innovation. This initiative was launched as part of a partnership with the European Parliament (EP) in 2014. For 2018-2019, the initiative has a budget of EUR 3 million. Its purpose is to provide support and expertise to those regions that show significant delays in implementing innovation. The initiative has two main objectives: (1) "finding" EU funds that will help finance innovative projects and cooperate with regions with a similar potential, and (2) jointly create innovative clusters. As part of the "Stairway to excellence", the agenda of the Science and Knowledge Committee, the Joint Research Center (JRC), will help regions not only tap into their priorities and strengths, but also offer guidance in the process of mutual transfer of knowledge between regions and in developing human creativity and talents. This initiative will help regions to develop, update and refine their smart specialization strategies - i.e. regional innovation strategies based on niche areas in which regions can demonstrate a competitive advantage - for the needs of the 2021-2027 budget period (Szatlach 2018, p. 598). It will also help them identify adequate EU resources to finance innovative projects, and pair up with other regions with similar assets to create innovation clusters. Following the Commission's proposals for the future Cohesion Policy, the new *Horizon Europe* programme, and in line with the Commission's renewed agenda for Research and Innovation, "Stairway to Excellence" is another way the Commission is helping Europe's regions prepare for the future, with solid innovation strategies supported by EU funds in the next long-term EU budget for 2021-2027.

To increase investment in innovative start-up and scale-up enterprises in Europe, the European Commission and European Investment Fund (EIF) (European Commission 2018d) have launched the VentureEU initiative, which is part of the wider ecosystem that is being introduced by the EU to enable many innovative European entrepreneurs to become global market leaders. In particular, as part of the Action Plan for a Capital Markets Union, the Commission presented a list of measures to improve access to finance for small and growing enterprises to develop and create jobs. The Investment Plan for Europe also aims to improve the business

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environment in the EU by making smarter use of financial resources and removing barriers to investment. The Commission and the EIF have announced six funds that will receive EU support through investment in the venture capital market. The funds, supported from EU funds in the amount of EUR 410 million, are to raise up to EUR 2.1 billion in public and private investment. This, in turn, is expected to trigger an estimated EUR 6.5 billion of new investments in innovative start-ups and scale-ups across Europe, thereby doubling the amount of venture capital currently available in Europe. While venture capital (VC) is important for a thriving capital markets union, it remains largely underdeveloped in Europe. In 2016, venture capital investors invested around EUR 6.5 billion in the EU, compared with EUR 39.4 billion invested by the United States. Furthermore, VC funds in Europe are too small - an average of EUR 56 million in the EU, compared with 156 million in the US. As a result, the companies are moving to ecosystems where they have better chances for rapid development. The number of enterprises that managed to work out a market value of over USD 1 billion by the end of 2017 was 26 in the EU, compared to 109 in the US and 59 in China.

VentureEU will provide new sources of financing, giving European innovators the opportunity to become leading global companies. About 1,500 start-ups and scale-ups across Europe are expected to gain access to funds. The EU will provide output investments worth up to EUR 410 million, including EUR 67 million from EIF own resources: EUR 200 million under the Horizon 2020 InnovFin capital instrument, EUR 105 million from the COSME (Europe's program for small and medium-sized enterprises) and EUR 105 million from the European Fund for Strategic Investments (EFSI) - the so-called Juncker Plan. The remaining financing will be collected by selected fund managers, mainly from independent investors. The six funds will invest in several smaller investment funds, covering projects in at least four European countries. Invested funds will help finance SMEs and mid-cap companies from a variety of sectors, such as information and communication technologies (ICT), digital technologies, life sciences, medical technologies, and resource efficiency and energy efficiency. The EU investment in VentureEU will be managed by the EIF under the control of the Commission. It will be introduced by six professional and experienced fund managers providing an approach based entirely on market mechanisms. This will attract more investment and significantly increase the availability of VC financing for start-ups and scale-ups in Europe.

Investing in research and innovation means investing in the future of Europe, knowledge and new solutions allowing to maintain sustainable economic growth and make the economy more competitive. Therefore, the new Strategic Innovation Agenda (SIA) for 2021-2027 (European Commission 2019c; European Commission 2019d; European Commission 2019e; European Commission 2019f) has the following assumptions:
- increasing the impact of knowledge and innovation communities at a regional level - the EIT will strengthen its networks, engage more higher-education institutions, enterprises and research organizations, and develop strategies for regional coverage. KICs will also develop links to smart specialization strategies;
- increasing the innovation capacity of higher education - the EIT will support 750 higher -education institutions in the form of financial resources, expertise and training. The Institute will develop and launch activities mainly in countries with lower innovation capacities. To this end, the EIT will benefit from successful initiatives such as HEInnovate, i.e. a free self-assessment tool for all types of higher-education institutions, or a regional innovation impact assessment framework that allows universities to assess how they support innovation in regions where they are present;
- creation of new KICs - the EIT will launch two new KICs, selected in areas most relevant to the priorities of the *Horizon Europe* program. The first new KIC is to be created in 2022 and will focus on the cultural and creative sectors. The second new KIC is to be launched in 2025 and the decision on its priority area will be made at a later stage.

Conclusions

An important source of finance for Industry 4.0 projects are EU programs. Supporting these projects is one of the priorities set out in EU development policy, with the EU aiming to spread the embrace of Industry 4.0 throughout its territory. Particularly noteworthy are initiatives such as the establishment of the European Research Area (ERA) or the European Institute of Innovation and Technology (EIT), the allocation of increasing funds for research and innovation in the Framework Programs, developing the mobility of researchers and students, creating European technology platforms, supporting smart specializations and sectoral approach (clusters of enterprises from across the EU), supporting the development of e-administration and the Digital Single Market, promoting Open Science and Open Innovation, stimulating the creation of pan-European venture capital, supporting the development of industry infrastructure (ICT, energy and transport networks), and finally, adopting legal regulations which protect intellectual property and personal data as well as promoting European standardization.

Strengthening innovation activities in the EU is becoming one of the paths for rebuilding the European economy and improving Europe's competitiveness in the global economy. This poses new challenges for the EU's industrial policy for 2021-2027 regarding its objectives, instruments and mechanisms for research, technological development and innovation. Particular attention is being paid to the effectiveness and efficiency of the instruments employed at the level of EU innovation policy. The need to devise an appropriate innovation ecosystem is emphasized. It is especially important to put forward institutional framework conditions for the creation and diffusion of innovation among the Member States, which would be conducive to the implementation of effective innovation systems at European, national and regional level, all while being mutually complementary and allowing the synergy effect. The European Commission's initiatives aimed at increasing efficiency in research, boosting innovation and developing modern technology markets reflect the right shift in EU innovation policy.

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ENTREPRENEURSHIP AND SUSTAINABILITY ISSUES
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IS THE USE OF MOBILE HEALTH APPS HEALTHY OR TOXIC TO CONSUMERS?

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Abstract. Increasingly omnipresent and powerful mobile technology has the potential to address long-standing issues in the healthcare sector. mHealth (mobile health) apps can be used by consumers or patients for their wellness, prevention or treatment management. This study explored the scale of awareness of mHealth apps and the perception of using mHealth apps for monitoring health in Mauritius. The study also explored the barriers they faced. The results have shown that the people of Mauritius are aware and have downloaded and used mHealth apps. Fitness seems to be important, as most of the respondents find the fitness training app most useful. The findings have also shown that biggest barrier that prevents the respondents from using a mHealth app is cost concerns and privacy or security. Hence, it is recommended that the cost of mobile apps be investigated. Furthermore, there should be communication from app creators about the benefits of using a particular app, as well as the security measures and protection of private users and their information.

Keywords: medical apps; Mauritius; health; fitness; wellness; mobile health apps

Reference to this paper should be made as follows: Cant, M.C, Doomun, R., Wiid, J.A. 2020. Is the use of mobile health apps healthy or toxic to consumers? *Entrepreneurship and Sustainability Issues*, 8(1), 1162-1176. http://doi.org/10.9770/jesi.2020.8.1(78)

JEL Classifications: I10, M00

1. Introduction

There has been a renewed focus on health worldwide and people are more engaged on what they consume than even a decade ago. The mHealth app is emerging due to the increase in the development of apps in healthcare. According to Research2Guidance (2017), there were around 3.7 billion of downloads of mHealth apps around the globe and there are 325,000 health apps (health, fitness and medical apps) available on all major app stores – the most there has ever been. At this pace, the global market for health apps is projected to reach $102.43 billion by 2022 (Medium, 2017).

Due to the growth in the interest and use of apps, the management of these apps are important. mHealth apps can be used by consumers or patients as part of their wellness, prevention or treatment regimens. In this report, we share the results of a study we have undertaken to look more closely at the usage of healthcare apps among the

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Mauritian population. We also look at the barriers to usage of the apps and propose recommendations on how to benefit from using mHealth apps.

2. Defining mobile health

mHealth can be defined as "medical and public health practice supported by mobile devices, such as mobile phones, patient monitoring devices, personal digital assistants, and other wireless devices" (World Health Organisation, 2011). Mobile health technologies allow individuals to easily and conveniently manage and access to their health information (mHealth. Use of mobile healthtools in pharmacy practice, 2019). The focus on mHealth is budding due to the rise in the production of smartphones and tablets (Krishna, Boren, & Balas, 2009; Klonoff, 2013). Wireless sensors present in smartphones support new methods for continuous monitoring of health at high precisions (Mosconi, Radrezza, Lettieri, & Santoro, 2019).

3. Literature review

A Google scholar search revealed articles on the topic under discussion. Research on which the articles are based, are mainly conducted in Western society in developed countries such as United States of America, England and Italy. What makes the research at hand different is that it was conducted in a developing country that is part of the Eastern African sub region (Kiprop, 2018).

Research conducted by the most popular types of apps used and installed among nurses were related to drug information, health calculators, and health guidelines, and for Kayyali, Peletidi, Ismail, Hasjim, Bandeira, and Bonnah (2017) the most used apps are health related and lifestyle apps. Health data; calorie counter; healthy eating; nutrition and general health lifestyle are informative in nature as well as fitness training (physical training apps) are regarded as useful. The findings of the research at hand is supporting the research conducted by Bhuya, Lu, Chandak, Kim, Wyant, Bhatt, Kedia and Chang (2016) and Mayer, Rodríguez, Blanco, and Torrejon (2019). According to these authors the difference in the use of health apps are caused by personal need and concerns. Protecting personal health information, technology effectiveness and failure, preference for face-to-face interaction with their surgeon, level of effort required, and ability of the older adults to navigate mobile health technology.

By 2020, mobile apps are forecasted to generate around $189 billion in revenues via app stores and in-app advertising. As of fourth quarter of 2019, there were 2.57 million available apps at Google Play Store and 1.84 million apps available in the Apple's App Store, the two leading app stores in the world (Statista, 2019). The growth of download numbers is driven mainly by downloads from Android and iOS. As per mHealth Solutions Market (2019), the global mHealth solutions market is predicted to reach USD 90.49 Billion by 2022. The growing demand of healthcare applications and advanced connectivity have led to the growing interest in the development of mHealth apps.

A mobile application (or mobile app) is a software application designed to run on smartphones, tablet computers and other mobile devices. They are usually available through application distribution platforms, which are typically operated by the owner of the mobile operating system, such as the Apple App Store, Google Play (Android), Windows Phone Store, and BlackBerry App World. Table 1 shows some applications that have been developed and their functionalities.

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Table 1. Some mHealth apps and their functionalities

Name of App	Major Functionality
Android	
Fooducate	Nutrition
Lifesum	Diet and Exercise
MyFitness Pal	Keep track of eating
Runtastic Running and Fitness Tracker	Run and walking tracker
StrongLifts 5X5	Workout
iPhone	
Nike Training Club	Workout
Fitocracy	Gamification to improve fitness
Calm	Meditation
Fitbit	Health and Fitness
Weight Watchers	Calorie counter
Both	
MySugr	Diabete tracker

Source: compiled by the authors

In a report by IMS Institute for Healthcare Informatics (2016), over 165 000 healthcare consumer qualified apps were selected for review from both the Apple iOS and Google app platforms. Through review and selection criteria, to include prioritisation of the most downloaded apps, 26 864 were selected as representative of the most widely used mHealth apps by consumers. mHealth apps can be divided into two main categories: those which facilitate overall wellness such as exercise and diet, and those which specifically focus on disease management. However, the awareness and knowledge of these apps need to be increased to reach out to both the public and healthcare professionals in using the apps.

The systematic review by Mosa, Yoo, & Sheets (2012) acknowledged the importance of mHealth in medicine and healthcare. The Economist Intelligence Unit in PwC report (2014) examined the current state and potential of mHealth apps in developed and emerging markets, the ongoing barriers to its adoption and the implications for companies in the field. It was found that consumers have high expectations for mHealth apps, particularly in developing countries due to increasingly omnipresent mobile technologies and mobile subscriptions. Based on the research, the key findings were:

- Widespread adoption of mHealth apps will require changes in behaviour of actors who are trying to protect their interests.
- Patients want more convenient provision of healthcare, but they also want greater control.
- Patients in emerging markets are much more likely to use mHealth apps or services than those in developed countries.
- Widespread mHealth app adoption requires services and products that appeal to current payers because patients, highly sensitive to price, will provide little income.

Mobile health (mHealth) apps have shown to improve health indicators, but concerns remain about the inclusion of populations from low and middle-income countries in these new technologies.

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4. Aim and methodology

The aim of this study was to explore the scale of awareness of mHealth apps and the perception of using mHealth apps for monitoring health in a middle-income country like Mauritius. The study also explored the barriers they faced.

This study involved a survey in the form of questionnaires for the general public. The questionnaires consisted of demographic-related questions and Likert-scale questions to determine whether respondents owned a smartphone, used apps, were aware of mHealth apps and barriers preventing them from using these apps. The questionnaire was piloted to distribution on a sample of 10 members of the public where it was found to be viable.

Based on convenient sampling, 385 questionnaires were distributed across the Mauritian population in August 2018. According to the Worldmeter (2018 Mauritius had a population of 1 268 315 people in 2018 and a sample of 385 at a 95% confidence level and 5% margin of error. A total of 141 useable questionnaires were received back, that is an 8.25% margin of error at a 95% confidence level at a 50% response distribution (Raosoft, 2004). The questionnaires were distributed both electronically and by hand through a researcher in Mauritius. The statistical package SPSS was used for analysing the data after it was captured and cleaned.

The demographic profile of the respondent group is presented in table 2 below. The majority of respondents (43.3%) were between 25 and 34 years of age. The gender split for the respondent group is male dominated, with 56% of the respondents being male. All (100%) of the respondents owned a smartphone and the majority, 85.8% (n =121) reported that they were aware of mHealth apps.

Table 2. Demographic profile

	% of Total	Total (n = 141)
Age group		
18-24	28.4	40
25-34	43.3	61
35-44	24.1	34
45-54	2.8	4
55-64	1.4	2
Gender		
Male	56	79
Female	44	62
Own a Smartphone		
Yes	100	141
No	0	0

5. Results

The respondents were asked a series of questions regarding mHealth apps to determine whether they are aware of mHealth apps, the identification and use of the mHealth apps. Questions regarding the usefulness and barriers that prevent the use of mHealth apps were also asked.

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5.1. Awareness

Most of the respondents (85.8%, n=121) are aware of mobile health applications for smartphones, figure 1.

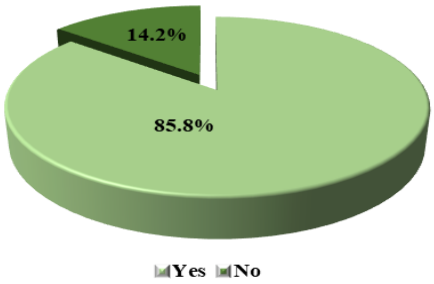

Figure 1. Aware of mHealth apps for smartphones

5.2. Identification

Note the question regarding the identification of mHealth apps is a multiple response question and therefore the groups of respondents for the different apps are not independent. This is why the percentages of cases add up to more than 100%, see figure 2.

On average, each respondent selected 2.56 apps that they are aware of. The best-known app is SamsungHealth with more than 50% (54.5%, n=72) of the respondents having selected it. GoogleFit (37.1%, n=49) is the second-best known app, followed by FloPeriodOvulationTracker (31.8%, n=42). Of those that selected FloPeriodOvulationTracker, 53.3% (n=32) are female.

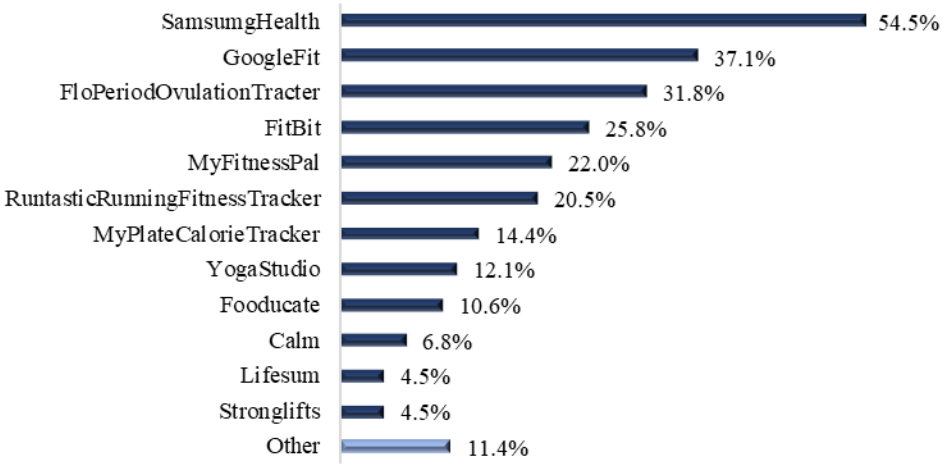

Figure 2. Awareness of mHealth apps

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5.3. Downloads and/or use of mHealth apps

Note the question regarding the download and/or use of mHealth apps is a multiple response question and therefore the groups of respondents for the different apps are not independent. This is why the percentages of cases add up to more than 100%.

On average, each respondent selected 1.76 apps that they have used or downloaded, see figure 2. The most popular app is SamsungHealth with more than 50% (52.7%, n=58) of the respondents having selected it. GoogleFit (24.5%, n=27) is the second most popular app, followed by FloPeriodOvulationTracker (23.6%, n=26). Of those that selected FloPeriodOvulationTracker, 42.0% (n=21) are female, see figure 3.

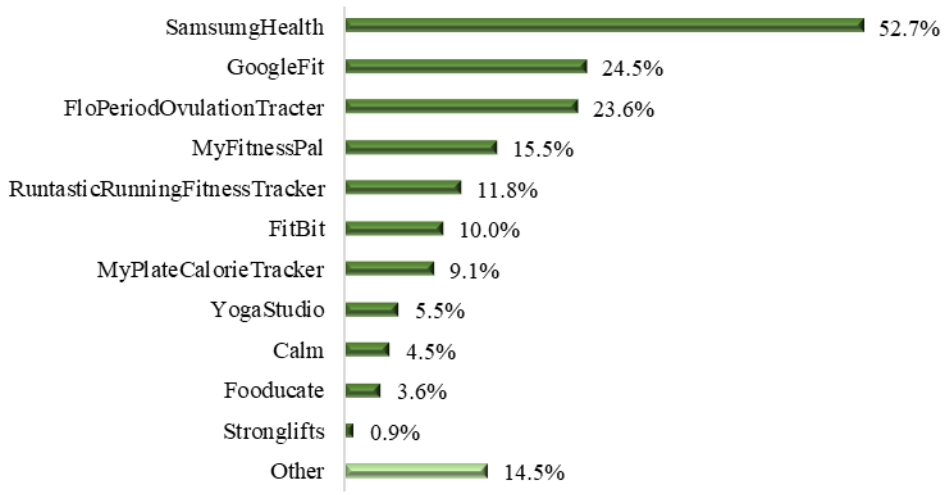

Figure 3. Downloads and/or use of mHealth apps

The respondents were requested to indicate what factors do they considered as important when downloading the mHealth app. The variables were firstly treated as categorical and secondly as numerical in the measurement level.

Treating the variables as categorical in the measurement level.
Considering the combined size of the Important and Very important proportions in the graph below, one can see that Cost of App (78.0%, n=110) is the most important factor when deciding which mHealth app to download, see figure 4.

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	Not at all Important	Slightly Important	Neutral	Important	Very Important	Total
Rating of The App	6	7	19	62	47	141
	4.3%	5.0%	13.5%	44.0%	33.3%	100.0%
Cost	1	7	23	46	64	141
	0.7%	5.0%	16.3%	32.6%	45.4%	100.0%
Friend Family Recommendation	6	21	32	65	17	141
	4.3%	14.9%	22.7%	46.1%	12.1%	100.0%
Appearance of App	4	16	31	66	24	141
	2.8%	11.3%	22.0%	46.8%	17.0%	100.0%
Brand Reputation	3	11	36	66	25	141
	2.1%	7.8%	25.5%	46.8%	17.7%	100.0%
Suitability of App	1	9	19	66	46	141
	0.7%	6.4%	13.5%	46.8%	32.6%	100.0%
Other	3	6	115	9	8	141
	2.1%	4.3%	81.6%	6.4%	5.7%	100.0%

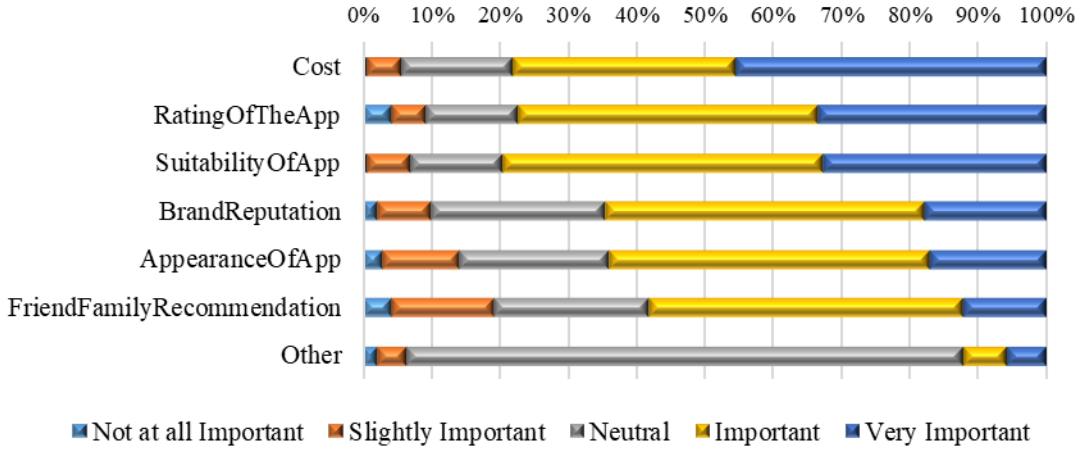

Figure 4. Factors considered when downloading the mHealth app: categorical measurement

Treating the variables as numerical in the measurement level.

These variables are Ordinal (categorical) in measurement level and as such, they are sometimes treated as numerical (scale in measurement level), provided that the number of values in the scale is no less than four. However, when interpreting the mean scale values for these variables, it must always be done relative to the scale. By no means should a mean value be construed as the average importance of the influencing factor. The mean scale value should be interpreted relative to the middle value of the scale (in this case it is 3). For example, if the mean of the scale values is higher than the middle value of the scale, then you can deduce that the respondents tended more to consider this factor to be important rather than not important.

On average, Cost (M=4.17, SD=0.925) is rated as the most important influencing factor when deciding which mHealth app to download, see figure 5. These results carry the same information as the previous section in a more parsimonious way.

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	Mean	N	Std. Deviation
Rating of the App	3.97	141	1.028
Cost	4.17	141	.925
Friend Family Recommendation	3.47	141	1.025
Appearance of App	3.64	141	.988
Brand Reputation	3.70	141	.924
Suitability of App	4.04	141	.885
Other	3.09	141	.643

Figure 5. Factors considered when downloading the mHealth app: numerical measurement

5.4. Usefulness of mHealth apps

Respondents were asked to rate the usefulness of the mHealth apps on a 5-point Likert scale ranging from not useful at all to very useful. The variables were firstly treated as categorical and secondly as numerical in the measurement level.

Treating the variables as categorical in the measurement level.

Considering the combined size of the not useful at all to very useful proportions in the graph below (figure 6) one can see that Fitness Training Apps (83.7%, n=118) is the most useful mHealth app.

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	Not at all Useful	Somewhat Useful	Useful	Very Useful	Total
Healthy Eating Apps	6	40	69	26	141
	4.3%	28.4%	48.9%	18.4%	100.0%
Fitness Training Apps	2	21	78	40	141
	1.4%	14.9%	55.3%	28.4%	100.0%
Calorie Counter Apps	6	35	71	29	141
	4.3%	24.8%	50.4%	20.6%	100.0%
Nutrition Apps	7	28	86	20	141
	5.0%	19.9%	61.0%	14.2%	100.0%
General Health Lifestyle Apps	3	42	78	18	141
	2.1%	29.8%	55.3%	12.8%	100.0%
Sleep Monitoring Apps	14	63	49	15	141
	9.9%	44.7%	34.8%	10.6%	100.0%
Medication Reminder Apps	6	35	61	39	141
	4.3%	24.8%	43.3%	27.7%	100.0%
Health Data Apps	7	19	70	45	141
	5.0%	13.5%	49.6%	31.9%	100.0%
Other Apps	10	108	21	2	141
	7.1%	76.6%	14.9%	1.4%	100.0%

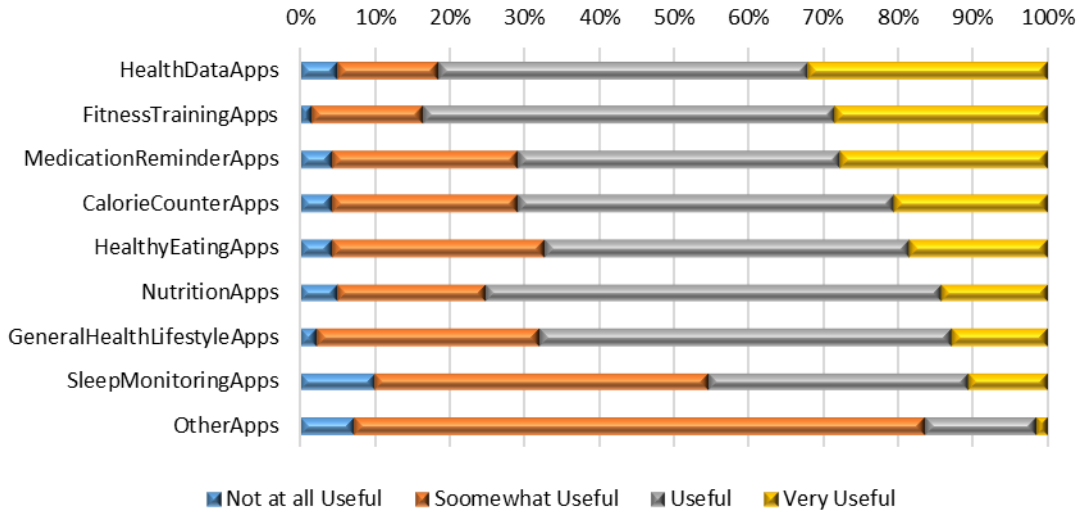

Figure 6. Usefulness of the mHealth apps: categorical measurement

Treating the variables as numerical in the measurement level.

These variables are Ordinal (categorical) in measurement level and as such, they are sometimes treated as numerical (scale in measurement level), provided that the number of values in the scale is no less than four. However, when interpreting the mean scale values for these variables, it must always be done relative to the scale. By no means should a mean value be construed as the average usefulness of the app. The mean scale value should be interpreted relative to the middle value of the scale (in this case it is 2.5). For example, if the mean of the scale values is higher than the middle value of the scale, then you can deduce that the respondents tended more to find this app to be useful rather than not.

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On average, Fitness Training Apps (M=3.11, SD=0.694) is rated as the most useful app, see figure 7. These results carry the same information as the previous section in a more parsimonious way.

	Mean	N	Std. Deviation
Healthy Eating Apps	2.82	141	.780
Fitness Training Apps	3.11	141	.694
Calorie Counter Apps	2.87	141	.782
Nutrition Apps	2.84	141	.720
General Health Lifestyle Apps	2.79	141	.685
Sleep Monitoring Apps	2.46	141	.815
Medication Reminder Apps	2.94	141	.835
Health Data Apps	3.09	141	.806
Other Apps	2.11	141	.517

Figure 7. Usefulness of the mHealth apps: numerical measurement

5.5. Barriers that prevent the use of the mHealth app

Respondents were asked to indicate barriers that prevent people from using the (mHealth apps on a 5-point Likert scale ranging from not strongly disagree to strongly agree. The variables were firstly treated as categorical and secondly as numerical in the measurement level.

Treating the variables as categorical in the measurement level
Considering the combined size of the Agree and Strongly agree proportions in the graph below, one can see that there is a close tie with Cost concerns (78.8%, n=111) and privacy or security (78.0%, n=110) for being the biggest barrier that prevents people from using a mobile health app, see figure 8.

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	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Total
Cost Concerns	7	7	16	71	40	141
	5.0%	5.0%	11.3%	50.4%	28.4%	100.0%
Lack of mHealth Apps	6	24	54	41	16	141
	4.3%	17.0%	38.3%	29.1%	11.3%	100.0%
Lack of evidence viability of mHealth Apps	4	5	36	73	23	141
	2.8%	3.5%	25.5%	51.8%	16.3%	100.0%
Privacy Security	3	4	24	75	35	141
	2.1%	2.8%	17.0%	53.2%	24.8%	100.0%
Ease of Use	4	17	31	68	21	141
	2.8%	12.1%	22.0%	48.2%	14.9%	100.0%
Technological Barrier	5	11	30	69	26	141
	3.5%	7.8%	21.3%	48.9%	18.4%	100.0%
Battery memory use of Smartphone	5	10	27	55	44	141
	3.5%	7.1%	19.1%	39.0%	31.2%	100.0%
Knowledge Barrier	4	7	26	71	33	141
	2.8%	5.0%	18.4%	50.4%	23.4%	100.0%
Other Apps	6	5	115	10	5	141
	4.3%	3.5%	81.6%	7.1%	3.5%	100.0%

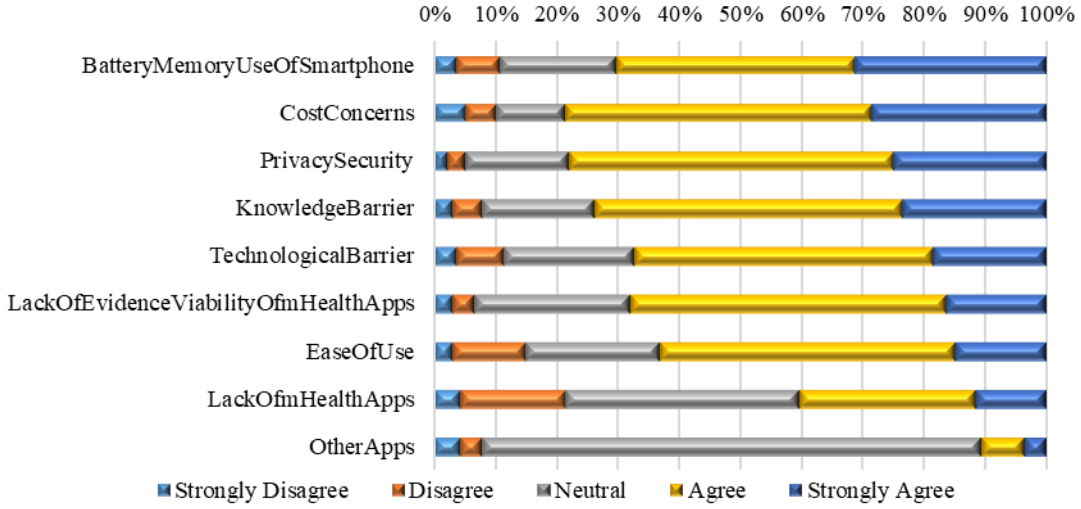

Figure 8. Barriers that prevent the use of the mHealth app: categorical measurement

These variables are Ordinal (categorical) in measurement level and as such, they are sometimes treated as numerical (scale in measurement level), provided that the number of values in the scale is no less than four. However, when interpreting the mean scale values for these variables, it must always be done relative to the scale. By no means should a mean value be construed as the extent to which this factor is a barrier to using a mobile health app on average. The mean scale value should be interpreted relative to the middle value of the scale (in this case it is 3). For example, if the mean of the scale values is higher than the middle value of the scale, then you can deduce that the respondents tended more to find this factor to be a barrier rather than not.

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On average, privacy or security (M=3.96, SD=0.852) is rated as the strongest barrier to using a mobile health app, followed closely by Cost concerns (M=3.92, SD=1.022), see figure 9. These results carry the same information as the previous section in a more parsimonious way.

	Mean	N	Std. Deviation
Cost Concerns	3.92	141	1.022
Lack of mHealth Apps	3.26	141	1.012
Lack of Evidence Viability of mHealth Apps	3.75	141	.871
Privacy Security	3.96	141	.852
Ease of Use	3.60	141	.977
Technological Barrier	3.71	141	.975
Battery Memory Use of Smartphone	3.87	141	1.048
Knowledge Barrier	3.87	141	.928
Other Apps	3.02	141	.649

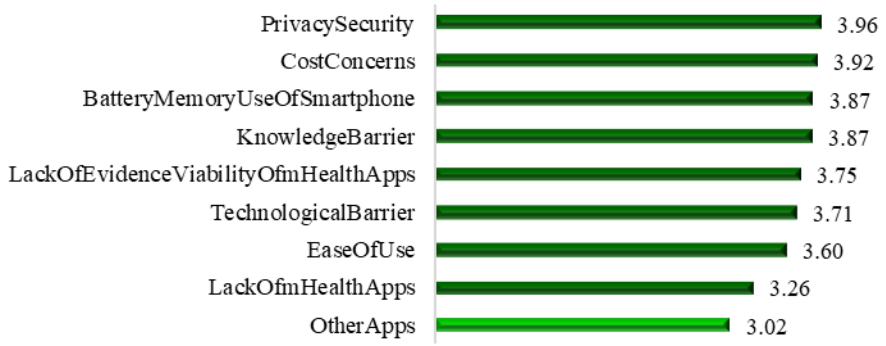

Figure 9. Barriers that prevent the use of the mHealth app: numerical measurement

6. Discussion

A mobile app is software programs that are designed for mobile devices such as a tablet computer or a smartphone and requires an operating system to run. Apps are designed for the end user and allow the user to perform specific tasks. Mobile apps were originally intended for productivity assistance, but the demand for apps caused a rapid expansion into other areas for instance retailing, gaming, medicine etcetera, there are literally millions of apps available. One such an app is mobile health or mHealth that provides health related services for smartphones and tablet PCs. As these apps are accessible from both home and on-the-go, health apps are of the movement towards mobile health programmes in health care (Rouse 2011).

The aim of the article is to explore the scale of awareness of mHealth apps and the perception of using mHealth apps for monitoring health in a middle-income country like Mauritius.

The research revealed that all respondents have smartphones and that the majority of the respondents are aware of mHealth apps and that the best known and most downloaded mHealth app by the respondents is SamsungHealth. About 54.5% are aware of the SamsungHealth apps and 52.7% of the respondents had downloaded it. Respondents consider the cost, suitability and rating of the apps before downloading it. According to the

respondents the most useful apps are apps dealing with fitness training, health data and medical reminders. The biggest barrier that prevents the respondents from using a mobile health app is cost concerns and privacy or security.

Conclusions and recommendations

Smartphones are mobile devices that are readily available and used every day in a middle-income country like Mauritius. The people of Mauritius have knowledge of apps and are aware specialised of mobile applications (apps) such as mHealth. Fitness seems to be important as most of the respondents find the fitness training app use most useful. As can be expected from a middle-income country, the people are concerned about cost of downloading and associated costs such as data, as data is a prerequisite for using apps. Besides the cost aspect, privacy is very important to the people and is therefore seen as a barrier that prevents them from using apps. It is recommended that the cost of mobile apps be investigated. Furthermore, there should be communication and education from app creators regarding the benefits of using a particular app, as well as the security measures and protection of private users and their information.

Based on the findings of the research it seems that the type of health app used as well as the barriers to using these apps are similar in developed and developing countries. There is also not a significant difference between the type of app used and barriers to use in a Western society and Africa.

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ADAPTABILITY OF THE BELARUSIAN MODEL OF DIAGNOSTICS OF FINANCIAL STABILITY TO AGRICULTURAL ENTERPRISES

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Abstract. The article considers the current state of the agricultural sector of the Republic of Kazakhstan and its capabilities. The role of state support for the agro-industrial complex, characterized by high capital intensity, long payback period, low profitability, and dependence on natural and climatic conditions, which makes it less competitive in comparison with other sectors of the economy, and leads to the fact that the activities of agribusiness entities is more exposed to financial risk, is shown. A comparative assessment of the financial stability indicators of agricultural formations of the dairy sector of the Grodno region of the Republic of Belarus and two agricultural producers of the Republic of Kazakhstan with similar production specialization was carried out in order to determine the likelihood of the onset of the financial crisis using statistical multi-choice models. The scientific novelty of the study is to identify promising areas for assessing the financial stability of domestic agricultural enterprises, including on the basis of studying foreign experience in diagnosing the financial crisis, which will allow predicting and developing the right managerial decision aimed at improving the financial condition of agricultural enterprises.

Keywords: financial stability, risk of financial crisis, production efficiency, production and financial factors

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JEL Classifications: Q10, Q12, Q13

1. Introduction

The transition of the modern economy to building fundamentally new economic relations, increasing the independence of business entities in the implementation of financial policies, and their entry into international markets fundamentally changed the conditions for the functioning of the organization and exacerbated the problem of ensuring the stability of economic development. The basis of sustainable growth and financial stability

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of the national economy in market conditions is the financial stability of agricultural enterprises as the most significant structural element of the country's economic system. Financial stability serves as a guarantee of survival and the basis of a firm position of the enterprise, in connection with which there is increasing interest from external and internal users in assessing the financial capabilities of enterprises both in the short term and for the long term.

The strategic orientation of the organization's management system is largely determined by the prevention of the development of crisis phenomena, a necessary element of which is the timely and high-quality diagnostics of the stability of the financial condition of the organization, as a result of which the prevailing goal of financial management is achieved - achieving financial equilibrium with steady economic growth. This is an urgent problem both at the level of an individual business entity, and at the sectoral and regional level, especially for agriculture, since this industry is characterized by an increased risk of economic activity and a low level of cost recovery.

An important aspect is the selection of effective methodological tools for diagnosing financial stability, which is especially important in the context of the digitalization of the economy, characterized by new methods of generating, processing, storing, transmitting information in all spheres of human activity. Thus, the current level of digitalization of the economy allows organizing mechanisms for collecting, processing and delivering basic and effective information to the place of use with minimal use of labor, material and financial resources to perform these functions. Possessing relevant information is a unique competitive advantage of business entities, which allows increasing the accuracy of forecasting their activities and thus ensuring financial stability (Achapovskaya, 2019).

In this regard, the basis of this study is to determine the most effective in terms of prognostic accuracy, substantive capacity, and informational usefulness while at the same time simplicity in applying the approach to assessing the financial stability of agricultural enterprises of the Republic of Kazakhstan.

2. Research background

Diagnostics of financial stability is aimed at assessing the current financial condition of the organization and its dynamics in the future, and therefore, the used diagnostic tools with a high degree of accuracy should identify the risks of crisis and financial insolvency of the organization (Tvaronavičienė, Masood, Javaria, 2018; Jing, Zhang, Hong, 2020).

Note that in domestic and foreign practice, two main approaches to the diagnosis of financial stability are used - coefficient (R-analysis, from ratio) and prognostic (assessment of the probability of loss of financial stability, bankruptcy based on multidimensional factor models). In literary sources, one can find a different classification of approaches (qualitative and quantitative; based on the official methodology and alternative methods).

The prediction of the financial crisis has been the subject of serious statistical research. A significant contribution to solving this problem was made by Western scientists and analysts as well as prominent Russian and Kazakh scientists.

The methods used for predicting the probability of crisis phenomena in the activities of enterprises differ in the scope, composition of indicators used by statistical methods for processing the initial information and constructing prognostic models. At the same time, the models developed on the basis of multiplicative discriminant analysis (MDA-models) and logit-regression analysis (logit-models) was most widely used. The issues of the content of these models, their predictive value, as well as adaptability to the conditions of activity of national enterprises have been investigated by a number of domestic scientists.

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All models are built on the basis of a comprehensive indicator of the probability of bankruptcy for various key indicators (from two to seven or more) that are most responsible for crisis development trends: this is information about the features of the capital structure, cash and material flows, performance results, internal and external relations and others (Tolpegina, Mohun, 2014). Thus, approaches to predicting a financial crisis (bankruptcy) are associated with the formation of a crisis field - i.e. systems of special indicators, indicators that indicate a change in financial stability. At the same time, a system of criteria is developed with respect to which the dynamics of the values of coefficients are studied, indicators, since, as studies have shown, some financial ratios of the failed enterprises significantly differ from those of stable ones.

Despite the high predictive value of the constructed models, there are a number of restrictions on their use for domestic enterprises. For example, some authors attribute the problem of data stationarity, poor quality of financial statements and insufficient data used to build models, as well as the negative impact of the practice of manipulating financial statements and criminal bankruptcies (Kolyshkin, Kazakov, 2018). Another point of view shows that the forecasting results differ significantly depending on the size of the enterprise, its industry affiliation, legal form, degree of state regulation, state presence among shareholders and its share (Fedorova, Khrustova, Chekrizov, 2018).

Monitoring of the results obtained on the basis of the most well-known MDA models during testing of agricultural enterprises of the Grodno region (Republic of Belarus) over a number of years (sample of more than 600 observations) made it possible to identify the following drawbacks in their use for national business entities.
Firstly, the over-versatility of most models. The system of indicators included in the model does not take into account the industry specifics of the organization. So, for example, agricultural enterprises are characterized by the presence of a temporary gap in the payment turnover, which is a means of fluctuation during the year in the circulation of working capital. This is manifested in the unevenness of production costs and revenue on the accounts of enterprises, due to the seasonality of agricultural production. As a result, farms are faced with problems such as: a long production cycle, a slowdown in working capital turnover, and frequent interruptions in the labor process. In addition, the features of the agricultural producer are determined by his specialization, that is, a combination of individual sectors of agricultural production in the economy. An important influence on the results of agricultural activities is exerted by biological factors.

Secondly, not entirely justified critical values of integral indicators, which is also related to the lack of industry specifics in accounting models. For example, due to the characteristics of various industries, the significance of indicators included in the models varies significantly. In particular, for trade organizations the value of the financial leverage ratio can be close to unity, while for agricultural organizations the generally accepted criterion for this ratio at a level of no more than 0.5 is very significant. In addition, the industry specifics of organizations are not taken into account when determining the system of indicators, on the basis of which integral indicators are also built.

Thirdly, most models do not take into account the differences in macro- and microeconomic conditions in which the business entities of our republic function (the degree of development of market relations, the role of state structures in managing the national economy). For example, in foreign companies, when assessing their financial condition, an important place is occupied by indicators of their market activity, the possibility of participation in the securities market, whereas in our conditions such a market practically does not exist.

Fourth, there are national characteristics, as well as differences in the legislative and information base. National financial statements differ from the financial statements of the United States and European countries: there are differences in their purpose, in the structure of capital, in the methodology for reflecting inflation factors. In addition, a number of established financial terms, although they coincide in name with the terms of foreign

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countries, however, they differ significantly in content. There are differences with respect to the reporting period. So, for example, a fiscal year under IFRS is equal to any 12 months selected at the discretion of the manager. In domestic practice, a fiscal year is equal to a calendar year and lasts from January 1 to December 31.

Fifth, obsolescence of existing crisis-forecasting models has occurred. So, the first Altman model was developed in 1968, the second in 1983, the Fox model in 1973, and Tuffler in 1977. Therefore, these models do not take into account the requirements for the financial and economic development parameters of both the national economies as a whole and individual organizations (Shcherbatyuk, 2015).

Nevertheless, despite the above drawbacks, the approach to the development of statistical multidimensional models to obtain an integrated assessment of the financial stability of organizations and to predict the likelihood of a financial crisis in the foreseeable future is very relevant today.

The choice of the crisis modeling method used is associated with the determination of the most effective approach. Moreover, in the course of numerous studies of bankruptcy forecasting models constructed using discriminant analysis, a number of their significant shortcomings were revealed that do not allow their effective and adequate use in assessing the degree of bankruptcy. For example, these models are not able to quantify the probability of bankruptcy. It cannot be determined by the nominal value, models are able to give only its qualitative degree - as low, high, very high, etc. In addition, in all models using discriminant analysis, there is a so-called “zone of uncertainty”, if you enter a calculated final indicator, you cannot make an unambiguous conclusion about the probability of bankruptcy (Muradov, 2011).

Our studies also show that MDA models are more unstable with respect to crisis prediction. In our opinion, the reasons for this, in particular, are as follows: the need for the annual determination of the parameters of integrated assessment models and verification of the classification of farms according to new models; the impossibility of defining clear boundaries for the transition from one type of financial stability to another; increasing the complexity of the analysis due to the need to test the organization simultaneously for three discriminant functions to identify the type of financial stability; lack of opportunity for organizations experiencing financial tensions to identify threats of financial insolvency in the next reporting period (Shcherbatyuk, 2015).

To eliminate the identified shortcomings associated with the use of discriminant models for diagnosing the financial crisis, a method for constructing nonlinear binary choice models, namely, a logit model, was chosen. The advantages of their use over MDA models are determined by the following aspects. First of all, it is worth noting that, in contrast to discriminant forecasting models, which provide only a linear dependence of the probability of bankruptcy on certain factors, the logit analysis operates with the ability to build non-linear dependence models, which can be considered a significant advantage. In addition, unlike discriminant models that can only determine the qualitative degree of probability of bankruptcy, there are no problems with the unambiguous interpretation of the resulting indicator of this probability in logit models. It can take values only in the range from 0 to 1 and determines the nominal value of the probability of bankruptcy. Also in the logit models there are no “zones of uncertainty” inherent in discriminant models (Muradov, 2011).

3. Materials and methods

Kazakhstan has all the possibilities for the production of competitive agricultural products: there is a need for agricultural products in many countries, and therefore markets; there is suitable land for agricultural production; the large population that lives in rural areas. At the same time, it should be noted that Kazakhstan does not implement the above factors to create an effective competitive agro-industrial complex in the country. In this regard, the role of state regulation of agricultural development is increasing.

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Over the years of independence of Kazakhstan, the state has developed nine programs of state policy in the field of agriculture. At the present stage, the State Program for the Development of the Agro-Industrial Complex of the Republic of Kazakhstan for 2017-2021 is being implemented (Popova and Mataibaeva, 2019). However, despite the positive aspects due to the functioning of state programs, currently the development trends of the agricultural sector in the Republic of Kazakhstan are very contradictory. Agriculture remains one of the most inefficient sectors of the economy. The level of labor productivity in agriculture with a indicator of $ 10,585 for 2018 corresponds to only 44% of the indicator of the Republic of Belarus and 63.8% of the indicator of Russia. According to the SWOT analysis of the agro-industrial complex, given in the state program for the development of the agro-industrial complex of the Republic of Kazakhstan for 2017-2021, low labor productivity and low profitability of agricultural producers are among the weaknesses of the industry. The problem of sustainability of agricultural production has become particularly relevant for modern Kazakhstan (Zhakisheva, Mukasheva, Tleushanova, Zhumanova, Assilova, Berstembayeva, 2018)

The unstable financial condition of agricultural enterprises can be judged by the main indicators of financial and economic activity of the agricultural sector of the Republic of Kazakhstan (Table 1).

Table 1. Inflation-adjusted key indicators of financial and economic activity of agricultural enterprises

Indicators	2010	2011	2012	2013	2014	2015	2016	2017	2018
Volume	470710377,2	578383054,8	59162483,0	577160430,2	565805881,9	461839818,8	485184551,3	513228898,8	519769326,0
manufactured products and	488356796,2	594151741,1	634661440,8	597103884,0	569257732,1	461993890,1	507780388,2	552311092,8	533748171,0
services provided, thousand tenge	453041485,5	483058820,4	555142523,0	561684905,7	498025404,2	421956168,3	435343873,0	461936902,4	449191776,0
Income from sales of products and rendered services, thousand tenge	35315310,7	111092920,7	79518917,8	35418978,3	71232328,0	40037721,7	72436515,2	90374190,4	84556395,0
Cost of goods sold and services rendered, thousand tenge	106942589,6	110357507,8	148321492,6	126599656,9	143823590,8	203909199,0	176204785,7	131715296,9	158297911,0

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Gross profit, thousand tenge	-14030705,3	62642546,3	35202965,0	-27453779,7	17981951,8	-65658826,6	5306877,1	75403866,3	30450622,0
Non-manufacturing expenses, thousand tenge	1414,2	2054,4	1723,6	2123,5	2722,5	2969,1	2999,0	3250,0	3642,8
Profit (loss) before tax, thousand tenge	-2,5	10,6	5	-4	2,8	-11	0,9	12,7	5

Source: compiled by authors according to Internet resource of the Committee on Statistics of the Ministry of National Economy of the Republic of Kazakhstan

According to table 1 shows that the performance indicators of enterprises of the agricultural sector of the Republic of Kazakhstan for the period 2010-2018 characterized by high variability, which indicates the presence of high financial risks in their activities. The outstripping growth of production and non-production costs compared with revenue lead to sharp jumps in the dynamics of both operating profit and profitability of agricultural enterprises. Moreover, the maximum loss ratio equal to "-11%" observed in 2011 and 2015, which is due to the significant influence of external factors, the general economic decline in the country. The share of agricultural enterprises that received a negative financial result for 2010-2018, fluctuates at a level of not less than 30% of all enterprises in the agricultural sector (Figure 1). The largest share of the unprofitable result of agricultural enterprises was noted in 2013 - 48.3%, and in 2015 - 39%.

At the end of 2018, the share of enterprises that suffered a loss fell to 32% (in 2010 their share was 45%).

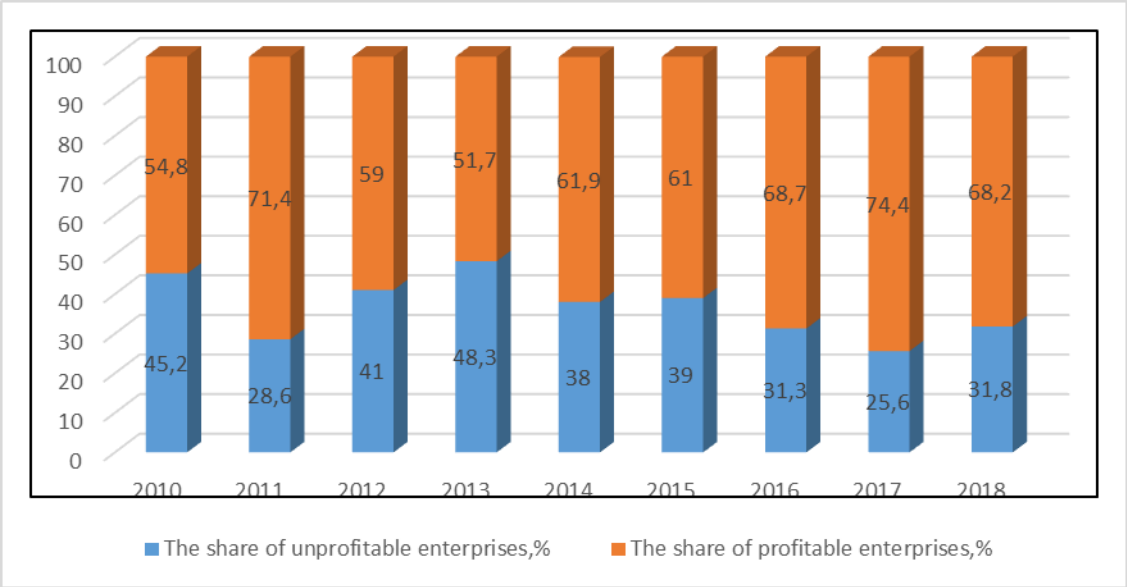

Figure 1. Distribution of agricultural formations of the Republic of Kazakhstan by their financial results for 2010-2018, %
Source: compiled by authors according to Internet resource of the Committee on Statistics of the Ministry of National Economy of the Republic of Kazakhstan

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This decrease was greatly influenced by the trend of a decrease in the total number of agricultural enterprises by almost 50% in 2018 compared to 2010 (Figure 2) .At the same time, the peak decrease in the number of enterprises was observed against the background of general financial instability in the country in 2015, when the number of agricultural formations declared insolvent amounted to 38%.

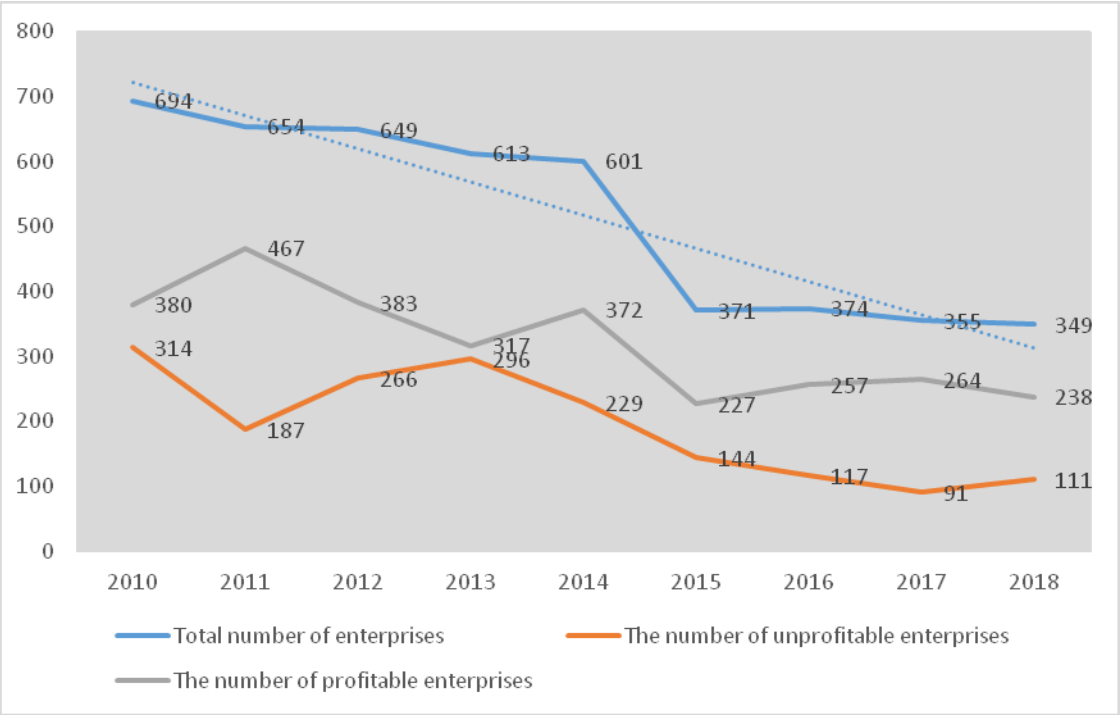

Figure 2. Distribution of agricultural units of the Republic of Kazakhstan by their number for 2010-2018
Source: compiled by authors according to Internet resource of the Committee on Statistics of the Ministry of National Economy of the Republic of Kazakhstan

The problems of sustainable development of agricultural production are multifaceted, they include various factors: natural and logistical, economic, including financial and social, the development of scientific research and organizational and managerial.

The success of agrarian reform is largely determined by the mobilization of domestic resources and opportunities by each agricultural enterprise, the ability to choose the right strategic course of development and the ability of the manager to manage entrepreneurial risk in achieving the goals (Baranova, 2016).

Thus, the development of the agricultural sector of the economy in the face of intense competition and globalization of markets determines the increasing role of strategic management of organizations in the agricultural sector. An important task of strategic management is the creation of instrumental techniques to identify, evaluate and analyze existing threats to the financial stability of agricultural enterprises.

The use of a crisis-forecasting model constructed using logit-regression to diagnose the financial stability of agricultural organizations of the Republic of Kazakhstan must meet a number of requirements. So, the crisis-forecasting (logit-regression) model should be universal in nature and smooth out differences in the specifics of the production and financial activities of organizations, as well as temporary differences, which is especially

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important in agricultural production, since the climatic conditions of management are an important factor in the sustainability of agricultural organizations (Utibaev, 2017).

Two agricultural enterprises were chosen as the object of research: the first is the leading agricultural enterprise in the market for milk and dairy products - PK "Agrofirm" Rodina ", located in the Akmola region of the Republic of Kazakhstan, and the second - the cooperative of workers “Mambetov and K”, young but a promising enterprise in the direction of dairy farming, located in the North Kazakhstan region.

As a methodological base, the logit model built for agricultural enterprises of the Grodno region of the Republic of Belarus was chosen (Tolpegin, Mohun, 2014):

$$Z=27-5{,}00\times X_1+15{,}96\times X_2-15\times X_3-1{,}16\times X_4-63{,}68\times X_5-0{,}39\times X_6+47{,}44\times X_7,$$

where: Z – the value of the crisis forecast model;
X_1- current ratio;
X_2 - financial leverage ratio;
X_3 - current assets turnover ratio;
X_4 - ratio of own working capital;
X_5 - ratio of financial liabilities with assets;
X_6 - return on equity;
X_7 - total assets turnover ratio.

When constructing this model, if the value of the function *F (Zi)* of the enterprise tested by this model is equal to zero or lower, then there is no likelihood of a financial crisis. On the contrary, if the value of the function *F (Zi)* of the tested company is equal to one or higher, then the risk of a financial crisis is high.

The methods and procedures of regression analysis served as the main method for studying the statistical relationship between the value of the integral indicator and its factor indicators. The following regression model was used (Kusainov, 2011):

$$Y = b_0 + \sum b_i X_i + \sum b_j Z_j$$

where $Y -$ the result variable;
$X_j -$ factor variation variables;
$Z_j -$ factorial categorical (attributive) variables;
$b_0, b_i, b_j -$ parameters (coefficients) of the model.

Parameters b_i for variables X_i represent the magnitude of the change in the productive variable Y when the values of the corresponding variational characteristics change by one.

Parameters b_j for variables Z_j show the magnitude of the change in the effective variable Y if the corresponding attributive characteristics are taken into account. Categorical variables Z_j take values either 0 or 1. Note that in our problem variational variables are absent.

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The advantages of using the proposed logit-model for agricultural producers of the Republic of Kazakhstan are as follows: it is quite easy to use, since it involves the calculation of 7 coefficients and their simple substitution into functional equations; on its basis, it is possible to identify agricultural organizations that are at the point of financial crisis and evaluate the "borderline" values of financial stability ratios, showing the transition from one type of financial stability to another; the model allows ranking agricultural organizations by the degree of proximity of the organization to the point of financial crisis; on its basis, the risk of the financial crisis is accurately predicted, which indicates its high practical significance.

4. Results and Discussion

At the first stage, the value of the logit model (Z) of agricultural enterprises of the Grodno region for 2017-2018 was calculated with their subsequent ranking by level Z. In this case, 4 groups of enterprises were selected by type of financial stability, where the value of the integral indicator is presented as a range of values (Table 2), then a grouping of enterprises was carried out with the definition of average values for the group in accordance with the type of financial stability (Table 3).

Table 2. The boundaries of the values of the logit-model (Z) in the grouping of enterprises by the level of financial stability

Business groups	Indicator value Z
1) A group of enterprises with a low risk of crisis	«-51» and lower
2) A group of enterprises with a moderate risk of crisis	from «-50» to «-11»
3) A group of enterprises with a risk of crisis above the average	from «-10» to «0»
4) A group of enterprises experiencing a high risk of crisis	«0» and higher

Source: compiled by authors

Table 3. The value of the logit model (Z) in accordance with the type of financial stability of agricultural organizations in the Grodno region (Republic of Belarus)

Year	Group of enterprises by level of risk of crisis	The number of objects in the group	Group average							
			Z	**X1**	**X2**	**X3**	**X4**	**X5**	**X6**	**X7**
2017	Low risk	3	-77,11	20,52	0,07	1,02	0,95	0,05	16,41	0,49
2018		3	-95,73	24,98	0,04	0,95	0,96	0,04	10,87	0,48
Absolute change (+, -)		0	-18,63	4,46	-0,03	-0,07	0,01	-0,01	-5,54	-0,01
2 years on average		x	-86,42	22,75	0,05	0,99	0,95	0,04	13,64	0,48
2017	Moderate risk	4	-16,12	5,75	0,41	1,14	0,81	0,28	13,47	0,42
2018		3	-14,68	6,61	0,27	1,07	0,85	0,21	10,51	0,44
Absolute change (+, -)		-1	1,44	0,87	-0,14	-0,07	0,04	-0,06	-2,95	0,02
2 years on average		x	-15,40	6,18	0,34	1,10	0,83	0,24	11,99	0,43
2017	Above Risk Level	3	-3,41	4,18	0,26	1,39	0,75	0,20	10,94	0,53

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2018		2	-3,58	3,50	0,83	1,18	0,81	0,36	8,43	0,36
Absolute change (+, -)		+1	-0,17	-0,68	0,57	-0,21	0,06	0,16	-2,51	-0,17
2 years on average		x	-3,50	3,84	0,54	1,29	0,78	0,28	9,69	0,45
2017	High risk	1	2,79	1,53	0,82	1,62	0,34	0,45	6,13	0,55
2018		3	6,03	2,54	0,42	1,25	0,57	0,27	5,91	0,48
Absolute change (+, -)		+2	3,24	1,01	-0,40	-0,37	0,23	-0,18	-0,22	-0,07
2 years on average		x	4,41	2,04	0,62	1,44	0,45	0,36	6,02	0,52

Source: compiled by authors

Thus, the results of testing agricultural enterprises of the Grodno region according to the crisis forecast model for 2017-2018 showed that in 2018, 8 households (72.7% of the total number of households) were not threatened by the financial crisis, since the value of logit regression was less than zero, with 6 households experiencing sufficient financial stability, while 3 households are characterized by insufficient stability, and 2 households are approaching this state.

The testing of the presented logit-model on the data of agricultural enterprises of the Republic of Kazakhstan is presented in table 4. As you can see, the values of financial stability ratios and the values of the logit-model (Z) are more similar to the data of agricultural organizations of the Grodno region for an enterprise assigned to the group with a financial risk level above average (CW "Mambetov and K").

Whereas in a high-risk enterprise (Agrofirm Rodina LLP), both the coefficient values and the integrated value of the logit-model (Z) significantly differ from those of Belarusian agricultural producers.

Table 4. The value of the logit model (Z) of agricultural organizations of the Republic of Kazakhstan in comparison with the data of agricultural organizations of the Grodno region (Republic of Belarus) in accordance with the type of financial stability

Indicator	**Z**	**X_1**	**X_2**	**X_3**	**X_4**	**X_5**	**X_6**	**X_7**
"Agrofirm "Rodina" LLP (high level of financial risk)								
2017 year	59,33	0,91	0,83	1,8	-0,095	0,45	15,46	1,8
2018 year	59,32	1,14	0,93	1,76	0,125	0,48	7,86	1,76
Absolute change (+, -)	-0,01	0,23	0,1	-0,04	0,22	0,03	-7,6	-0,04
2 years on average	59,325	1,025	0,88	1,78	0,015	0,465	11,66	1,78
Deviation from the average values in the Grodno region	54,92	-1,01	0,26	0,34	-0,44	0,11	5,64	1,26
inc.	92,57	-98,54	29,89	19,27	-2923,33	22,58	48,35	71,04
CW "Mambetov and K" (the level of financial risk is above average)								
2017 year	0,98	1,96	0,49	1,12	0,49	0,33	28,36	0,53
2018 year	-12,55	2,79	1,26	1,01	0,64	0,56	26,49	0,34

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Absolute change (+, -)	-13,53	0,83	0,77	-0,1	0,2	0,2	-1,9	-0,2
2 years on average	-5,785	2,375	0,875	1,065	0,565	0,445	27,425	0,435
Deviation from the average values in the Grodno region	-2,289	-1,47	0,33	-0,22	-0,22	0,17	17,74	-0,01
inc.	39,57	-61,68	37,83	-20,70	-38,32	37,98	64,67	-2,18

Source: compiled by authors

Nevertheless, the level of financial ratios of enterprises of the Republic of Kazakhstan as a whole indicates its compliance with the group into which these enterprises were classified. So, we can conclude that the model for diagnosing financial stability and forecasting crisis conditions proposed for Belarusian agricultural enterprises can be applied to similar enterprises of the Republic of Kazakhstan.

Conclusions

The results of the study made it possible to establish that in order to diagnose the financial crisis of agricultural enterprises; one should take into account the specifics of the industry and analyze the influence of not only indicators of financial stability, but also indicators of the efficiency of economic activity. Testing the presented logit-model allows us to conclude that the model built for Belarusian enterprises is quite applicable for the diagnosis of financial stability and the risk of crisis for agricultural enterprises of the Republic of Kazakhstan. The conducted research gives the basis to determine the advantages of using logit-regression models: they are more universal in comparison with discriminant ones; they are quite easy to use, on their basis it is possible to identify agricultural enterprises that are at the point of a financial crisis and evaluate the “borderline” values of financial stability ratios, showing the transition from one type of financial stability to another; models allow ranking agricultural enterprises by the degree of proximity of enterprises to the point of financial crisis, which indicates their high practical importance.

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DEVELOPMENT OF THE YOUTH ENTREPRENEURSHIP: EXAMPLE OF KAZAKHSTAN*

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Abstract. The article deals with the socio-economic analysis of youth entrepreneurship in Kazakhstan. Youth entrepreneurship is defined as a tool to ensure the growth of employment, the involvement of young people in economic activities, their socialization and self-realization. The development of this direction allows to use the creative potential of the younger generation in the interests of innovative development of the country. The author presents the results of socio-economic analysis conducted in the framework of the topic among young entrepreneurs and students of the Republic of Kazakhstan. Published a complex description of the socio-economic subjectivity of youth in Kazakhstan, a systematic analysis of youth entrepreneurship, its quantitative and qualitative parameters, development effectiveness and its impact on the main macroeconomic indicators that characterize the growth of the economy and its innovative flexibility. Received the dynamics of the development of the economically active population of the Republic of Kazakhstan aged 15-28 years according to the indicators presented in the article. Also, the level of youth unemployment and its relationship with the youth category NEET - Not in Education, Employment or Training. The implementation of the common efforts of the state, business, civil society institutions will contribute to the development of youth entrepreneurship is substantiated. The conclusion that only the implementation of common efforts of the state, business, civil society institutions (NGOs) will contribute to the development of youth entrepreneurship is substantiated.

Keywords: youth; entrepreneurship; business activity of youth; startups; young unemployment; young employment; Spearman Coefficient.

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1. Introduction

Intensive development of youth entrepreneurship, especially its innovative type, is a key determinant of the modernization of the national economy and investment and innovation multiplication of its growth. Youth entrepreneurship (due to the socio-psychological characteristics of young people as the most active, creative, reflective part of society) is more flexible and susceptible to changes in the external environment, which contributes to the implementation of the innovative potential of the economy, commercialization of innovations and the introduction of innovative technologies.

Besides, broad involvement of youth in business activity is one of effective tools of a solution of the problem of unemployment and ensuring full employment of a manpower that is especially important in the conditions of the crisis and post-crisis periods of development of national economy and regions. The business activity of young people, on the one hand, promotes strengthening of financial position of young people, and on the other hand – provides their professional and personal realization.

Allocation of youth business as a special segment of business is caused by his specific signs, special characteristics of strong and weaknesses. Strengths of youth business: high innovative activity, innovation of thinking; high mobility, flexibility of approaches, speed of reaction on development of the new markets; high level of opportunities of systematic updating of the entrepreneurial knowledge and skills according to the changing requirements of production and market; potential ability of young people to maintain the increased labor and nervous tension accompanying business activity, especially at her starting stage; predisposition of youth to risk.

Weaknesses of youth business: insignificant social experience; lack of business reputation; weak practical skills of application of economic laws and mechanisms; problem of formation of the starting capital.

The perspective of youth business is one of relevant tasks of the modern economic theory and practice as in her both economic, and social calls of the modern world are accumulated.

The purpose of this stage of research is to systematize methodological approaches to the study of youth entrepreneurship with the specification of its institutional support in the domestic economy.

2. Research background

Actualization of youth entrepreneurship in modern conditions grows out of the specificity of analytical tools. This specificity is based on the spread of methodological pluralism on the subject-object characteristic of the phenomenon under study. This approach seems to be the most objective, since most economic processes are now developing under the influence of a huge number of endogenous and exogenous factors. Moreover, endogenous factors are also ambiguous in their conceptual design (Europe 2020: A strategy for smart, sustainable and inclusive growth. European Commission. Brussels, 2010). Therefore, the assessment from the perspective of methodological pluralism will allow to allocate modern dominants more carefully, to integrate them into the mechanism of post-industrial development, to determine the boundaries of the lacunae of uncertainty, to differentiate risks. And in the context of youth entrepreneurship, the conceptual framework is diversified and acquires additional specification on the main two determinants: subject and object.

First, the subjective determinants of youth entrepreneurship – youth – impossible without her social evaluation. Thus, the essential sociological characteristics of "youth", highlighting his dominant subject, and alumnae place. At the same time, from this social nature of youth grows its economic constitution, the motives and opportunities of labor and business participation in national reproduction, the limits of business implementation and a unique

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place in the micro- and macroeconomic structure. So, from the subjective side, "youth entrepreneurship" like no other socio-economic phenomenon is subject to interdisciplinary dualism (simultaneous analysis from both sociological principles and from the perspective of modern economic theory) (Youth on the move. Luxembourg, Publications Office of the European Union, 2010).

Secondly, the object determinant of youth entrepreneurship – entrepreneurship – in this key is also in a special methodological corridor of its implementation. After all, modern entrepreneurship is a heterogeneous system based on different concepts. Fragmentary and discrete conceptualization of theoretical and methodological foundations of entrepreneurship is the cause of inefficiency of state support measures and the emergence of institutional "trap", when the adopted legal norms and regulatory instruments do not correspond to economic realities and objective laws of entrepreneurship (Bridging the gap: New opportunities for 16 – 18 year olds not in education, employment or training, 1999).

The proposed classification of business concepts, taking into account the methodological features of economic schools, allows us to divide the existing concepts into two groups:
1) Functional concept that considers the entrepreneurship from the point of view of its functions:
– the classical concept of entrepreneurship as bearing the burden of risk and uncertainty (R. Cantillon (Cantillon, 2004), A. Smith (Smith, 2007), J.H. Thunen (Thunen, 2008), F.H. Knight (Knight, 2003));
– neoclassical concept of entrepreneurship as a combination of factors of production (J.B. Say (Say, 2016), A. Marshall (Marshall, 2018), J.B. Clark (Clark, 2017));
– innovative (modernization) concept of entrepreneurship (I.A. Schumpeter (Schumpeter, 2007));
– neoliberal multifunctional concepts of entrepreneurship as an engine of effective functioning of the market economy (L. Mises (Mises, 2015), T. U. Schultz (Schultz, 2004), I. Kirzner (Kirzner, 2017), F. Hayek (Hayek, 2001), M. Friedman (Friedman, 2016)).
2) Interdisciplinary concepts at the intersection of applied and managerial economics with legal, sociological, philosophical and psychological sciences:
– the concept of entrepreneurship of the German historical school and Keynesianism as a set of certain psychological qualities of the individual entrepreneur (J.M. Keynes (Keynes, 2016), V. Zombart (Zombart, 1994), M. Weber (Weber, 1990));
– institutional and post-institutional concepts of entrepreneurship as a multidisciplinary phenomenon (R. Cowes (Cowes, 2018), G. Pinchot (Pinchot, 1985), P. Drucker (Drucker, 2007), R. Hisrich (Hisrich, 2018), M. Peters (Peters, 2018), M. Coulter (Coulter, 2017), S. Robbins (Robbins, 2017)).

In scientific literature, the phenomenon of youth as a social object is given great attention. Moreover, this interest is differentiated in the following areas. Thus, the importance of youth as a separate but integral social strata is analyzed in the works of E. Durkheim (Durkheim, 1995), T. Parsons (Parsons, 1998), P. A. Sorokin (Sorokin, 2016). The ideology of socio-cultural status is considered in the works of R. Merton (Merton, 2017), E. Fromm (Fromm, 2018); models of intergenerational interaction are formulated in the works of A. Schutz (Schutz, 2017), P. L. Berger (Berger, 1995), T. Luckmann (Luckmann, 1995), understanding the value and ideological differentiation of the youth environment is analyzed in the works of K. Manheim (Manheim, 2017), M. Mead (Mead, 1988). Factors affectic youth entrepreneurship are analysed by e.g. an-Cristian Dabija, Brandusa Mariana Bejan, Vasile Dinu (2019), Voda, Martinez, Tiganas, Maha, Filipeanu, (2019), Gavurova, Kubak, Huculova, Popadakova, Bilan, (2019).

In post-socialist countries, youth entrepreneurship is at the initial stages of institutionalization, and therefore requires the ordering of the categorical apparatus, organizational design and legislative consolidation. Existing studies of the nature of youth entrepreneurship show that the conceptualization of this phenomenon is fragmented in the presence of different definitions and treatment of this phenomenon. The Researchers (F. Chigunta (Chigunta, 2002), W. Schoof (Schoof, 2017), E. K. Oseifuah (Oseifuah, 2017), S. Riahi (Riahi, 2018), S. G.

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Petrosyan (Petrosyan, 2016), D. Y. Vostrukhina (Vostrukhina, 2018), N. N. Masuk (Masuk, 2019), R. I. Malikov (Malikov, 2018), A. G. Komarov (Komarov, 2018), S. Yu. Bogdanova (Bogdanova, 2018), E.E. Kaurova (Kaurova, 2015), E. Yu. Kochemasov (Kochemasov, 2016) A. I. Dalibozhko (Dalibozhko, 2017) identify different criteria for the definition of the term, based on different cultural, social and economic factors and traditions.

Thus, youth is defined as a socio-demographic group of society, allocated on the basis of age characteristics and the characteristics of the social status of young people, their place and functions in the social structure of society, as well as their specific interests and values (Youth neither in employment nor education and training (NEET), European Commission, 2011). The uniqueness of youth entrepreneurship as a special segment of the business sector is due to the specific age and personal characteristics of young people, their social status and behavioral models as well as high mobility, activity and adaptability of this social group.

The relevance of this stage of the research is due to the fact that, despite the relevance of youth entrepreneurship in world practice, its development in Kazakhstan is quite specific and differs from its analogues in the world. The distinctive characteristics of youth entrepreneurship in our country are the following points: the borders of youth entrepreneurship themselves are not relief; more important in the development of youth entrepreneurship is not business self-realization, but the task of reducing unemployment; youth entrepreneurship is not structured in the system of small and medium-sized businesses; there is no systematic policy for the targeted development of business activity of young people, there are no separate programs to support youth entrepreneurship; adaptation factors and strategies for activating youth entrepreneurship are not detailed.

3. Data, analysis and results

The main result of recent years was that the population in the Republic of Kazakhstan is steadily increasing. The reason for the increase in the population is a powerful migration flow, a significantly high natural growth, socio-economic effect of demographic reforms in the Republic of Kazakhstan and favorable living conditions (Andarova, Khussainova, Bektleyeva, Zhanybayeva, Zhartay, 2016; Caurkubule, Kenzhin, Bekniyazova, Bayandina, Dyussembekova, 2020).

Socio-economic reforms in the Republic of Kazakhstan led to the transformation of the former economic structure. There are changes in the sphere of labor and employment.
Effective youth employment policy is directly related to the policy in the economic field aimed at creating qualitatively new jobs, the development of youth entrepreneurship and self-employment of young citizens, education policy, the implementation of labor rights of young people, the implementation of active programs in the labor market.

Young people are a dynamic and mobile part of Kazakhstan's society. It is this category of workforce that has increased mobility, potential abilities for rapid learning, non-standard thinking and creativity.
Also, young people are one of the vulnerable groups of the population, which is associated with a low level of competitiveness in the labor market.

The development of effective strategies to overcome youth unemployment is the focus not only of the state, but also of international organizations.

One effective strategy is to support youth entrepreneurship, which serves to realize the potential of young people, the opportunity to justify the education they receive, as well as the beneficial multiplier effect on the economy as a whole.

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From the above number of young economically active population aged 15-28 years, we can distinguish the category as self-employed young people who are engaged (can be engaged) in entrepreneurial activity.

Thus, statistics show that among the self-employed and entrepreneurs, the majority are young people. And this category today is not sufficiently covered by the social guarantees provided by the state.

In 2018, the number of self-employed young people in the Republic of Kazakhstan (15-28 years) amounted to 471 300 people, i.e. 23.5% of the employed population of the Republic of Kazakhstan aged 15-28 years (Table 1).

Table 1. Number of self-employed young people of the Republic of Kazakhstan aged 15-28 years for 2011-2018

Year	Employed population of the Republic of Kazakhstan aged 15-28 years (1)	self-employed young people of the Republic of Kazakhstan aged 15-28 years (2)	Share (2) of (1), %
2001	1 656 600	828 200	50,0
2002	1 563 200	730 000	46,7
2003	1 872 800	891 000	47,6
2004	1 960 900	864 300	44,1
2005	1 995 200	879 600	44,1
2006	2 038 400	866 800	42,5
2007	2 082 000	830 700	39,9
2008	2 127 000	814 500	38,3
2009	2 107 000	799 400	37,9
2010	2 180 400	851 100	39,0
2011	2 222 100	821 900	37,0
2012	2 298 900	818 700	35,6
2013	2 259 600	722 100	32,0
2014	2 341 100	667 300	28,5
2015	2 275 300	540 500	23,8
2016	2 182 700	513 000	23,5
2017	2 057 300	492 500	23,9
2018	2 007 900	471 300	23,5

Source: compiled by authors

In comparison with 2001, the number of self-employed young people of the Republic of Kazakhstan at the age of 15-28 years has decreased by 2 times (2001 - 828 200 people, 2018 - 471 300 people) (figure 1).

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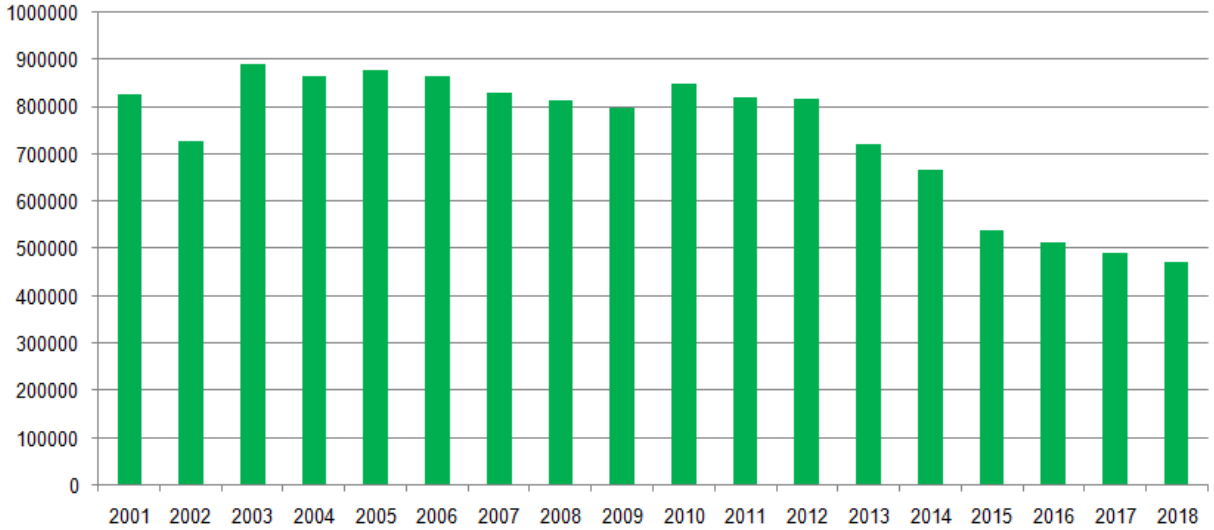

Figure 1. Number of self-employed young people of the Republic of Kazakhstan aged 15-28 years for 2001-2018
Source: compiled by authors

The share of self-employed young people in 2018 of the total economically active population of the Republic of Kazakhstan aged 15-28 years (9 151 600 people) is 5.15% (471 300 people).
Taking into account the regional analysis of self-employed young people of the Republic of Kazakhstan, we can conclude the following:
- 17 regions, the leading ones in the number of self-employed young people aged 15-28 years are Turkestan (106 600 people), Zhambyl (57 400 people) and East Kazakhstan (48 100 people) regions;
- the minimum number of self-employed young people aged 15-28 years was in the city of Nur-Sultan city (4,200 people), Mangystau (4 800 people), Karaganda (7 600 people), Pavlodar (8 400) and North Kazakhstan (8 400) regions (figure 2).

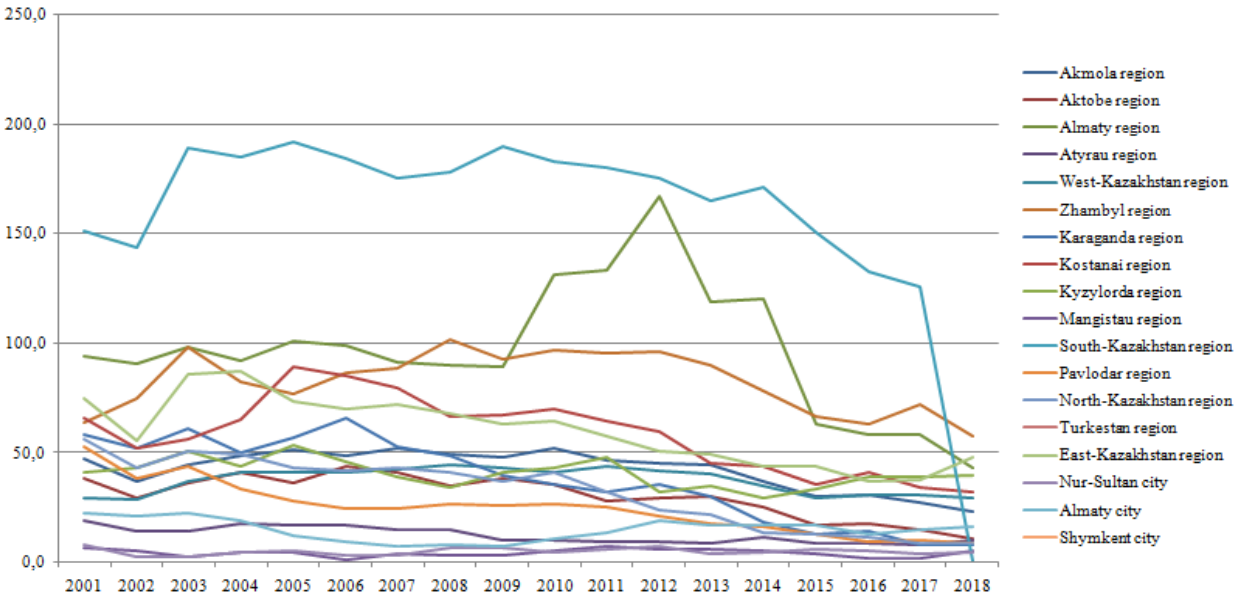

Figure 2. Number of self-employed young people of the Republic of Kazakhstan aged 15-28 years for 2001-2018 by region
Source: compiled by authors

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Every nineteenth young man in the Republic of Kazakhstan is engaged in his own business.
Statistical data of figure 3 show that 70% of self-employed young people of the Republic of Kazakhstan at the age of 15-28 years do business in villages, the remaining 30% of young people are employed in cities (Kaliev, Kaidarova, 2018).

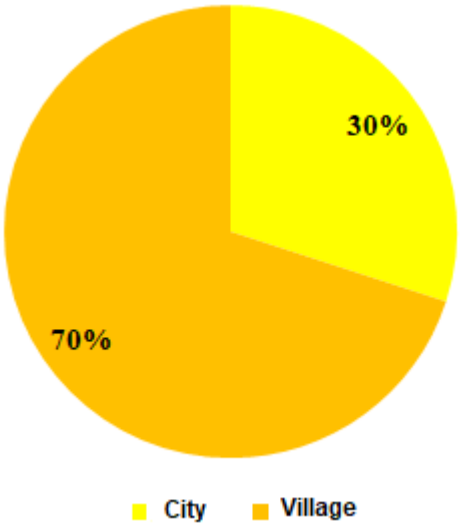

Figure 3. Number of self-employed young people of the Republic of Kazakhstan aged 15-28 years for 2011-2018 by type of area
Source: compiled by authors

According to the International classification of employment status (ICSE-1993), employees are divided into employees (paid) and self-employed.

Employees are those employees who work under a contract of employment (written or oral), providing for payment in the form of remuneration (salary).
There are the following groups of self-employed:
- employers;
- self-employed;
- unpaid family workers;
- cooperative member.

Employers include persons engaged in business activities in any economic activity and employing one or more employees on a permanent basis.

Self-employed persons are persons who carry out an economic activity and do not employ employees on a permanent basis (Seidakhmetov, Seidakhmetova, 2016).

Unpaid family workers are employees of family firms who receive their remuneration not in the form of wages, but on the basis of intra-family distribution of profits.

The members of the cooperative are persons who are members of a labor cooperative engaged in entrepreneurial activity (Shapoval, 2016).

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Among self-employed young people in the Republic of Kazakhstan at the age of 15-28 years, in 2018, we can distinguish such categories as self-employed (90%), employers (5%), helping (unpaid) workers in family businesses (3%) and the members of the cooperative (2%).

90% of self-employed young people are self-employed, i.e. 453,000 people engaged in any kind of economic activity, out of the total number of young people in the Republic of Kazakhstan.
15,700 people (2 007 900 young people in Kazakhstan) engaged in the force was played out in entrepreneurial activities, representing 0.8% of the total employed population of the Republic of Kazakhstan at the age of 15-28 years (figure 4).

2,000 young people are members of the cooperative, benefiting from entrepreneurial activities (0.1% of the total number of young people in the Republic of Kazakhstan).

600 people are subject to the category of helping (unpaid) employees of family businesses, which does not imply direct profit from doing business.

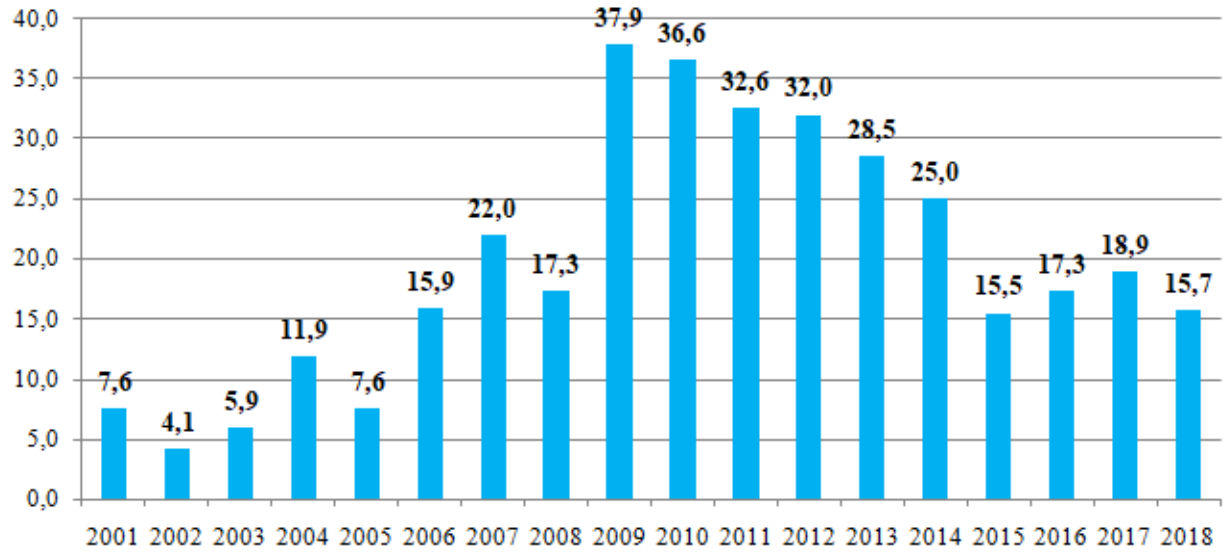

Figure 4. Dynamics of the number of young employers aged 15-28 years in the period 2001-2018
Source: compiled by authors

It should be noted that the number of young people in the 15-28 years of age increased 5-fold in the period from 2001 to 2009. From 2009 to the present day there is a methodical (smooth) decrease in the number of young entrepreneurs, which is associated with the beginning of the world economic (financial) crisis of 2010.

258 100 people or 55% of self-employed youth in 2018 - men, of whom 245 500 young people - self-employed, 10 500 people - employers, 1 900 men helping (unpaid) workers in family businesses and 200 people - members of the cooperative (figure 5).

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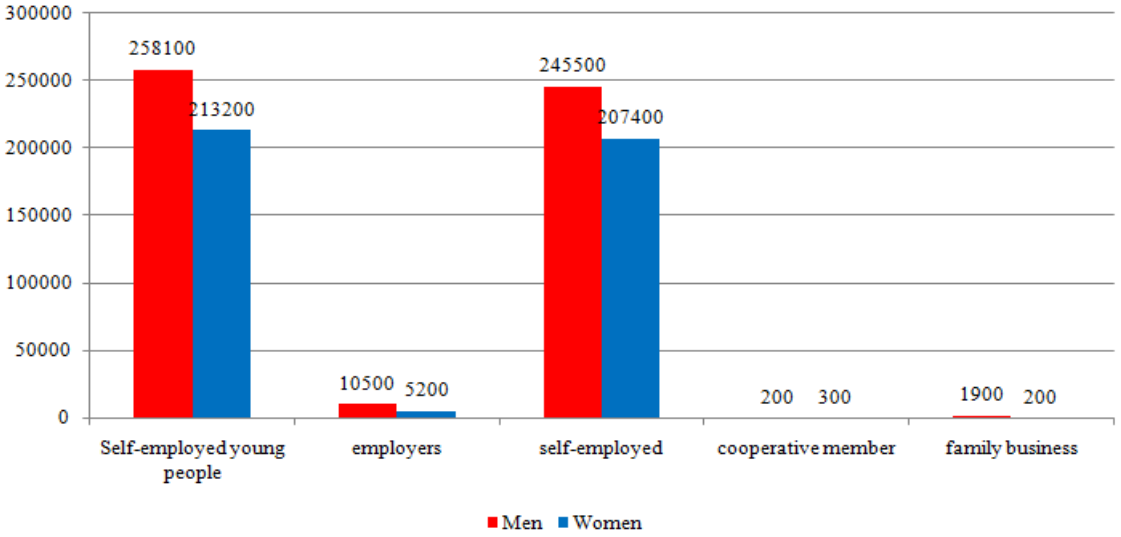

Figure 5. Number of self-employed young people aged 15-28 in the period 2001-2018
Source: compiled by authors

213 200 people or 45% of young people in the labor market of the country in 2018 are representatives of the female half of society, of which 207 400 young people are registered as independent workers, 5 200 people are employers, 300 women members of the cooperative and 200 people are helping (unpaid) workers of family enterprises.

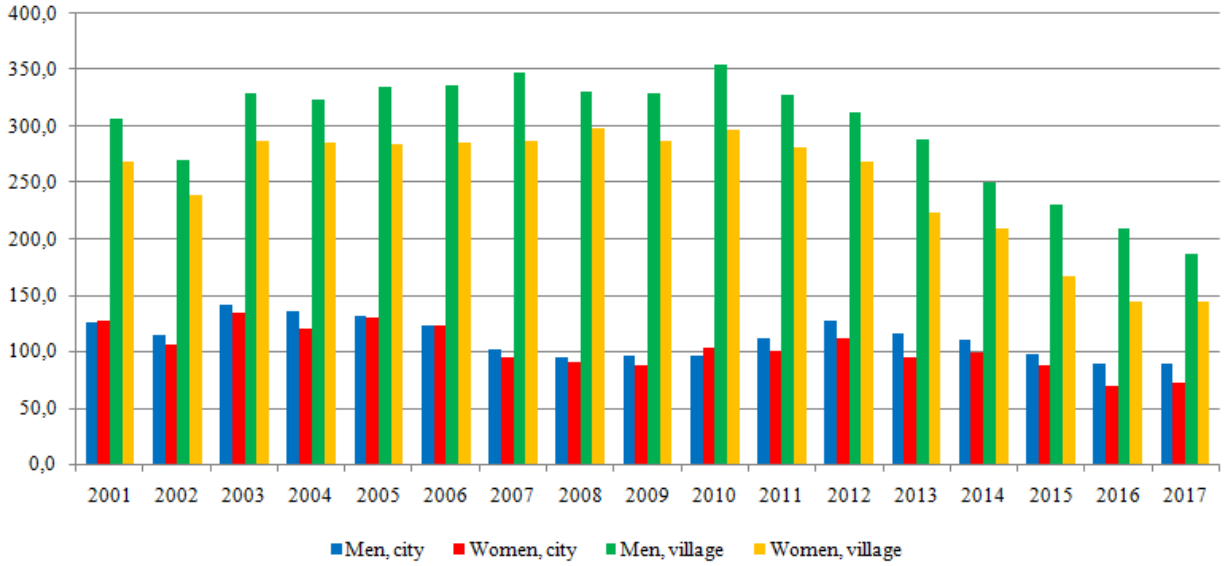

Figure 6. Number of self-employed young people aged 15-28 in the period 2001-2018, by gender and type of locality
Source: compiled by authors

Among the self-employed young people aged 15-28 years in 2018, 153,900 people live in the cities, of which 146 500 people are independent workers, 6,800 people are employers and 500 people are helping (unpaid) workers of family enterprises.

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153 900 people of the urban population employed in their own business, 75 700 people - men, 78 300 young people were female.

Among self-employed young people aged 15-28 years in 2018 in the villages live 317 300 people, including 306 400 people - self-employed, 8 900 people - employers and 1,500 people are helping (unpaid) workers in family businesses.

317 300 people of the rural population employed in their own business, 182 400 people - men, 134 900 young people were female (figure 6).

Based on the statistical data of the Committee on statistics of the Ministry of national economy of the Republic of Kazakhstan, we will assess the impact of external effects of youth entrepreneurship on the growth and modernization of the economy (Zhartay, Khussainova, Abauova, Amanzholova, 2016).

Spearman rank correlation coefficient was used to identify the correlation. Spearman's rank correlation coefficient is a nonparametric method used to statistically study the relationship between phenomena. In this case, the actual degree of parallelism between the two quantitative series of the studied features is determined and the closeness of the established relationship is estimated using a quantitatively expressed coefficient.

When using the rank correlation coefficient, the closeness of the relationship between the signs is conventionally estimated, considering the values of the coefficient equal to 0.3 and less - indicators of weak closeness of the relationship; values more than 0.4, but less than 0.7 - indicators of moderate closeness of the relationship, and values 0.7 and more - indicators of high closeness of the relationship.

The time lag from 2001 to 2018 was determined, when calculating the coefficient. Significant correlations were revealed between the number of young people (youth) of the Republic of Kazakhstan aged 15-28 years and the gross domestic product (GDP) of the country, employment growth, growth of tax revenues to the state budget, innovative flexibility of the economy and the speed of its adaptation to the development of innovative products and new technologies and the cost of information and communication technologies.

The statistical analysis revealed significant correlations between the number of registered young people aged 15-28 who are business entities and indicators of employment growth, growth of tax revenues to the state budget and the cost of information and communication technologies.

A detailed analysis showed that there is an inverse statistically significant correlation between the number of registered young people aged 15-28 years who are business entities and employment growth indicators (S = -0.756 at p <,05000) (Table 2).

Table 2. Correlation between the number of registered young people aged 15-28 and employment growth rates

Indicator	Period	Spearman Coefficient	t(N-2)	p-degree.
The number of young people & employment growth	2001-2018	-0,756450	-4,62624	0,000280

Source: compiled by authors

This correlation reflects the following pattern in the specified time lag: the increase in the number of young people engaged in entrepreneurial activity leads to a decrease in the official growth of employment (figure 7).

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Figure 7. Correlation between the number of registered young people aged 15-28 and employment growth rates
Source: compiled by authors

The reason for this correlation may be informal employment of young people, temporary (seasonal) employment of young people, ignorance of labor legislation, sale of "ideas" at the stage of origin of large business entities.
The analysis showed the presence of the inverse statistically significant correlation between the number of registered young people aged 15-28 years, who are subjects of entrepreneurial activity and indicators of growth of tax revenues (S = -0.766 at p <,05000) (table 3).

Table 3. Correlation between the number of registered young people aged 15-28 years and the growth of tax revenues

	Period	Spearman Coefficient	t(N-2)	p-degree.
The number of young people & growth of tax revenues	2001-2018	-0,766770	-4,77796	0,000205

Source: compiled by authors

According to the data of Table 1, the revealed correlation reflects the following pattern in the specified time lag: the increase in the number of young people engaged in entrepreneurial activity leads to a decrease in the growth of tax revenues (figure 8).

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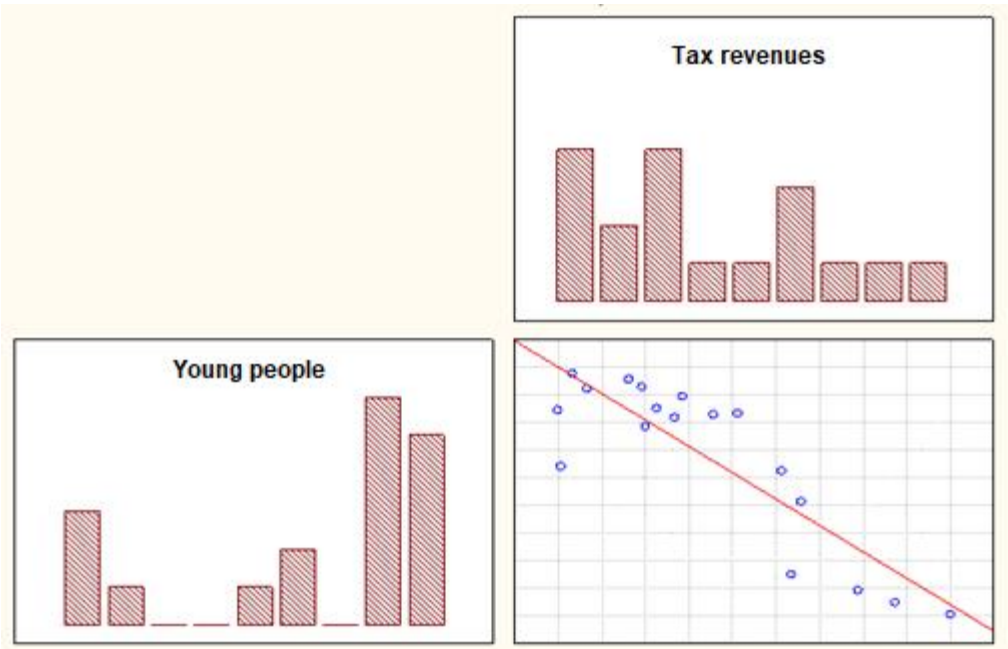

Figure 8. Correlation between the number of registered young people aged 15-28 years and the growth of tax revenues
Source: compiled by authors

This correlation confirms the above-mentioned pattern of decline in official employment, that is, as a consequence of informal, temporary (seasonal) employment of young people, ignorance of labor legislation, the sale of "ideas" at the stage of origin of large business entities, is subsequently expressed by a decrease in tax revenues to the state and local budgets.

The analysis revealed the existence of an inverse statistically significant correlation between the number of registered young people aged 15-28 years, who are business entities and indicators of growth in the cost of information and communication technologies (S = -0.779 at p <,05000) (table 4).

Table 4. Correlation between the number of registered young people aged 15-28 and the growth of information and communication technology costs

Indicator	Period	Spearman Coefficient	t(N-2)	p-degree.
The number of young people & growth of information and communication technology costs	2001-2018	-0,779953	-4,98502	0,000135

Source: compiled by authors

The revealed correlation shows that the increase in the number of young people in Kazakhstan at the age of 15-28 years does not lead to an increase in the cost of ICT, but rather a marked decrease in this indicator (figure 9).

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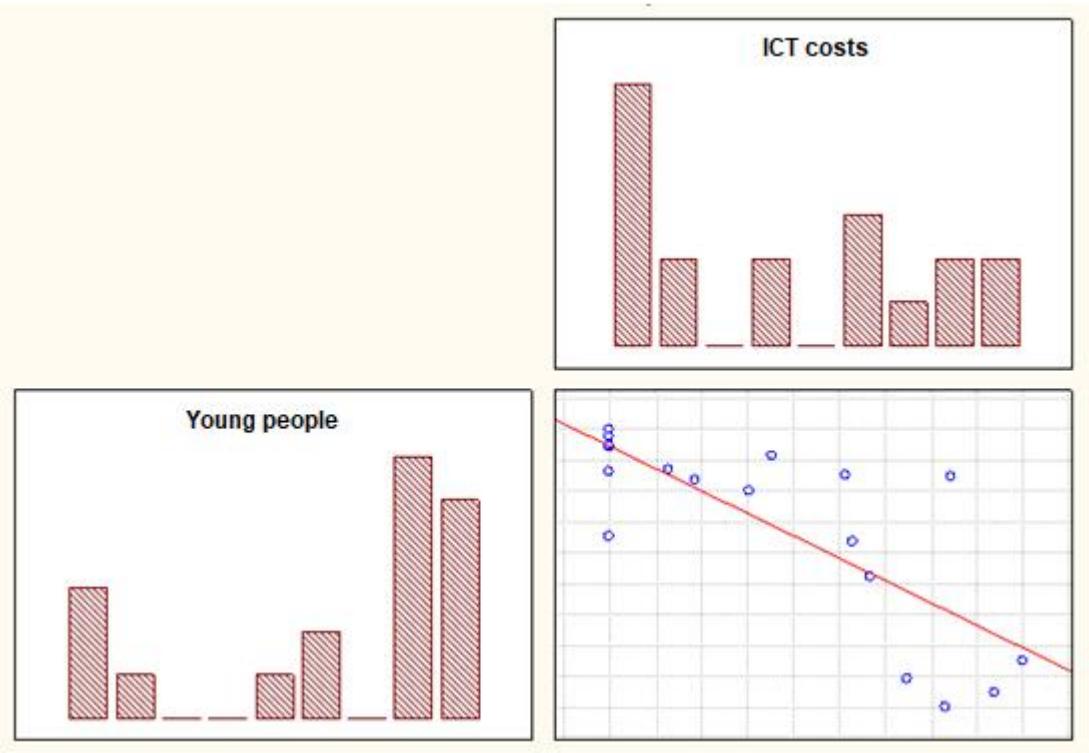

Figure 9. Correlation between the number of registered young people aged 15-28 years and growth rates of information and communication technology costs
Source: compiled by authors

The reasons for this decrease is the lack of connection between the costs of ICT allocated by the state and the monitoring of the market and the need of young people associated with projects and startups in the IT sphere.

The analysis revealed a moderate correlation between the number of registered young people aged 15-28 years who are business entities and indicators of employment growth, growth of tax revenues to the state budget and the cost of information and communication technologies.

A detailed analysis showed the existence of an inverse statistically significant correlation between the number of registered young people aged 15-28 years who are subjects of entrepreneurial activity and indicators of innovative flexibility of the economy and the speed of its adaptation to the development of innovative products and new technologies (S = -0.654 at p <,05000) (table 5).

Table 5. Correlation between the number of registered young people aged 15-28 years and indicators of innovation flexibility of the economy

Indicator	Period	Spearman Coefficient	t(N-2)	p-degree.
The number of young people & innovation flexibility of the economy	2001-2018	-0,654621	-3,46380	0,003199

Source: compiled by authors

The revealed correlation reveals a negative trend between the above indicators, that is, the growth of youth in Kazakhstan does not lead to an increase in innovation and new technologies in the economy. This is a

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consequence of the lack of awareness among young people of the innovation policies pursued by public authorities, which also results in youth activities focusing on traditional forms of business rather than on innovative ones, and rather on the small number of state and non-state institutions helping to generate innovative ideas among young people (figure 10).

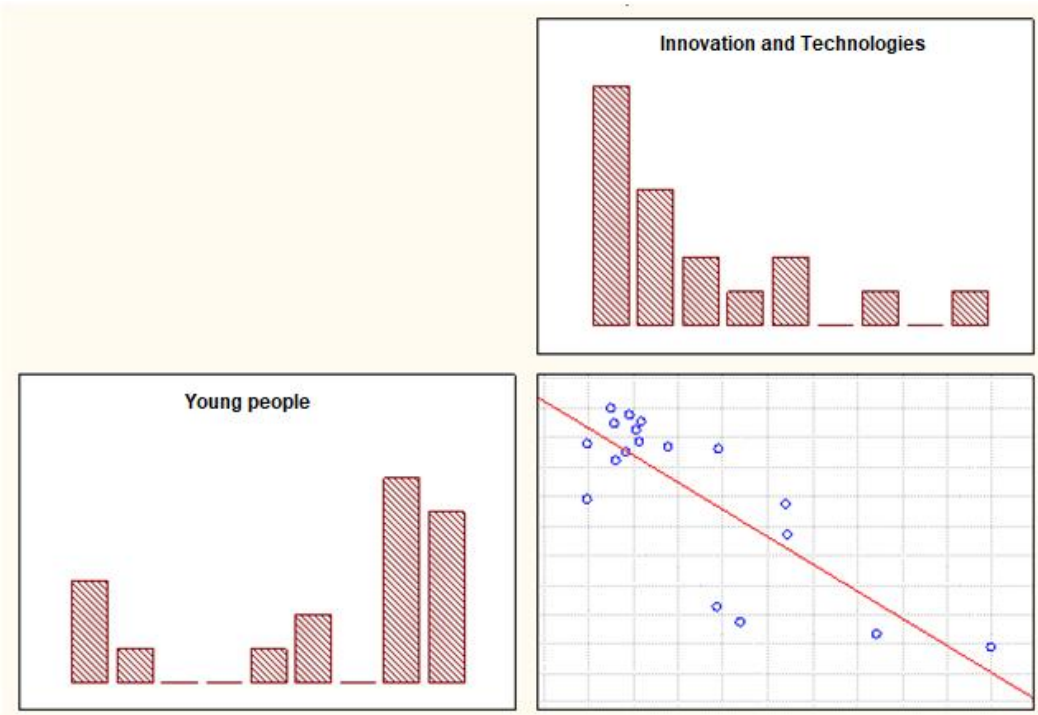

Figure 10. Correlation between the number of registered young people aged 15-28 years and indicators of innovative flexibility of the economy and the speed of its adaptation to the development of innovative products and new technologies
Source: compiled by authors

The correlation between the indicators of the number of registered young people aged 15-28 years who are business entities and the gross domestic product (GDP) of the country is not significant, that is, these two indicators are not interrelated (S = -0.589 at p <,05000) (table 6).

Table 6. Correlation between the number of registered young people aged 15-28 and the gross domestic product (GDP) of the country

Indicator	Period	Spearman Coefficient	t(N-2)	p-degree.
The number of young people & GDP of the country	2001-2018	-0,589267	-2,91739	0,010071

Source: compiled by authors

According to table 1, the correlation is moderate but statistically insignificant, since t empirical below t is critical (t(N-2) = -2,917 > t-2,120) (figure 11).

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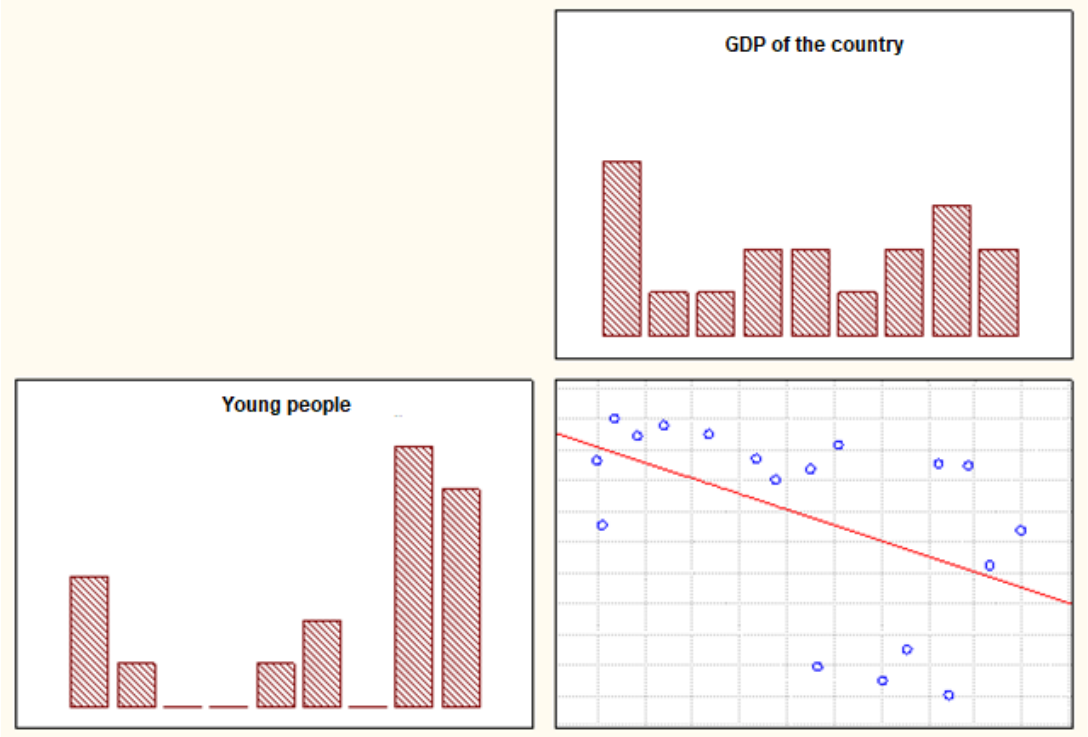

Figure 11. Correlation between the number of registered young people aged 15-28 and the country's gross domestic product (GDP)
Source: compiled by authors

Thus, there is a significant pronounced inverse correlation between the number of registered young people aged 15-28 years who are subjects of entrepreneurial activity and indicators of employment growth, growth of tax revenues to the state budget and the cost of information and communication technologies. A significant moderate inverse correlation with the indicator of innovative flexibility of the economy and the speed of its adaptation to the development of innovative products and new technologies and a moderate but insignificant correlation with the gross domestic product (GDP) of the country are revealed.

4. Conclusion

The research of regional aspects of the development of youth entrepreneurship in Kazakhstan allowed us to draw the following conclusions:

1. During the analyzed period, the highest concentration of registered youth business entities was recorded in Astana (with a slight decrease in the share from 15.9% in 2016 to 13.9% in 2017 and to 14.1% in 2018), Almaty (with a constant increase in the share from 13.1% in 2016 to 17.1% in 2017 and to 17.3% in 2018). The minimum number of registered youth business entities among the regions of Kazakhstan was recorded in the North Kazakhstan region with an annual drop in its share in the total number of youth business entities from 2.3% in 2016. up to 1.9% in 2017 and 1.7% in 2018.

2. The largest share (from 90%) of active (active) young entrepreneurs in the total number of registered youth business entities is typical for the Mangistau region (in 2016 – 96.7%, in 2017 – 93.6%, in 2018 – 94.8%), Atyrau region (in 2016 – 96.0%, in 2018 – 90%) and in 2018 – for the Turkestan region (92.7%).

Among the registered subjects of youth entrepreneurship, 79-86% of men and 78-88% of women were active (active) young entrepreneurs during the analyzed period.

The research of youth entrepreneurship in the context of locality (city/village) allowed us to draw the following conclusions:

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1. During the analyzed period, the highest concentration of registered youth entrepreneurs was recorded in urban areas – on average 80-82% (with a slight annual decrease in this share from 81.6% in 2016, to 81.0% in 2017, to 80.3% in 2018).
2. The largest share of active young entrepreneurs in the total number of registered youth business entities is typical for rural areas: in 2016 – 91.7% (against 85.8% of urban areas), in 2017 – 81.8% (against 78.2% of urban areas), in 2018 – 87.3% (against 83% of urban areas).
The correlation between the number of youth business entities (employers) and individual macroeconomic indicators shows the following:
1) there is a high statistically significant correlation between the number of youth business entities (employers) and indicators of unemployment reduction (S = -0.756 at p < 0.05000), reduction of the state budget deficit (S = -0.766 at p < 0.05000), and expenditures on information and communication technologies (S = -0.779 at p < 0.05000);
2) there is a moderate statistically significant correlation between the number of youth business entities (employers) and indicators of innovative flexibility of the economy and the speed of its adaptation to the development of innovative products and new technologies (S = -0.654 at p < 0.05000). The revealed correlation reveals a negative trend between the above indicators, that is, an increase in the number of young entrepreneurs does not lead to an increase in innovation and new technologies in the economy. This is due to the lack of awareness among young people about the state innovation policy and tools to support innovation activity, which means that the entrepreneurial activity of young people is focused on traditional industries and forms of business, rather than on innovative ones.
3) the correlation between the number of youth entrepreneurs (employers) and the economic growth (GDP growth) of the country is not significant, that is, these two indicators are not interrelated (S = -0.589 at p < 0.05000). The correlation is moderate, but statistically insignificant, since t is empirical and t is critical (t (N-2) = -2.917 > t-2.120).

Thus, as a result of the research conducted in this section, a comprehensive characteristic of the socio-economic subjectivity of youth in Kazakhstan was given and a systematic analysis of youth entrepreneurship, its quantitative and qualitative parameters, development effectiveness and its impact on the main macroeconomic indicators that characterize the growth of the economy and its innovative flexibility was carried out. However, a systemic problem in analyzing the parameters of youth entrepreneurship is the lack of a unified register of youth business entities and comprehensive statistical accounting of their performance indicators.

The revealed subject and object determinants of youth entrepreneurship, its endogenous and exogenous factors, as well as multiplicative and accelerative effects, supplemented by effective support tools, form an optimal model of modern youth entrepreneurship in the mechanism of industrial and innovative growth of the economy.

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DEVELOPMENT OF ENVIRONMENTAL PILLAR IN THE CONTEXT OF CIRCULAR ECONOMY ASSESSMENT: BALTIC SEA REGION CASE

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Abstract. Circular Economy (CE) is an economic approach which aims to save the environment by eliminating waste and efficiently using resources by applying recycle, reuse, repair, remanufacturing and recycling strategies. The purpose of the article is to propose a concept of measurement the development of Environmental pillar in the context of Circular Economy, apply and provide empirical evidence based on the data of Baltic Sea Region countries. The research augmented for the analysis of Circular Economy which includes assessment model creation. The multi-criteria decision methods MULTIMOORA and TOPSIS were used to assess the development of Environmental pillar of Circular Economy in Baltic Sea Region. Results are useful to add to theoretical building and evaluate the Environmental aspect in the concept of Circular Economy.

Keywords: circular economy; circular economy indicators; environmental indicators; circular economy strategies; MULTIMOORA; TOPSIS

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JEL Classifications: D7, O11, O44, O52

1. Introduction

Circular economy approach can be represented as a closed loop with the material and process flow ensuring zero waste in every step of the production or product consumption. Circular economy is seeking to minimize material input, water, land and air pollution. Circular economy seeks to integrate strategies that would help to achieve a zero-waste aim – recycling, remanufacturing, repair, reuse, reduce and others to turn the waste into the resource for another process. Circular economy approach corresponds to sustainable development and sustainability goals, seeking well-being in a long term, consists of three pillars: environment, economic and social. Many countries have already created some strategies to implement circular economy approach, however, still there are concerns about circular economy assessment model creation. Integration of circular economy is relatively new approach, which actively is being discussing among scientists. Circular economy is a multi-disciplinary approach, which connects environmental and social sciences. Thus, assessment model with the possibility to analyze circular

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economy as a whole concept and its pillars separately would be useful to evaluate todays situation, see the dynamics of the development by areas and integrate the assessment model in other model which would analyze circular economy and lead to its integration.

2. Circular Economy strategies and targets

Circular economy became a popular approach for policy makers, government and scientists to discuss about transition from linear economy to circular economy contributing to sustainable development. Today, in the times of economic growth and technological development, huge volumes of economy brought a negative impact on environment – the greenhouse effect, air, water and pollution, scarcity of materials and many others. Linear economy model helped society to build effective business models, which aimed to increase production and volumes. However, environmental problems became a very popular topic to discuss recent years, as many environmental changes we are facing now due to human activities.

Circular economy approach offers a decision how to keep economy healthy and reduce the harmful environmental activities. Circular economy offers new approach based on re-use, reduce and recycling of materials (Morseletto, 2020). Circular economy promotes the idea of reducing waste and resources used, replacing them by recycled and re-used materials (Homrich et al., 2018). China was one of the first countries who officially has started promoting circular economy concepts (Geng, et al., 2008; Li, et al., 2007). However, circular economy concept was related to economic and environmental pillars in china making circular economy concept highly related to environment and less to social pillar (Geng et al., 2012; Ghisellini et al., 2016).

Lately, many authors discussed about the necessity of social pillar to be included in circular economy model as social pillar represent human well-being as the aim of circular economy (Nikanorova et al., 2020). Circular economy corresponds to the sustainable development goals (Schroeder, et al., 2018) and includes environment, economic and social dimensions. According to m. Lewandowski (2016), many different size enterprises are becoming to implement the concepts of circular economy. European union has introduced an action plan about circular economy implementation across the member states (EC, 2015). In 2018 european commission has introduced key indicators for a monitoring circular economy development grouped in following classifications (CE, 2018):

1. Self-sufficiency for raw materials
2. Green public procurement
3. Waste generation
4. Food waste
5. Recycling rates
6. Recycling / recovery for specific waste streams
7. Contribution of recycled materials to raw materials demand
8. Trade in recyclable raw materials
9. Private investments, jobs and gross value added
10. Patents related to recycling and secondary raw materials

Mainly, the indicators suggested by CE (2018) are related to responsible production and consumption. Green public procurement (2), Waste generation (3), Food waste (4), Recycling rates (5), Recycling / recovery for specific waste streams (6) are connected with common EU target on Waste Management. Moreover, indicators to measure Waste Management are coming from earlier EU policy related to resource efficiency (EC, 2011). According to P. Repo, et al., (2018), A. Bjørn et al., (2017), P. Morseleto (2020) studies on EU targets they can be classified according to area or object of targets in several groups:

- Recycling
- Resource Efficiency

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- Waste reduction
- Energy recovery
- Water recovery
- Emission reduction
- Design

Indicators proposed by EU for circular economy development monitoring can be grouped by the EU strategies, area of the target or object of the target. J. Potting, et al., (2017) has introduced 10R circular economy strategies (Table 1).

Table 1. 10R Circular Economy strategies

R0	Refuse	R5	Refurbish
R1	Rethink	R6	Remanufacture
R2	Reduce	R7	Repurpose
R3	Reuse	R8	Recycle
R4	Repair	R9	Recovery

Source: Potting, et al., 2017

The strategies, represented in Table 2 are classified by circularity level, which means, that R0 has the lowest circularity level, while R9 has the highest circularity level. R0 Refuse strategy lets the product be unnecessary by abandoning its function or which can be easily replaced by different product. By R1 Rethink strategy the product is being used more intensively (multi-functional products), while R2 Reduce strategy increases efficiency of product manufacture or consuming less natural resources. R3 Reuse strategy offers to reuse the product by another customer, while the product is still in a good condition. R4 Repair strategy allows product to be modified or repaired, while R5 Refurbish strategy restores an old product up to date. R6 Remanufacture allows to use parts of discarded product in a new product with the same function, while R7 Repurpose strategy allows to use parts of discarded product or its part in a new product with different function. R8 Recycle strategy allows to process materials to obtain the same or lower quality. R9 Recovery strategy has the highest circularity level and allows incineration of material with energy recovery.

3. Selection of indicators for monitoring environmental pillar of circular economy

Environmental pillar of Circular Economy should include a complex set of indicators covering the targets and strategies set by European Union. The indicators could be classified by the area of target or Circular Economy strategies.

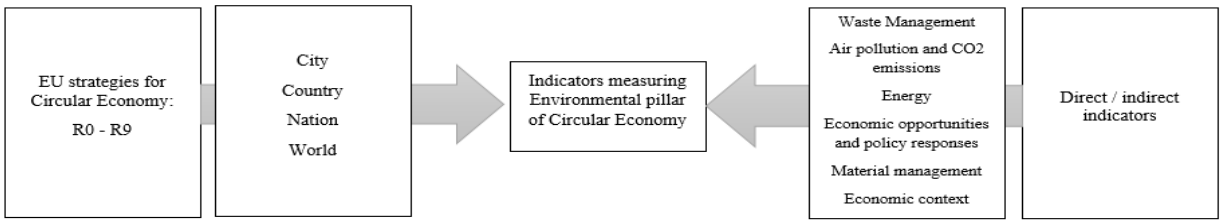

Figure 1. Indicators selection strategy to assess Environmental pillar of Circular Economy.

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Direct and indirect indicators for assessment of Environmental pillar have been selected according to the definition and principles of Circular Economy with the correlation of European Union strategies and targets (Fig. 1). Indicators of Environmental pillar are divided into six groups related to the areas of European Union targets for Circular Economy. Also, strategies of European Union are being selected according to the scope of research – from micro level including product, product creation steps – to macro – analysis of cities, regions, nations or world.

In this research Circular Economy is being analyzed only by Environmental and Economic pillars, however it is possible to analyze Circular Economy including all the pillars: Environmental, Social and Economic. Ability to analyze one of the pillars separately would have benefits of the possibility to follow the development of separate pillar or part of the pillar represented as a group of indicators.

Table 2. Indicators for assessment Environmental pillar of Circular Economy

Area of target	Indicator	Strategy
Waste Management	Municipal waste generated	R2, R3
	Recycling rate of municipal waste	R8
	Recycling rate of e-waste	R8
	Recycling of bio waste	R8
Air pollution and CO2 emissions	CO2 Emission Intensity	R0, R2
	Production-based CO2 emissions	R0, R1, R2
	Air pollution exposure	R0, R1, R2
	Greenhouse gas emissions	R0, R1, R2
Energy	Renewable electricity, % total electricity generation	R4
	Energy intensity	R4
	Energy productivity	R4
	Renewable energy supply	R9
Economic opportunities and policy responses	Environmentally related ODA, % total ODA	R6
	Environmentally related taxes, % GDP	R0, R1, R2
	Green Patents	R2,R5,R6
	Jobs in Green Technology Industry	R2,R5,R6
Material Management	Circular material use rate	R6,R7,R8,R9
	Non-energy material productivity	R2, R3
	Trade in recyclable raw materials	R8
Economic context	Real GDP	R2
	Value added in industry, % of total value added	R2
	Value added in services, % of total value added	R2
	Value added in agriculture, % of total value added	R2

Source: created by authors

In Table 2 the indicators that have direct and indirect impact are classified into the group according to the area of targets of European Union for Circular Economy. Classified indicators correspond to the European Union strategies for Circular Economy. Indicators, representing macro-level have been selected to evaluate countries and regions.

Indicators are being classified into six groups: waste management, air pollution and CO_2 emissions, energy, economic opportunities and policy responses, material management and economic context. Waste management group of indicators is focused on the reduction of municipal waste generated and recycling of municipal, bio waste and e-waste what corresponds to one of the most important aspects of circular economy – zero waste approach. Air pollution and CO_2 emissions group measures CO_2 emissions intensity and production-based co2

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emissions, including air pollution and greenhouse gas emissions – corresponds to air pollution reduction approach of circular economy. Energy group of indicators concentrates on the quantity of renewable energy is being produced and used in production or households – corresponds to the circular economy approach of green energy. Economic opportunities and policy responses group of indicators analyses the financing of green policies, green patents and number of jobs in green technology industry corresponding to circular economy approach of promoting eco-technologies and eco-innovations. Material management group includes material management aspects as well as material circularity and recycling of materials. Economic context connects environmental and economic pillars, by the indicating whether the economy is being stable or growing – as one of the aspects of circular economy is a formation of strong sustainable economy based on the environmentally friendly decision making.

4. MCDM Methods in assessment of environmental pillar in the context of circular economy

Environmental pillar of circular economy is represented as a set of indicators divided into the group of areas. As indicators collected for environmental pillar measurement have different units of measurement – the methods of assessing environmental pillar should be selected accordingly. Multiple-criteria decision-making methods (MCDM) can be applied to assess the set of criteria with different units of measurement, could evaluate and rank the criteria. To assess environmental pillar of circular economy MULTIMOORA and TOPSIS methods have been selected.

MULTIMOORA method has been introduced by Brauers and Zavadskas (2010), who have updated MCDM method MOORA by adding multi-object optimization. MULTIMOORA method has been used by scientists from different fields: Hafezalkotob et al., (2019) has applied MULTIMOORA method in the field of Engineering by proposing of MULTIMOORA use in hybrid vehicle engine selection. Wu et al., (2020) used MULTIMOORA method in the analysis of quality function deployment. Also, MULTIMOORA method has been used by Siksnelyte, et al., (2019) in assessment of implementation of EU energy policy priorities in the Baltic Sea Region. Liet al., (2019) has used MULTIMOORA method for evaluation of passenger satisfaction of public transport. Geetha et al., (2019) has used MULTIMOORA method for assessment of healthcare waste disposal methods.

TOPSIS method based on identifying geometric distances from best and worst solutions: the shortest geometric distance from the best solution and the longest geometric distance from the worst solution (Zavadskas *et al*. 2016). TOPSIS method has been used in the selection of sustainable supplier by Memari et al., (2019). Comparison of sustainability models in development of electric vehicles has been presented using TOPSIS method by Samaie et al., (2020). Gorgij et al., (2019) has used TOPSIS method in the ranking of groundwater quality. Economic and environmental energy performance of EU countries has been assessed with TOPSIS method by Vavrek and Chovancova (2019). Credit card platforms have been evaluated using TOPSIS method by Yildirim (2019).

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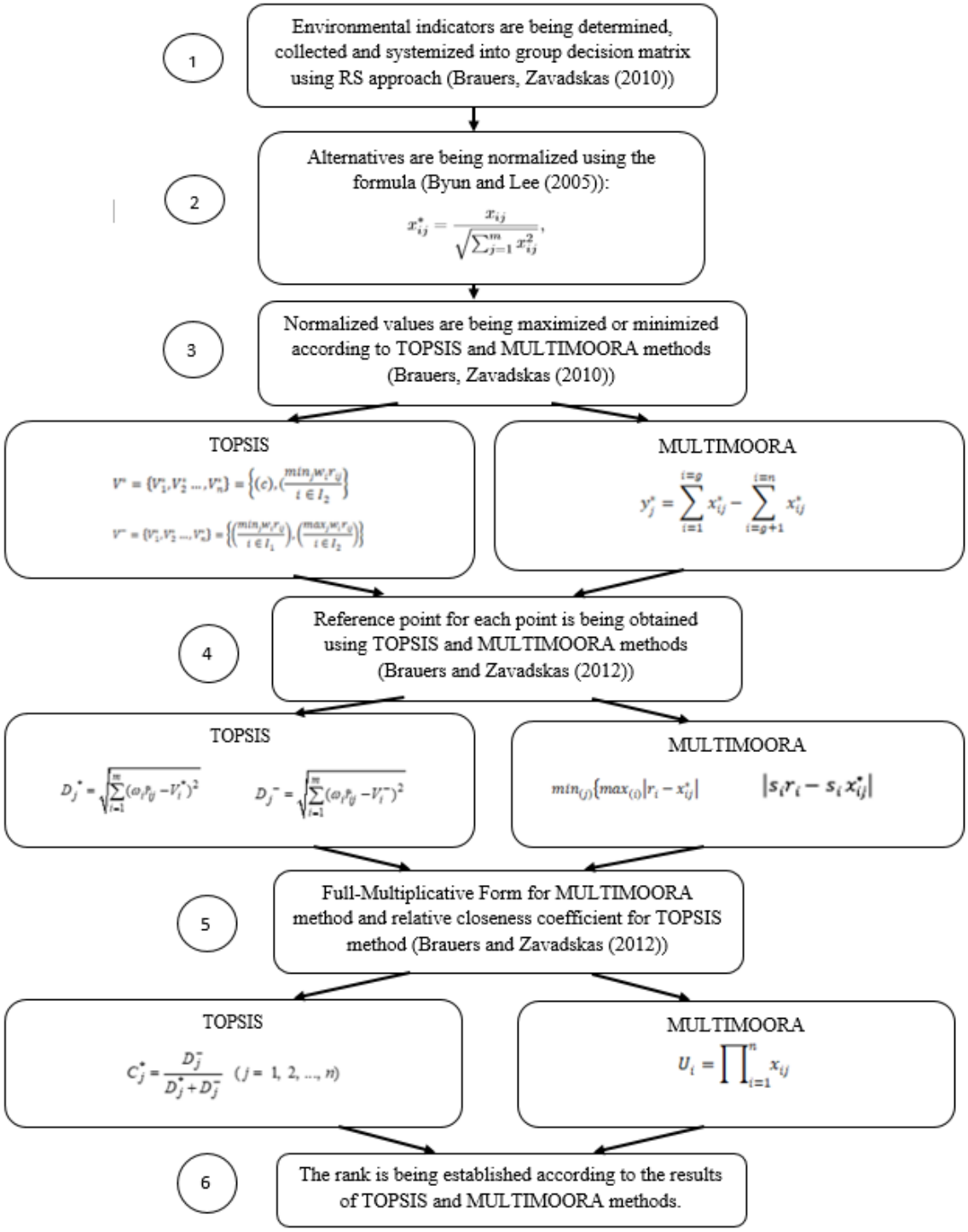

Figure 2. Assessment model of Environmental pillar in the context of Circular Economy using MULTIMOORA and TOPSIS methods

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The assessment model of Environmental pillar in the context of Circular Economy is based on 6 major steps as represented in Fig. 2. Indicators for Environmental pillar assessment in the context of Circular Economy are being collected and grouped, systemized in decision matrix. As all the indicators have various units of measurement the values are being normalized as is represented in Step 2. In Step 3 the values are being maximized or minimized according to the rules of MULTIMOORA and TOPSIS methods. Once the values have been maximized or minimized, the reference point can be found out as represented in Step 4. In Step 5 the Full-Multiplicative form for MULTIMOORA is obtained and relative closeness coefficient to the best and to the worst solutions can be obtained by MULTIMOORA and TOPSIS methods. In the last Step the rank of values can be obtained according to the result of TOPSIS and MULTIMOORA methods.

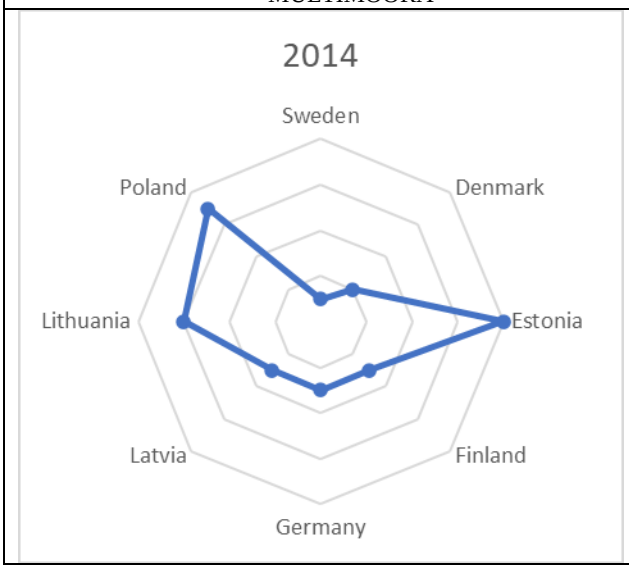
The ranking of Development of Environmental pillar in the context of Circular Economy can be assessed in the different periods of time and can be compared among selected countries or region for further analysis.

5. The assessment of environmental pillar in the context of circular economy

The first Macro-Regional Strategy in Europe has been established for the countries with geographical location around Baltic Sea and named Baltic Sea Region. The action plan for this strategy has been introduced by the European Commission (2009). The strategy is based on key challenges regarding saving the sea, connecting the region and increasing prosperity. The strategy has several objectives which relate to different areas and policies, such as: clean water in the sea with healthy wildlife, safe shipping, and reliable energy markets with the perspective to make a single energy market, climate change adaptation with risk management and other contributions to Europe 2020 (European Commission, 2010) strategy. Baltic Sea Region includes Sweden, Denmark, Estonia, Finland, Germany, Latvia, Lithuania and Poland.

Data for Environmental pillar s was collected in the period of 2014-2018 years using the following databases: European Statistical Database – Eurostat (2020), Organization for Economic Co-Operation and development (2020) and European Commission (2020).

Table 3. Environmental pillar evaluation of Baltic Sea Region in 2014

MULTIMOORA	TOPSIS
	

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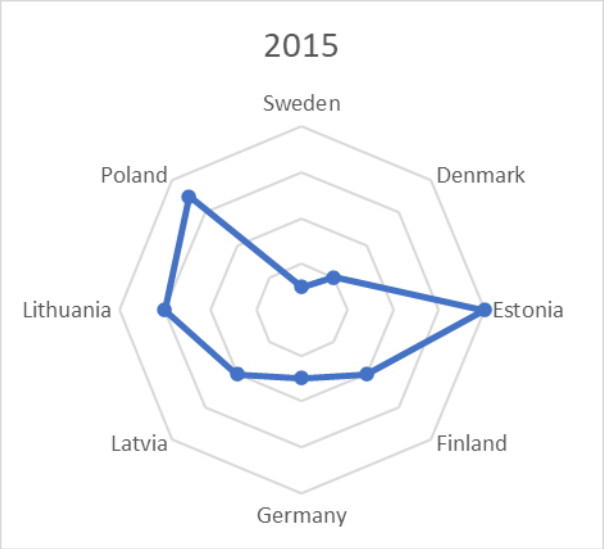
The result of Environmental pillar evaluation by MULTIMOORA and TOPSIS methods for 2014 is represented in Table 3. According to MULTIMOORA method the highest ranks were received by Sweden, Denmark and Finland, while the lowest rank received by Estonia and Ploand. TOPSIS result shows, that the best evaluation of Environmental pillar in 2014 were received by – Sweden, Germany and Denmark. The lowest rank according to TOPSIS method was received Poland in 2014.

The result of Environmental pillar evaluation by MULTIMOORA and TOPSIS methods for 2015 is represented in Table 4. According to MULTIMOORA method the highest ranks were attributed to Sweden, Denmark and Germany and the lowest rank attributed to Estonia. TOPSIS result shows, that the best evaluation of Environmental pillar in 2015 were ranked – Sweden, Denmark and Germany. The lowest rank according to TOPSIS method received Poland in 2015.

Table 4. Environmental pillar evaluation of Baltic Sea Region in 2015

MULTIMOORA	TOPSIS
	

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The result of Environmental pillar evaluation by MULTIMOORA and TOPSIS methods for 2016 is represented in Table 5. According to MULTIMOORA method Sweden, Denmark and Finland were tagged the highest rank and Estonia the lowest rank. In respect of this, TOPSIS result shows, that the best evaluation of Environmental pillar in 2016 received - Sweden, Germany and Denmark. The lowest rank according to TOPSIS method received Poland in 2016 therein.

The result of Environmental pillar evaluation by MULTIMOORA and TOPSIS methods for 2017 is represented in Table 6. According to MULTIMOORA method, the highest rank received were that of Sweden, Latvia and Denmark and the lowest rank received belongs to Estonia. TOPSIS result shows that the best evaluation of Environmental pillar in 2017 received were that of Germany, Sweden and Denmark. The lowest rank according to TOPSIS method received was that of Poland in 2017.

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Table 5. Environmental pillar evaluation of Baltic Sea Region in 2016

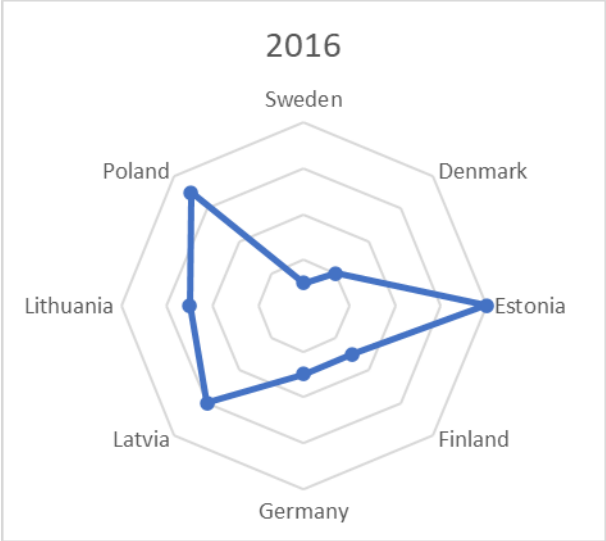
MULTIMOORA	TOPSIS
	

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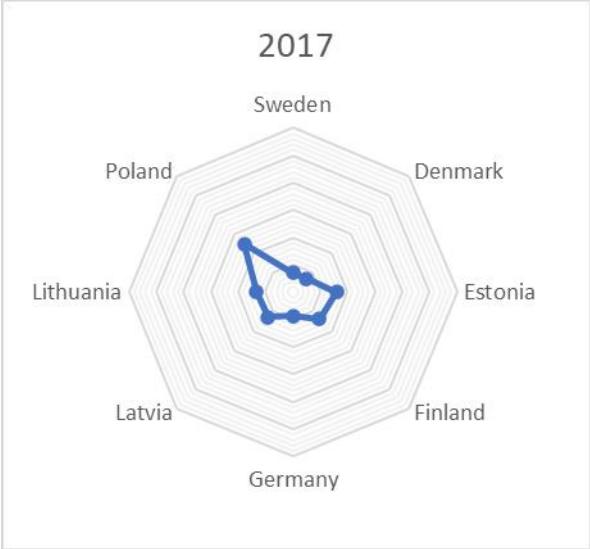
Table 6. Environmental pillar evaluation of Baltic Sea Region in 2017

MULTIMOORA	TOPSIS
	

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The result of Environmental pillar evaluation by MULTIMOORA and TOPSIS methods for 2018 is represented in Table 7. According to MULTIMOORA method, the highest rank received were that of Sweden, Germany and

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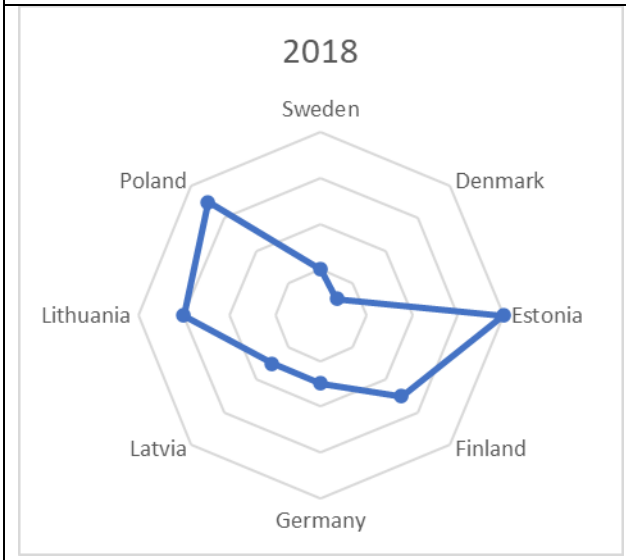
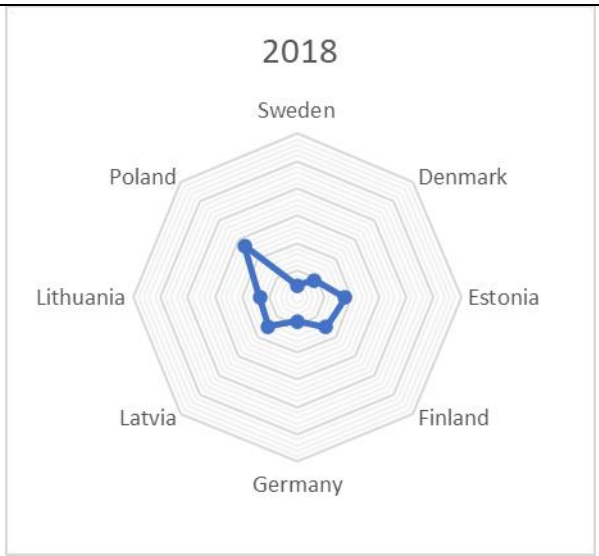
Denmark and the lowest rank received belongs to Estonia. TOPSIS result shows, that the best evaluation of Environmental pillar in 2018 received were that of Sweden, Germany and Denmark. The lowest rank according to TOPSIS method received was that of Poland in 2018.

Table 7. Environmental pillar evaluation of Baltic Sea Region in 2018

MULTIMOORA	TOPSIS
	

Source: created by authors

The development of Environmental pillar in Baltic Sea Region in the context of Circular Economy during the period of 2014-2018 according to MULTIMOORA is represented in Fig. 3. Sweden was in the leading position in development of Environmental pillar, moreover, in the end of 2018 Denmark has strengthen its position to be a leader among all the countries in Baltic Sea Region. In 2014 Sweden had the highest result of Environmental pillar, but in 4 years Denmark could overcome. Germany and Latvia hold the third position after Denmark and Sweden according to MULTIMOORA. In addition to this, by 2018 Germany, Latvia, Estonia and Poland did not improve the results during all the period. Finland according to MULTIMOORA decreased in the evaluation of Environmental pillar during 2014-2018. Lithuania, according to MULTIMOORA, improved the result of Environmental pillar assessment by 2018.

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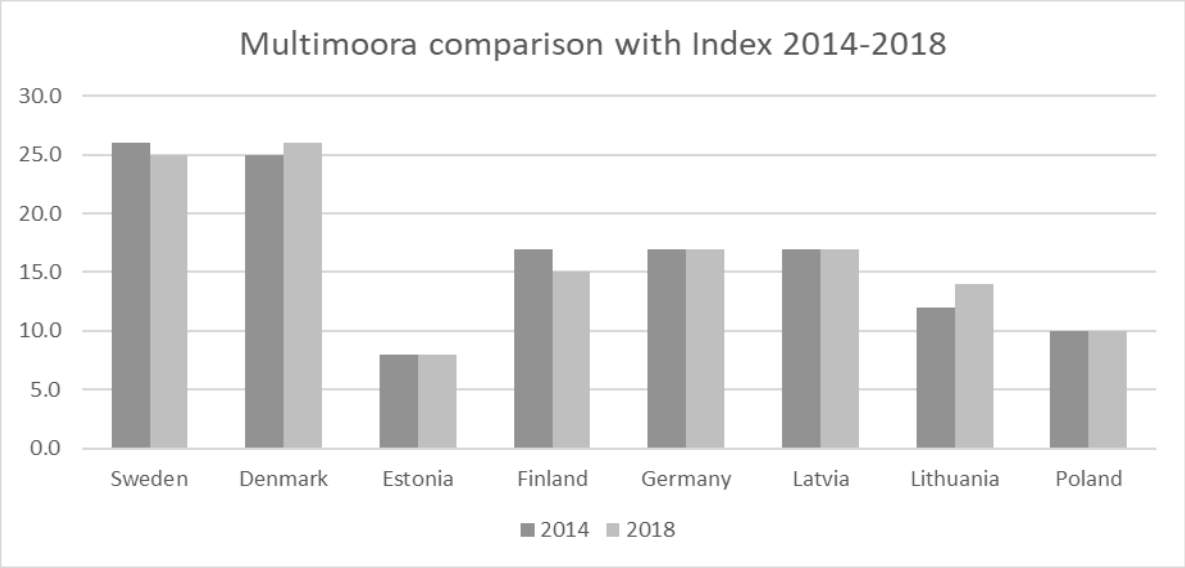

Figure 3. Development of Environmental pillar in Baltic Sea Region in the period of 2014-2018 represented by MULTIMOORA

Source: created by authors

The development of Environmental pillar in Baltic Sea Region in the context of Circular Economy during the period of 2014-2018 according to TOPSIS is represented in Fig. 4. According to TOPSIS results Sweden, Denmark and Germany are in the leading positions. Estonia and Lithuania have improved the result by 2018 while Denmark (still remains the leading position), Finland and Poland have decreased the result by 2018. Germany, Latvia, and Sweden did not reach any significant progress in Environmental pillar in the period of 2014-2018.

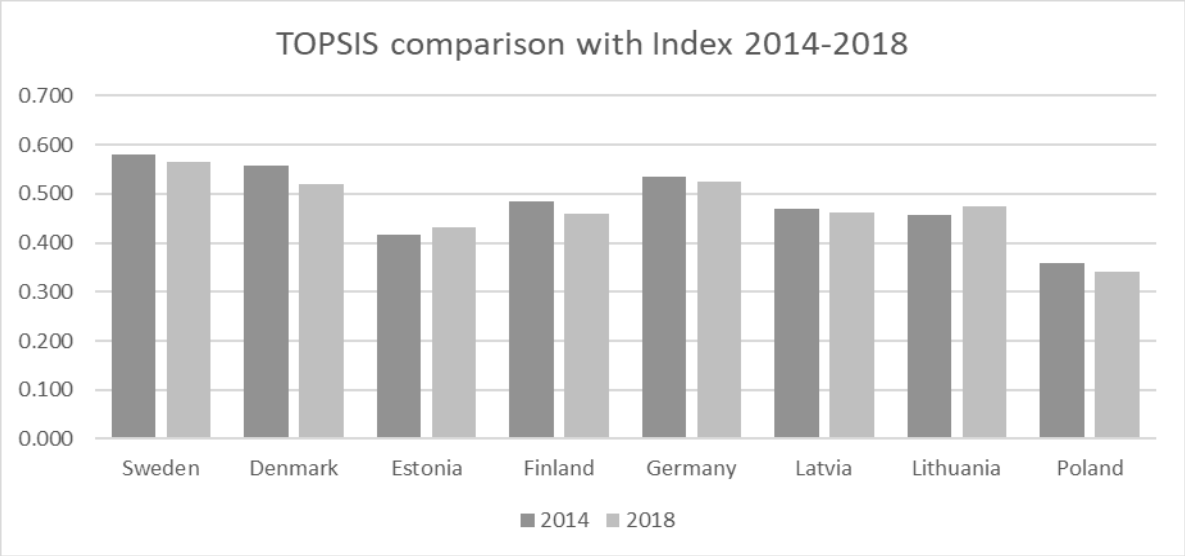

Figure 4. Development of Environmental pillar in Baltic Sea Region in the period of 2014-2018 represented by TOPSIS.

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The development of Environmental pillar in Baltic Sea Region and development of Eco-innovation in the context of Circular Economy is represented in Fig. 5. According to the data represented, it is possible to see the tendency of growing or decreasing of Environmental pillar in the context of Circular Economy. The represented data is already ranked according to MULTIMOORA and TOPSIS. The gradient shows the ranked position of the selected country by the year – the darker font means lower rank the country owes, and opposite, the lighter font – the higher position holds the country.

Germany has been evaluated by MULTIMOORA and TOPSIS with the rank 2-3 in the period of 2014-2018, what is middle position, close to the leading position.

	MULTIMORA		Topsis	
	2014	2018	2014	2018
Sweden	1	2	1	1
Denmark	2	1	2	3
Estonia	8	8	7	7
Finland	3	5	4	6
Germany	3	3	3	2
Latvia	3	3	5	5
Lithuania	6	6	6	4
Poland	7	7	8	8

Figure 5. Development of Environmental pillar of Circular Economy assessed using MULTIMOORA and TOPSIS methods in Baltic Sea Region in 2014-2018.

Source: created by authors

To sum up, the assessment of Environmental pillar shows the development of Environmental pillar in the context of Circular Economy. TOPSIS and MULTIMOORA methods identified the leading countries in development of Environmental pillar in the context of Circular Economy which are Sweden, Denmark and Germany. Also, according to TOPSIS and MULTIMOORA methods the lowest ranks got countries: Lithuania, Estonia and Poland. Finland and Latvia have been ranked in the middle by MULTIMOORA and TOPSIS methods.

Conclusion

Circular Economy is an opposite economic approach to Linear Economy, which integrates Environmental aspects in Economic model. Opposite than Linear Economy, which promotes "take, make, dispose" approach, Circular Economy suggest representing Economic model as a closed loop with high attention to Environment on every step of production and consumption.

Environmental pillar of Circular Economy is a multidisciplinary approach, connecting Environmental and Social sciences. The set of indicators are being selected based on European Union policies, promoting Sustainable Development and Circular Economy. Based on established strategies and targets indicators are being grouped according to the aim of the target – which make a system of indicators representing Environmental pillar of Circular Economy.

Environment pillar has been analyzed in Baltic Sea Region in the period of 2014-2018 using MULTIMOORAand TOPSIS methods. Based on MULTIMOORA and TOPSIS methods the assessment model of Environmental pillar has been proposed. According to proposed assessment model of Circular Economy the countries are being ranked based on the result of applied MCDM methods.

The results of MULTIMOORA and TOPSIS methods shows similar evaluation of the development of Environmental pillar in the context of Circular Economy. As e research shows the best development of Environmental pillar show Sweden, Denmark and Germany. Finland and Lithuania have been middle-ranked by MULTIMOORA and TOPSIS. Lowest ranks got Lithuania, Estonia and Poland using MULTIMOORA and TOPSIS methods. The assessment model of Environmental pillar allows to analyze and follow the dynamics of development of Environmental pillar Circular Economy, allowes to include it to the complex evaluation of Circular Economy.

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FINANCIAL-CREDIT AND INNOVATIVE ECONOMIC SECTORS: EVALUATION OF MACROECONOMIC EFFECTS OF REGULATION AND INTERACTION SECTORS*

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Abstract. In the article, the authors examine contemporary problems of the divergence of the interests of financial and credit institutions and enterprises operating in the innovation sector. Based on the study of theoretical and methodological approaches to the interaction of subjects of financial and innovative sectors of the economy, the authors obtained the results of economic-mathematical modeling on the effect of interaction between sectors on economic growth and assess the role of regulators in this process. The obtained results are interpreted through the prism of the experience of economically developed countries, which reached the greatest degree of synergy between the financial and innovative sectors of the economy. Conclusions are drawn regarding the need to develop preventive measures to eliminate the undesirable effects, including on the basis of the adaptation of best world experience.

Keywords: financial sector; innovation sector; interaction; economic growth; synergy; macroeconomic effects; institutional infrastructure; regulation

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1. Introduction

In the current conditions of development of Kazakhstan, characterized by a progressive movement towards the development of the processing industry, one of the urgent directions for the development of interaction between the financial and real sectors of the economy is an innovative form of interaction, which in terms of its development is significantly inferior to investment, but in terms of demand from real (innovative) sectors of the economy and from the standpoint of the need to address key tasks of socio - economic power, significantly surpasses it.

The basis of the organization of this form of interaction is venture financing related to the commercialization of research results in high technology, high-tech areas where the results are not guaranteed and the risks are high (Nakipova, Akhmetova, Kamenova, 2013). It is noteworthy that in most European countries, risk capital has received significant development with the support of the financial sector and the state, which began to fulfill simultaneously the role of co-financier, organizer, source of information and customer. Despite the complexity of implementing this form of interaction (venture business is highly risky, and financial and credit organizations cannot risk borrowed funds), the prospects for the development of this form of interaction between financial and innovative sectors of the economy associated with the transition of Kazakhstan to an innovative development path in order to implement a structural economic restructuring (Rakhmetova, Kalkabayeva, Iskakova, Kurmanalina, Turmakhanbetova, 2019)

At the initial stage of this path, it is proposed to develop this form of interaction through loans from large entities of the banking sector with state participation, which can finance large-scale risk projects. Countries with a high share of the banking sector in the economy (in terms of the ratio of loans to GDP) also include Spain - 207.1%, the UK - 171.5%, France - 147.9% and Germany - 141.1% (Zavadska, 2018, Dwenger, Fossen, Simmler, 2020). For example, in France back in the 80s there was a reorganization of the banking system, the essence of which was to strengthen the processes of nationalization of individual sectors of the national economy and financial and credit institutions. The basis for such a reform was the need to overcome the crisis and the need to modernize large industrial enterprises based on the intensive introduction of innovations. Thus, in accordance with the Law on Nationalization, CompagnieFinancieredeParisetdesPays - Bas, known today as Paribas and CompagnieFinancieredeSuez, were nationalized, who later became shareholders in five nationalized industrial groups. Among quasi-state institutions, one can distinguish CreditNational activity aimed at providing loans to industries for up to 5 years, primarily to small and medium-sized businesses, the costs associated with the acquisition of equipment and construction. One of the incentive measures was the creation of the state company OSEO, whose main function was to stimulate the innovation process and increase the competitiveness of enterprises in the innovation sector by providing a guarantee of up to 90% of the amount of the requested loan and implementing joint financing with banks (Egyed, Pola, 2020). In China, the functions of financial support for the national economy were transferred to specialized state banks (Agricultural Bank, Commercial and Industrial Bank, Construction Bank and Bank of China). At the same time, the reform of the banking system in subsequent years increased the state's share in the banking sector to 61.1% of all banking assets, concentrating them in four state and three political banks. At the same time, Chinese laws impose strict restrictions on capital outflows, which is why most of the resources The banking sector is located domestically. The cost of loans for innovative enterprises remains low, therefore this source is more preferable for them than operations with securities (Wu, Xu, 2020). In Spain, a specially created network of specialized state credit institutions represented by the Mortgage Bank, Stroybank, Industrial Bank, Local Credit Bank, Foreign Economic Bank and Central Bank, along with private commercial banks, covers the entire needs of the real sector in the priority areas of navigation and fishing (Shchenin, 2010). In order to balance the redistribution of resources between priority sectors of the economy, the State Credit Institute has been established here, which gives preference to those enterprises that actively invest in

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research and development (R&D), use resource-saving technologies in their production, expand exports, and contribute to protection environment (Hombert, Matray, 2019).

In order to maintain economic growth, the government of Japan in the 90s decided to nationalize two long-term lending banks LongTermCreditBank and NipponCreditBank and to merge two development banks with state financial funds: Development Bank of Japan with Hokkaido-Tohoku Development Finance Public Corporation and Export - Import Bank of Japan with Overseas Fundation Economic, having agreed upon financing schemes mutually acceptable for the state and sectors (Shioji, 2019). At the beginning of the 20th century, these institutions made a significant contribution to the development of the Japanese economy by providing long-term loans to enterprises belonging to the most priority sectors of the real sector. At present, including being again transferred to private hands; they are engaged in lending to enterprises of high-tech and high-tech industries. In the Russian Federation, large banks with state participation (OJSC Sberbank of Russia, OJSC Russian Agricultural Bank, OJSC Bank Vozrozhdenie, OJSC Prosvyazbank) use products oriented to the innovation sector (Polyakova, 2012). So, the Development Bank (Vnesheconombank) has launched the Financing for Innovation and Modernization program, under which the partner banks of RBD will receive financial support from the latter for the implementation of innovative projects in the SME sector in the amount of up to 150 million rubles for a period of less than 7 years at a rate of 2/3 of the Bank of Russia refinancing rate. It is assumed that the share of loans in innovative projects should be 20% of the total investment in a particular industry (Shmeleva, 2017).

Kazakhstan's experience in using venture financing is so far limited to the activities of specialized venture funds, including those with participation in the capital of the state and large banks. There are examples of international practice of the participation of banks of Kazakhstan and Russia in venture financing of enterprises in the real sector on the basis of signing an agreement between OJSC RUSNANO, JSC Kazyna Capital Management, VTB Capital Group and I2BFHoldings on the creation of a Russian-Kazakhstan venture fund (target size 100 million US dollars) to support projects aimed at the introduction of nanotechnology and the use of nanotechnology products in various sectors of the economy of the Republic of Kazakhstan and the Russian Federation (Official site of RUSNANO) as well as the Eurasian Development Bank (EDB), which finances projects with the introduction of innovative technologies (construction of a SukhoiSuperjet passenger aircraft, a plant for the production of polycrystalline silicon "Usolye Sibirsky Silicone", a project of Kazfrac LLP for gas utilization at the Kenlyk field, etc.) (Finogenov, 2012).

In countries where strategic documents aimed at the development of innovative activity have been adopted and are being implemented (State program of industrial and innovative development of the RK), and the financial system model is close to the European one, the so-called hybrid varieties of this form of interaction will predominantly develop in the medium term, involving joint participation in financing the innovation sector of banks, the state and institutional investors (Strategy of innovative development of the RF). The role of the state in expanding this form of interaction is determined by the need to use instruments of subsidizing, insurance and guarantee, without which it is impossible to achieve success in this area.

2. Methodological approach

The methodological basis of the study was the work of domestic and foreign scientists who are devoted to fundamental research in the development of the theory: systems, banking, credit, interaction, asymmetry, institutionalism and state regulation of the economy. In particular, the methodology of the presented study is based on the works of I.V. Blauberg, V.N. Sadovsky, E.G. Yudin (Blauberg, 1969), who considered the object of study as a complex of interconnected and interacting elements, as well as a combination of entities and relationships. Using the methodology of a systemic reproductive approach in the study allows us to show the process of interaction between subjects of the financial and innovative sectors of the economy as a set of elements

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of the economic system functioning and interconnecting each other (the relationship between the whole and its parts) and confirm the thesis that the nature, quality and direction of interaction between subjects of sectors largely determine the sustainable development of the modern economic system (the impact of large macroeconomic FIR trends and its development on the economy).

Moreover, the connection between the two methodological paradigms is due to the fact that it is the institutions that determine not only the course, but also the course of the processes taking place in the economy, ensure the integration of the social whole, smooth out the conflicting interests of many system elements (financial and real sectors, as well as the state), and , ultimately, determine the stability of the functioning of both the elements themselves and the economic system formed by them.

Along with the methodology of the systematic approach, the study also relies on the development of the founders of the theory of institutionalism T. Veblen (Veblen, 1984), J. Schumpeter (Schumpeter, 1982), D. North (North, 1997), the institutional theory of R. Coase (Coase,1993) and representatives of the Russian school of institutionalism G. B. Kleiner, V.M. Polterovich (Polterovich, 2016), whose attention, when conducting research, is focused on the analysis of conditions that determine the viability of mechanisms for reconciling the interests of fully functioning and developing economic entities and the interests of the state and society as a whole.

However, for all the depth of research and the results obtained by these authors, questions remain underexplored, revealing the influence of a modified set of macroeconomic factors of the external and internal environment on the process of interaction between the banking and real sectors of the economy in the new economic conditions, the search for ways to improve the quality and stability of the interaction trajectory of sectors, productivity state participation in conditions of growing crisis, increasing the role of financial and credit organizations in the development of the innovation sector and others (Rozmainsky, 2017).

Issues of institutional modernization of the financial system are reflected in the works: G.N. Beloglazova (Beloglazova, 2011), G.A. Tosunyan (Tosunyan, 2018), I. Tselishchev (Tselishchev, 2019), G.L. Avagyan (Avagyan, 2012), T.N. Zverkova (Zverkova, 2018), and others. The obtained results of these studies cover topical issues in the field of interaction between subjects of the financial and real (including innovative) sectors of the economy in modern conditions are fragmented and do not take into account the relationship between the elements of a complex systemic process of interaction between the subjects of these sectors.

3. Materials and methods

When selecting data for assessing the first group of dependencies of GDP growth rates on innovation and investment activities, the difference in the assessment of innovations by different groups of countries was taken into account. For example, in Kazakhstan, generally accepted indicators for assessing innovation in statistical reporting are such quantitative indicators as the number and share of enterprises implementing technological innovations, the share of R&D expenditures in their total volume, etc. The practice of foreign countries indicates that these indicators do not reflect the final result of innovation, so they use as a key indicator - the share of high-tech products in total exports, which would l was taken as the basis for evaluating innovation.

A wide range of indicators of a temporal and spatial nature was used in the work, given that the process of interaction between sectors is influenced by a set of interrelated micro-, meso- and macroeconomic factors, and the subjects are distinguished from each other by the specifics of their activities and institutional environment. As a measure of institutional characteristics, one of four main methods was chosen - based on macroeconomic indicators - characterizing the degree of development of the relationship between the subjects of the studied sectors. The logic of structuring macroeconomic parameters is based on key factors of economic development that are directly related to the process of interaction between the financial and innovative sectors of the economy.

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In the research process, general scientific, special methods and such methods of scientific knowledge were used as statistical, graphic, expert, comparative and modeling.

4. Qualitative and Quantitative Research

For a comparative analysis, we selected countries that occupy high positions in the ranking of the Global Innovation Index: Sweden - 2nd place, the Netherlands - 3rd place, Singapore - 9th place and for comparison Kazakhstan, which takes not a high 78th place in the rating. As can be seen from the data in Table 1, the largest value of the export of high-tech products among the analyzed group of countries for 2016 belongs to Singapore (126.3 billion US dollars), although it has a slight negative dynamics over the past 4 years. the studied period, the volume of exports of high-tech products in Kazakhstan increased by 2.1 times, while in Singapore - 1.7, the Netherlands - 1.2, and in Sweden - on the contrary, has a tendency to decrease by 1.3 billion dollars. USA.

Table 1. GDP and high-tech products by country (in billion US dollars)

Years	Sweden		Netherlands		Singapore		Kazakhstan	
	GDP (billion US dollars)	High-technology exports (billion US dollars)	GDP (billion US dollars)	High-technology exports (billion US dollars)	GDP (billion US dollars)	High-technology exports (billion US dollars)	GDP (billion US dollars)	High-technology exports (billion US dollars)
2000	259,8	16,2	412,8	44,9	95,8	73,9	18,3	0,0
2001	239,9	10,8	426,6	38,9	89,3	62,5	22,2	0,0
2002	263,9	12,3	465,7	34,1	91,9	64,1	24,6	0,2
2003	331,1	13,5	571,9	50,2	97,0	76,4	30,8	0,2
2004	381,7	17,3	650,5	60,1	114,2	94,2	43,2	0,3
2005	389,0	17,3	678,5	65,9	127,4	105,6	57,1	0,4
2006	420,0	18,4	726,6	69,5	147,8	124,7	81,0	0,9
2007	487,8	15,1	839,4	67,4	179,9	102,8	104,8	1,5
2008	513,9	15,4	936,2	58,1	192,2	117,1	133,4	2,3
2009	429,7	12,8	857,9	50,8	192,4	95,4	115,3	1,8
2010	488,4	16,2	836,4	59,5	236,4	126,9	148,0	2,4
2011	563,1	18,5	893,8	67,1	275,6	126,4	192,6	2,6
2012	543,9	16,6	828,9	64,1	289,2	128,2	207,9	3,5
2013	578,7	17,1	866,7	69,0	302,5	135,6	236,6	3,1
2014	573,8	16,6	879,6	70,3	308,1	137,4	221,4	3,3
2015	497,9	14,9	757,9	59,1	296,8	130,9	184,4	2,8
2016	514,5	14,9	777,2	53,0	296,9	126,3	137,3	2,1
2017	541,0	17,4	833,8	78,2	341,8	147,2	166,8	1,8
2018	555,4	17,4	914,1	85,7	373,2	155,4	179,3	1,8
2019	530,8	17,5	909,1	85,7	372,1	155,4	180,2	2,2

Source: compiled by authors according to data from the World Bank

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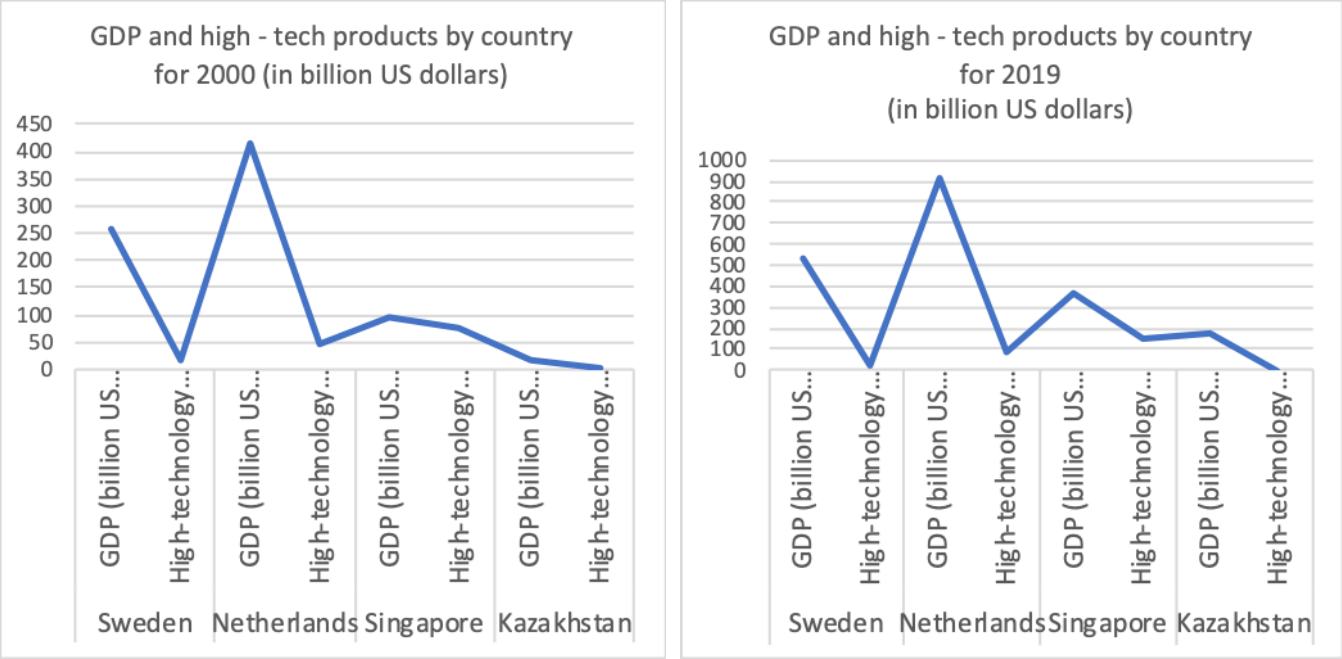

Figure 1. GDP and high-tech products by country
Source: compiled by authors according to data from the World Bank

In order to assess the role of innovation in the real sector in the development of the economic system as a whole, we compared the values of the ratio of the export of high-tech products in% to GDP. It should be noted that, according to the results of the analyzed period, the greatest contribution to the development of the economy is made by Singapore's innovations (42.54%), which is 6 times higher than the value in the Netherlands (6.82%), almost 15 times higher than in Sweden (2.89%), and 28.4 times in Kazakhstan, despite the contradictory dynamics in recent years of the study period (Table 2). In our opinion, for Kazakhstan, even a relatively small, but progressive increase in the value of this indicator over the entire analyzed period is a very positive characteristic from the standpoint of implementing the strategy of innovative and industrial development.

Table 2. The share of high-tech products in% of the GDP of Sweden, the Netherlands, Singapore and Kazakhstan

Year	Sweden	Netherlands	Singapore	Kazakhstan
2000	6,24	10,87	77,13	0,00
2001	4,50	9,13	70,06	0,22
2002	4,66	7,33	69,74	0,80
2003	4,08	8,79	78,77	0,65
2004	4,53	9,23	82,52	0,65
2005	4,45	9,71	82,92	0,73
2006	4,38	9,56	84,39	1,22
2007	3,09	8,03	57,15	1,39
2008	2,99	6,21	60,90	1,69
2009	2,98	5,92	49,58	1,56
2010	3,32	7,12	53,71	1,59
2011	3,28	7,51	45,88	1,34
2012	3,05	7,74	44,35	1,70

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2013	2,95	7,97	44,83	1,29
2014	2,89	7,99	44,58	1,50
2015	2,99	7,80	44,13	1,54
2016	2,89	6,82	42,54	1,50
2017	0,032	0,094	0,43	0,01
2018	0,031	0,093	0,416	0,098
2019	0,033	0,093	0,416	0,012

Source: compiled by authors according to data from the World Bank

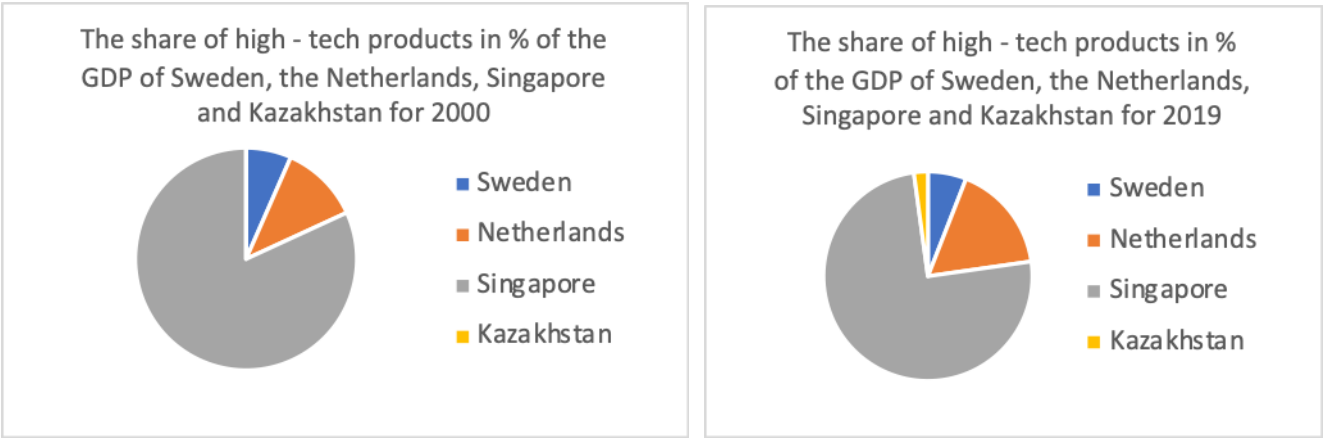

Figure 2. The share of high-tech products in% of the GDP of Sweden, the Netherlands, Singapore and Kazakhstan
Source: compiled by authors according to data from the World Bank

For a more detailed and qualitative analysis of the role of innovation in economic development, we have expanded the range of factors that have the strongest influence on the quality of innovation and their dynamics. These factors included: the share of high-tech goods in the country's total industrial exports (High-technology exports,% of manufactured exports), the share of research and development (R&D) expenditures (% of GDP) and the share of domestic loans related to the country's GDP (Domestic credit to private sector,% of GDP).

The results of a comparative analysis showed negative dynamics of GDP growth rates for the entire study period: in Sweden from 4.7% to 3.2%, in the Netherlands - from 4.2% to 2.2%, in Singapore - from 8.9% to 2 % in Kazakhstan - from 9.8% to 1.1%. Such a significant slowdown in economic growth is associated with the action of factors of a predominantly globalization and integration nature. Many experts note that the lack of pronounced growth originates in the crisis of 2007-2009, after which the economies of most countries could not recover, and even those in which the innovative component is very strong, which, in the opinion of institutional scientists, can quickly end the recession and go to a confident rise. Important in this case is the effect of the growth factor of R&D and the availability of financial sources for both the financial and innovative sectors of the economy in order to enhance mutually beneficial cooperation between their entities.

In particular, at the end of the analyzed period, the share of high-tech products in the total industrial export in Singapore amounted to 67.4% against the background of the growth of this indicator over the entire period by 4.6%. In Kazakhstan, rapid growth of this indicator for the entire study period by 26.8% was noted, which made it possible to reach 30.4% at the end of 2016. In Sweden and the Netherlands, despite a high position in the Global ranking of innovations, there is a similar tendency to decrease in the share of high-tech products in the total volume of industrial exports for the period 2000-2016. So, the value of this indicator in Sweden at the end of the analyzed period amounted to 14.3% (decrease by 8.5%), in the Netherlands - 17.8% (decrease by 17.8%), respectively.

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We are led to contradictory conclusions by the analysis of the R&D expenditure indicator to GDP for the studied group of countries. Thus, the largest share of R&D expenditures to GDP is observed in countries such as Sweden and Singapore, where the share of research and development expenditures ranges from 3.1% to 3.9% and 1.8% to 2.6%, respectively the period 2000-2016, while the share of R&D expenditures in Kazakhstan is negligible, and amounts to only 0.2% of GDP, without changing its value over the past 15 years.

The obtained results confirm the thesis that the growth of the R&D expenditure indicator in modern conditions of Kazakhstan does not practically affect the results of innovative activity (only in the case of an increase in quantitative indicators). This is due to the fact that in Kazakhstan, in the context of the so-called catching up development, the prevailing experience is the purchase of finished foreign equipment and technologies that do not require a long period of their implementation (on average up to 3 years) and borrowed innovative technologies are being increasingly used, which allows to increase the share high-tech products in total industrial exports. On the contrary, the decrease in the value of a similar indicator in such highly developed countries that have a strong innovation component, such as Sweden and the Netherlands, is explained by the fact that a complete cycle of the innovation process is practiced here, which takes on average up to 10-15 years.

Of particular interest in the study of the relationship between financial and innovation sector entities and the impact of this process on economic growth are the results of the assessment of the indicator of domestic bank loans to GDP (Official site of the World Bank). According to the data in Appendix 1, the comparatively largest contribution to the development of the economy, including through lending to innovations, is made by the banks of Singapore and Sweden, where the values of the studied indicator at the end of the analyzed period amounted to 132.9% and 128.8% of GDP, respectively, against the background of a steady and progressive This indicator grew by 36.6% and 38.3%, respectively, over the entire period. The Netherlands also has a high share of loans to GDP - 110.4%, but with insignificant negative dynamics in recent years. Kazakhstan is characterized by a relatively low share of loans to GDP - 33.4% amid growth over the period - by 22.2%.

The results of a comparative analysis indicate a different degree of dependence of entities in the real sector on borrowed funds that financial and credit organizations can provide them. It should also be noted that a restrained policy of using credit resources by Kazakhstani entities of the real sector is explained by high risks that banks do not want to take and the presence of a sufficient amount of own funds from large companies that can afford the costs of implementing projects. Unfortunately, for small businesses that could most successfully use loans to implement their innovative ideas, credit resources are usually not available, primarily because of the size of interest remuneration and other conditions due to the gradual tightening of regulation on the part of financial regulator.

4.1 Multinomial Logistic Regression

The logistic regression model, in our opinion, is the most suitable for solving our tasks. The choice of this model (the logistic regression equation) is due to the need to determine the strength of the relationship between variables and allows us to draw conclusions about the direction and degree of mutual influence between indicators.
To identify the degree of influence of various factors on the rate of economic growth, we have built a correlation-regression model. The GDP growth rate (GDP growth, annual%) - Y was taken as an effective sign. Based on the results of an analytical study, factor signs were selected that determine, in our opinion, the change in Kazakhstan's economic growth rates:
x_1 – the share of high-tech goods exports in the total volume of industrial goods exports, in %;
x_2 - R&D expenditures in % of GDP;
x_3 – share of domestic loans to the private sector in% of GDP.
To identify the most significant factors of them, we conducted an analysis of paired coefficients and correlation indices with an assessment of their uniqueness (significance). For this purpose, a matrix of paired correlation

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coefficients was compiled, which measures the tightness of the connection between factor and effective attributes. Selected factors were studied for the period 2000-2016. The matrix of pair wise coefficients is presented in table 3.

Table 3. Matrix of paired correlation coefficients

	Y	x_1	x_2	x_3
Y	1			
x_1	0,6123	1		
x_2	0,0932	0,2417	1	
x_3	0,1939	0,3093	0,0049	1

Source: compiled by authors

The studied factor x1 has a rather high paired coefficient with GDP growth rates. The tightness of the correlation between the trait and the factors x2, x3 is weak, which is confirmed by the low values of the correlation coefficients. Therefore, factor attributes x2, x3 can be excluded from the model.

Based on the data in Table 3, based on the results of calculating pair correlation coefficients and using the program "Information Technology of Linear Regression", the values of the variance and regression analysis indicators were obtained (Table 4 and Table 5).

Table 4. Regression statistics

Multiple R	0,782338
R- square	0,612052
Normalized R-squared	0,586189
Standard error	2,407988
Observations	17

Source: compiled by authors

The factor variance of the productive attribute, amounting to 137.22, far exceeds the value of the residual variance of the productive attribute, equal to 5.79 (table 5).

Table 5. Analysis of variance

	df	***SS***	***MS***	F	Significance F
Regression	1	137,2192	137,2192	23,66499	0,000206
Remainder	15	86,97609	5,798406		
Total	16	224,1953			

Source: compiled by authors

According to the results of the analysis of variance, a significant part of the variation in GDP growth depends on the impact of the studied factor. In turn, the coefficient of determination, calculated as the ratio of the factorial variance to the total variance, was 0.61 or 61% (in table 5, the coefficient of determination is presented as an R-square). This means that the factor included in the regression equation explains 61% of the variation in rates GDP growth, if we consider the values of indicators for the period 2000-2016.

The validity of the model is confirmed by the value of the Fisher F-test. The practical F - Fisher criterion was 23.66 and turned out to be larger than the theoretical F, which is 4.070. This means that the constructed regression model is legitimate.

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Conducted correlation and regression analysis made it possible to identify a factor that significantly affects the variation (y). The calculated regression coefficients allow a quantitative assessment of the range of changes in the rate of GDP with variation of the factor.

The statistical relationship between the studied indicators studied using the correlation method indicates the feasibility of constructing the following regression model (equation):

$$Y = a_0 + a_1 \times x_1,$$

where:
a_0 – free term of the equation
a_1 – net regression coefficient

Therefore, the formula dependence can be represented as follows:

$$Y = 12{,}15 + 0{,}23 \times x_1$$

7. Results

During the study, confidence intervals are constructed that help to understand how much the obtained point estimate can deviate from the true value of the parameter. The obtained confidence intervals are presented in table 6.

Table 6. Forecast values of bank loans, billion tenge

Year	Forecast	Upper interval	Lower Interval	Parameter estimation multiple regression
The regression equation with an estimate of the parameters is: $Y = 12{,}15 + 0{,}23\ X_1$				
2017	37,79	34,011	41,569	$R^2 = 0{,}6120$
2018	46,97	42,273	51,667	$F_{\_calc.} = 23,66$
2019	58,38	52,542	64,218	$F_{\_tabl.} = 4{,}070$
2020	72,57	65,313	79,827	
2021	90,20	81,18	99,22	

Source: compiled by authors

In general, the forecast values obtained on the basis of the solution of the multivariate regression equation are within the margin of error and can be taken into consideration for the formation of forecast indicators.
The results of the study confirm the significance of the factor selected for analysis, which affects the change in GDP growth rates.

6. Discussion

The results of economic and mathematical modeling for assessing the influence of the factors we have chosen on the rate of economic growth are confirmed by the following theses (conclusions):
- the dependence of economic growth on the growth of innovation and its results in the form of high-tech products in the total volume of industrial exports was identified;

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- it was established that the influence of factors such as R&D expenses and bank loans affect economic growth indirectly depending on external and internal economic and financial stability, the level of risks and the relevant regulatory practice in the country;
- it is proved that the influence of all factors on economic growth is equally blocked by the sharply negative effect of crisis phenomena, which reduces the effectiveness of any incentive measures in the field of enhancing investment and innovation in sectors at the crisis and post-crisis stages of the economic cycle;
- the asymmetry of state regulation measures was confirmed when, if financing and lending to innovations in the real sector are necessary to accelerate the pace of economic growth, bank loans are still not quite accessible for small businesses, despite the fact that an industrial-innovative development strategy is being implemented;
- in terms of lending to innovations of small businesses for Kazakhstan, the prospects for predominantly short-term and medium-term loans (3-5 years) have been determined against the background of a deficit in budgetary constraints and a lack of own sources of investment financing, which is most important for the purchase of ready-made innovative technologies and equipment in the context of catch-up development (Kalkabayeva, Kurmanalina, Gusmanova, 2017).

7. Conclusion

A critical rethinking of a number of scientific concepts in the context of modern conditions for the interaction of subjects of the financial and innovative sectors of the economy, which are distinguished by frequent cyclical fluctuations and exacerbation of contradictions in the interaction of sectors, predetermined the choice of the research methodology in favor of the theory of asymmetry of information and institutional-evolutionary theory of economic development. It was found that the dependence of economic growth rates can be traced, including on the results of the innovative component of the real sector, which, in turn, largely depends on the sufficiency of R&D and expenditures on them or the availability of borrowed funds that financial and credit institutions can provide. The state, stability of sectors and the economy as a whole, as well as the priorities that the state sets for itself, as a rule, determine the nature, quality and orientation of the process of interaction between subjects of the financial and innovative sectors of the economy, depending on institutional changes in the structure of the economy. At the same time, the deepening of existing contradictions and problems in the interaction of entities of these sectors is due to the inconsistency (asymmetry) of macroeconomic effects, based on the different directions of target orientations of the subjects of interaction, unsatisfactory quality of information, polarity of behavioral strategies, the level of authenticity of regulatory measures, as well as distortion of expected results (effects) at the micro, meso and macro levels.

The fulfillment of a special role in the process of adjusting the institutional infrastructure to eliminate asymmetric macroeconomic effects, in our opinion, is intended to provide the state, which should pursue a balanced policy of preventive stimulation and regulation, taking into account the peculiarities of key stages of the economic cycle and the asymmetry in the interaction of subjects of key sectors of the economy. In particular, at the stage of crisis and recession, for Kazakhstan, a mechanism of comprehensive support of innovations can be used, which suggests that this stage is usually characterized by passivity of the financial sector entities, and, on the contrary, by the activity of subjects of the real (innovative) sector, when the latter search financial support for the implementation of their ideas in order to ensure the outcome of their crisis. The most acceptable option in this case is, on the one hand, the initiation of state programs to support the innovation sector, involving a system of incentive measures for banks, and on the other hand, the partial participation of financial and credit organizations, depending on the complexity of the stages of the innovation process (possibly together with state-owned banks of a specialized level) taking into account their resource capabilities and current regulatory standards. On the contrary, in a period of prosperity and economic growth, it is advisable to use a mechanism to stimulate the growth of innovation sector entities. This mechanism involves the creation of a network of specialized industry and innovation banks, in which the resource, personnel, methodological, technical and technological potential adequate to the needs of various sectors of the real sector is concentrated. The special status of these banks

implies the use of special regulatory measures in relation to them on the basis of the principle of budgeting, focused on the result: the provision of packaged incentive tools on the part of the state in the field of prudential standards, taxation, monetary policy, antitrust laws, etc. in strict dependence from the contribution of credit institutions to the development of the economy (increase in the share of loans in risky but priority sectors, participation in venture capital, development of flexible loan products focused on the development of innovative sector regions, etc.)

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FORMATION AND IMPLEMENTATION OF REGIONAL TARGETED AGRO-INDUSTRIAL COMPLEX DEVELOPMENT PROGRAMS TOWARDS INTEGRATED RURAL DEVELOPMENT

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Abstract. The paper discusses current issues related to the formation and implementation of regional targeted programs for the development of the agro-industrial complex (AIC), and also assesses their impact on the sustainable development of rural areas of the region. As an example, a regional target program has been developed and economically justified to involve fallow and unused lands in agricultural production turnover. The author's methodology for the formation and implementation of regional target programs for the development of the agro-industrial complex is presented. On the basis of this methodology, a pilot project of the regional target program "Involving Arable Lands Not Used for Their Intended Purpose in the Altai Territory for Sustainable Rural Development for the Period of 2020-2025" has been developed. Based on the strategy for the development of agricultural production in the Altai Territory, as well as in the context of the implementation of the draft regional target program developed by the authors, the forecasted production values of the main agricultural products of the Altai Territory for the period of 2020-2030 are presented. In the forecast calculations, the portion of the planned organic agricultural production is highlighted, the effectiveness of program measures is assessed, some conclusions are drawn on the feasibility of regional targeted programs towards sustainable rural development.

Keywords: target programs; sustainable development; unused arable land; rural areas; efficiency; agribusiness strategy; forecast

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1. Introduction

The Russian Federation has all the necessary resources for the further development of agricultural production, including today's highly efficient production of organic products – these are long-term agricultural traditions, vast areas of agricultural land resources, as well as a relatively low level of intensification and chemicalization of agricultural production in comparison with industrialized countries. So, for example, if the average level of chemicalization in the EU countries, expressed in the indicator "fertilizer application", is 196 kg of active ingredient per 1 hectare of agricultural land, on average in Russia this indicator does not exceed 43 kg, and in the largest arable land area – the Altai Territory – 4.8 kg per 1 hectare of arable land (Tatarkin, Policyn, 2015).

Rural territories play a significant role in shaping the economy of the region and the way of life of the population, for example, agriculture accounts for more than 19% of gross regional product against 6-7% in Russia. About 44% of the total national population lives in rural territories of the region. The Altai Territory has huge agricultural potential, ranking first in Russia in terms of arable land (6.5 million hectares), of which more than 75% are fertile chernozems (Kryukov *et al*., 2018). In terms of gross agricultural output, the region is in the first place among the regions of the Siberian Federal District and is in the top ten among the regions of the Russian Federation. The contribution of the region's agriculture to the solution of the national food security problem is 4% of all-Russian grain production, 3% of sunflower, 15% of flax, 5% of milk, 3% of potato, about 3% of meat and eggs, about 2% of sugar beets and vegetables (Voronkova *et al*., 2018; Yemelyanov et al., 2018; Tikhomirov et al., 2018).

For completeness of comparative analysis of the level of development of agriculture in Russia, we consider similar indicators of Azerbaijan. The territory of the Azerbaijan Republic is 86.6 thousand square meters. km., which is almost 200 times less than the territory of Russia. Land structure: 12% forest, 1.6% water basin, 52.3% land suitable for agriculture, 34.1% other land. Of the total land area (8.7 million ha), agricultural land is 4.6 million ha. Of these, more than 1.8 million hectares are arable land, 2 million hectares are occupied by summer and winter pastures, part of the agricultural land is occupied by perennial plantations (Agriculture in Azerbaijan, 2020). Thus, despite the significant difference in the total area of the territories of Russia and Azerbaijan, the ratio of the area of land suitable for agriculture to the total area of the territory does not differ much. As a result of the foregoing, it becomes relevant and significant to identify the relationship between the sustainable development of rural areas of the region and the formulation and implementation of regional targeted programs for the development of the agro-industrial complex (AIC).

2. Methods

The theoretical and methodological basis of the research is the works by domestic and foreign scientists on the sustainable development of rural areas, agricultural production in agricultural regions of the country; the academic studies and recommendations of the Russian Academy of Agricultural Sciences, the regulations of the Russian Federation, the decrees of the President and resolutions of the Government of the Russian Federation, regulatory legal acts of the constituent entities of the federation. The methodological basis was a systematic approach, which allowed for comprehensiveness and a targeted view. The following research methods were also used in this study: monographic, analytical, abstract-logical, computational-constructive, economic-statistical, extrapolation.

3. Results

The main goal of the implementation of the regional target development program is to increase production efficiency in certain segments of its target orientation through targeted support of the subsidy recipients, as well as continuous monitoring by authorized regional governing bodies of the targeted and rational use of the provided budgetary resources. In the process of research, as well as on the basis of studying domestic and foreign

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experience in implementing targeted development programs, a mechanism was created making it possible to optimally form the regional targeted development programs for the AIC, as well as assess their effectiveness (Figure 1).

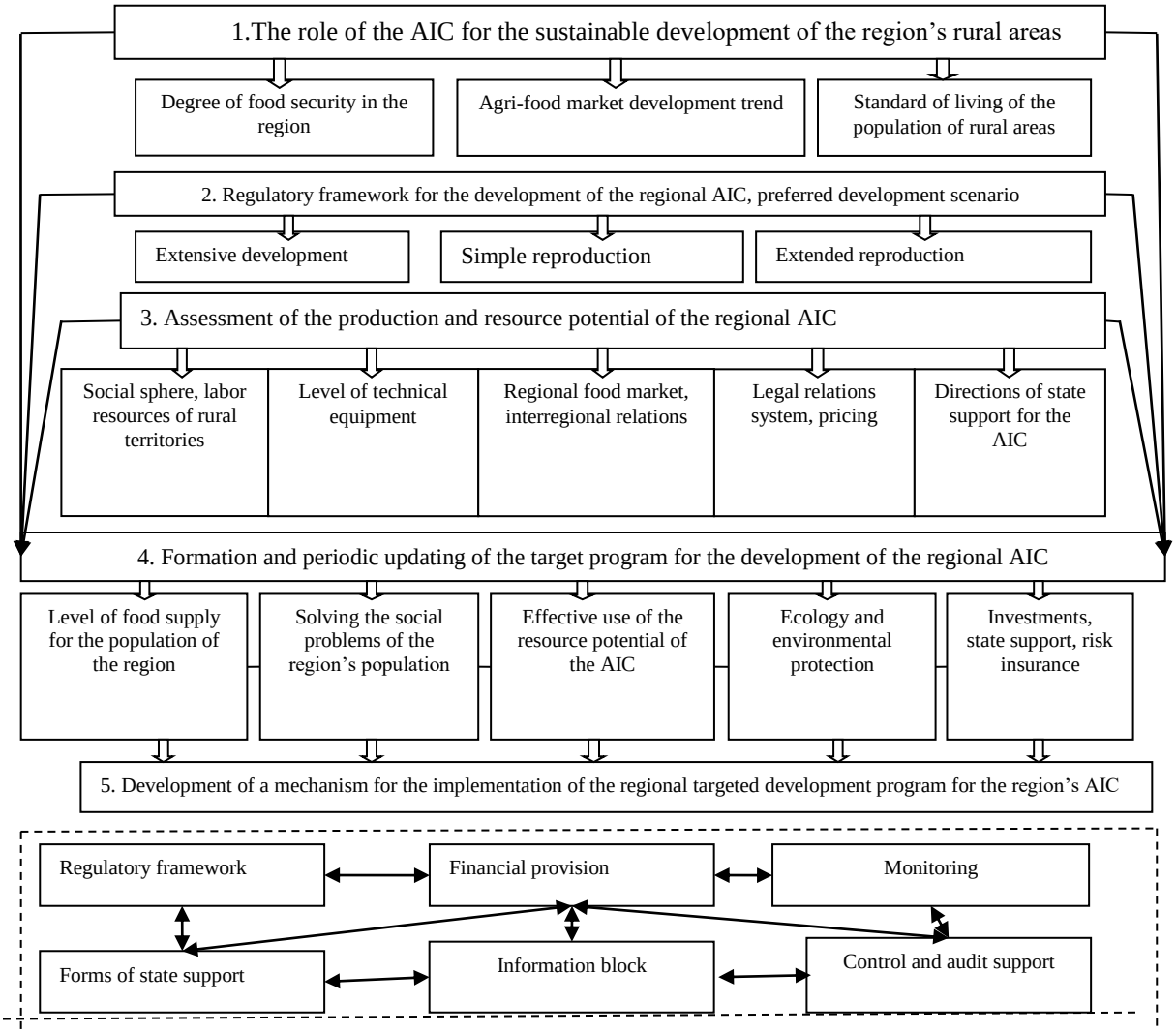

Fig. 1. The mechanism for the formation and implementation of the regional target program for the development of the AIC towards sustainable rural development
Source: the authors

Thus, arable land is the main resource of production in the agricultural production of rural areas. Over the past three decades, a significant amount of productive arable land has been removed from agricultural production, which has negatively affected both the volume of agricultural production and rural employment (Kovalenko, 2012; Miloserdov, 2014; Zhuchenko, 2012). In order to create an enabling environment for the sustainable development of rural territories in agricultural regions, it is necessary to involve unused arable land in the agricultural production process (Lysenko, 2008). Stimulation of agricultural producers, increasing the efficiency of their activities on additional involvement into agricultural production of arable land not used for its intended purpose, is assumed through the mechanism for implementing regional targeted development programs (Polushkina, 2012).

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The group of authors has developed a pilot project of the regional target program "Involving Arable Lands Not Used for Their Intended Purpose in the Altai Territory for Sustainable Rural Development for the Period of 2020-2025". The main provisions of the proposed regional target program are aimed at a more complete and efficient use of arable land by agricultural producers, increasing their efficiency, increasing the production of agricultural products in the Altai Territory, as well as increasing the level of employment and socio-economic well-being of residents of rural territories of the region (Korableva et al., 2018).

Expected results of the implementation of the regional target program "Involving Arable Lands Not Used for Their Intended Purpose in the Altai Territory for Sustainable Rural Development for the Period of 2020-2025":
1) an increase in the share of arable land used for its intended purpose by 2025 to 100% relative to the level of 2020;
2) involvement in agricultural production turnover of unused arable land with an area of 217 thousand hectares and fallow land with an area of 336 thousand hectares for the purpose of sustainable development of rural territories of the region;
3) formation of an effective mechanism for the implementation of regional targeted programs for the development of agriculture towards sustainable development of rural areas;
4) reproduction of soil fertility of arable land, environmental protection;
5) rational planning of production uses of arable and fallow land resources involved in the production turnover.
The total land area in the Altai Territory as of January 1, 2019 is 11,534.4 thousand ha, of which 10,596 thousand ha are farmlands. Of the total agricultural land area, arable land covers 6,542.1 thousand ha, fodder land – 3,731.1 thousand ha. According to statistics, the area of unused arable land in 2019 amounted to 217 thousand ha, the area of fallow land – 336 thousand ha (Melgui *et al*., 2018). Consequently, the reserve fund for increasing the sown area of the region is 553 thousand ha. In order to more efficiently use arable land, it is necessary to develop a set of measures to stimulate agricultural enterprises in the region to engage arable land that they do not use (Podprugin, 2012). The intended use of arable land is an important measure to increase soil fertility, increase the value of land resources, create new jobs, improve the quality of life of the rural population, the social and economic development of rural areas, and is also of great environmental importance (Altukhov, 2018; Alferova, 2015; Klochko et al., 2016). The mechanism of subsidizing part of the costs associated with the involvement of unused arable land in production includes the provision to agricultural producers of compensation for the reimbursement of part of the costs of involving unused arable land in the production turnover at the rate of 3,000 rubles for 1 hectare of arable land introduced into agricultural circulation that has not been used for its intended purpose for more than three years. The amount of compensation is calculated on the basis of the average market price of 60 liters of diesel fuel per 1 hectare of fallow arable land, this amount is minimally necessary for the necessary agricultural activities (Table 1).

Table 1. Performance indicators for the implementation of the draft regional target program for the period of 2020-2025 (forecast values)

No.	Indicators	Year					
		2020	2021	2022	2023	2024	2025
1	Reserve fund of unused arable resources, thousand ha	553	496	424	359	298	249
2	Area of unused and unclaimed arable land allocated as land shares, thousand ha	411	411	250	135	70	-
3	Area of arable land to be involved into agricultural circulation, thousand ha	35	49	68	65	60	50
4	Area of arable land in unsatisfactory agrotechnical condition, thousand ha	790	790	773	764	746	749
5	Total area of arable land used for its intended purpose, thousand hectares	6,317	6,384	6,656	6,521	6,573	6,636

Source: the authors' research

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It is necessary to provide for the annual development by agricultural organizations of plans where the planned structure of land use should be presented by each agricultural organization. Program activities also envisage the annual involvement of about 10% of the total area of unused arable land in agricultural production, and the effectiveness of the use of the arable land put into circulation should be evaluated annually based on data provided by land user organizations.

Table 2 presents the estimated financial support of the regional target program "Involving Arable Lands Not Used for Their Intended Purpose in the Altai Territory for Sustainable Rural Development for the Period of 2020-2025". The amount of funding for program activities is determined on the basis of the distribution of powers between the regional budget, as well as the municipal share of budget financing and extrabudgetary sources (Table 2).

Table 2. Program measures for the period of 2020-2025 (resources and terms of implementation of each event), million rubles

Measure	Year																	
	2020			2021			2022			2023			2024			2025		
	total	regional budget	local budget and extrabudgetary sources	total	regional budget	local budget and extrabudgetary sources	total	regional budget	local budget and extrabudgetary sources	total	regional budget	local budget and extrabudgetary sources	total	regional budget	local budget and extrabudgetary sources	total	regional budget	local budget and extrabudgetary sources
Task 1. Assessment of unused arable resources (allocated as land shares)																		
Identification of unused arable land allocated as land shares				161		161	115		115	65		65	60		60			
Subsidizing agricultural organizations part of the cost on involving unused arable land in production	71	26	45	362	136	228	389	144	245	355	130	224	335	124	210	175	102	173
Task 2. Preservation of the natural environment and rational use of arable land																		
Land use structure optimization	At the expense of funds provided for the operation of administrative bodies of state and municipal authorities																	
Intensification of state control over the use of arable land	At the expense of funds provided for the operation of administrative bodies of state and municipal authorities																	
Total according to the program	71	26	45	523	134	389	504	144	360	420	130	286	395	124	270	175	102	173

Source: the authors' research

The effectiveness of the implementation of the proposed project of the regional target program will be assessed by identifying the completeness and quality of the implemented program activities, the degree of achievement of the goals and objectives. The program activities are aimed at the sustainable development of rural areas of the country's agrarian regions by increasing the efficiency of agricultural production and creating the preconditions for ensuring food security in both the region under consideration and the Russian Federation as a whole by increasing the volume of agricultural production (Danilov-Danilian, 2003; Kolesova, 2015; Prokhorova, et al., 2016; Voronkova et al., 2020; Ziyadin, 2012).

The implementation of the draft regional target program should be based on legal, organizational, financial, informational and methodological support and support from the authorized bodies of regional power and management (Snitch, 2011). Program activities should be open in nature and implemented through wide information accessibility for agricultural producers, in particular, through the official website of the regional government and websites of executive authorities in municipalities. The effectiveness of the implementation of the project of the regional target program is assessed in accordance with the main objectives of the program and contributes to:

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1) identification of deviations of the current indicators of the implementation of program activities from the planned and approved ones;
2) identification of internal and external causes of deviations from the plan and their consideration in the formation of program activities for the next planning period;
3) adoption of measures aimed at the integrated implementation of indicators, as well as the current and final results of the activities of the regional target program;
4) taking measures to improve the quality of planning.
The following criteria can be noted for evaluating the effectiveness of the implementation of the regional target program:
1) the degree of implementation of planned program activities;
2) the level of achievement of the intended results;
3) the degree of compliance of the results obtained with the actual costs incurred for the implementation of program activities;
4) the compliance of operational indicators with the level of certain indicators for the implementation of program activities;
5) the completeness of the implementation of program activities.
Evaluation of the effectiveness degree in the implementation of the activities of the regional target program is based on the established target indicators presented in Table 1.
To assess the effectiveness of the production-related use of arable land and fallow land involved in agricultural turnover, the executive authorities of the municipalities of the region need to quickly monitor the condition of land resources put into turnover with the financial support of the regional target program in order to make decisions on suspension of subsidies for any agricultural organization in case if negative factors are found in land use, expressed in a decrease in soil fertility, deterioration in the quality state of arable land, reduced productivity, and in the case of the absence of a visible positive results in achieving the goals of sustainable development of rural areas.

Discussion

Based on the strategy for the development of agriculture in the Altai Territory until 2025, as well as the regional target program “Involving Arable Lands Not Used for Their Intended Purpose in the Altai Territory for Sustainable Rural Development for the Period of 2020-2025” developed in the research process, the forecast values of agricultural production in the Altai Territory for the period until 2025 have been calculated based on the extrapolation method. The forecast is based on an analysis of agricultural production volumes in the Altai Territory for the period of 2000-2019, then the forecast was formed by extrapolating the current trend of a gradual increase in production volumes, also taking into account the annual involvement of additional arable land into agricultural production turnover, and, accordingly, agricultural output from the given area (Table 3).

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Table 3. Predicted values of agricultural production in the Altai Territory, taking into account the implementation of program activities for the period of 2020-2025, thousand tons

Indicators	Year					
	2020	2021	2022	2023	2024	2025
Cereal crops	4,100	4,150	4,300	4,500	4,600	4,800
including produced on arable land, additionally involved in turnover	67	95	170	240	319	380
Flax	7.9	8.5	9.4	9.5	9.7	10.1
including produced on arable land, additionally involved in turnover	0.3	0.5	0.7	0.8	0.9	1.0
Sugar beet	505	640	695	720	765	800
including produced on arable land, additionally involved in turnover	7	15	24	39	46	60
Sunflower	303	320	335	354	370	395
including produced on arable land, additionally involved in turnover	3	5	9	15	28	36
Potatoes	857	869	876	880	886	900
including produced on arable land, additionally involved in turnover	7	12	24	46	72	89

Source: the authors' research

In the strategically foreseeable period (2020-2025), it is planned to increase the share of agricultural products of the Altai Territory produced on arable land, additionally involved in turnover in the cereals group up to 7.9%, flax up to 10%, sugar beet up to 7.5%, sunflower up to 9.1%, potatoes up to 9.9% of the total agricultural production in the region.

As a result, an increase in the cost of gross agricultural output in comparable prices of 2020 by 2025 is forecasted to reach 182 billion rubles, or 155% compared to 2015; the profitability level of agricultural organizations is planned to be increased up to 20%, in comparison with the estimated indicator of 2015 – 8.7% (Table 4).

Table 4. Target indicators for the development of agriculture in the Altai Territory, taking into account the implementation of program activities for the period of 2020-2025

Indicators	Year					
	2020	2021	2022	2023	2024	2025
Value of gross agricultural output, billion rubles, at comparable prices of 2020	121	129	136	144	152	161
Production index, as % of 2020	100.0	106.6	112.4	119.0	125.6	133.1
Profitability of agricultural organizations, %	9.9	12.5	13.1	14.2	15.5	16.8

Source: the authors' research

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Conclusions

The study identified that the rural territories of the country's agrarian regions possess the necessary climatic conditions, labor, resource and land potential towards sustainable development goals. An in-depth analysis and assessment of the possibility of applying the world experience of sustainable rural development in conjunction with the existing system of Russian agricultural land use are serious prerequisites for strategic development and strengthening the position of the AIC in the national economy.

The mechanism of formulation and implementation of the regional target program for the development of AIC towards sustainable development of rural territories, justified and presented in the study, made it possible to develop a draft regional target program "Involving Arable Lands Not Used for Their Intended Purpose in the Altai Territory for Sustainable Rural Development for the Period of 2020-2025". The main activities of the program are aimed at a more complete and efficient use of arable land by agricultural organizations, increasing production efficiency in agriculture, as well as increasing the volume of agricultural production in the Altai Territory. So, according to program measures until 2025, 217 thousand hectares of arable land and 336 thousand hectares of fallow land not used for their intended purpose and not claimed by the owners of land shares will be involved in agricultural production turnover.

According to the results of the study, the maximum amount of subsidiary support until 2025 was identified on the basis of a reasonable standard for arable land introduced into agricultural production, not used for its intended purpose, in the amount of 3,000 rubles per hectare for doing agricultural works. The developed methodology for operational monitoring of the effectiveness of the use of arable land introduced into turnover will allow the municipal authorities of the region to quickly monitor the state of arable land and fallow land in order to decide on the suspension of subsidies for any agricultural organization when identifying some factors of inefficient land use.

Based on the strategy for the development of agricultural production in the Altai Territory, as well as taking into account the developed draft regional target program "Involving Arable Lands Not Used for Their Intended Purpose in the Altai Territory for Sustainable Rural Development for the Period of 2020-2025", forecast values of agricultural production of the region for 2020-2025 have been calculated. Target indicators for the development of agriculture in the Altai Territory have been substantiated, in accordance with the implementation of the program-related activities.

The prevailing natural and climatic conditions of rural territories of the country's agrarian regions, as well as the concentration of land, material, financial and labor resources towards sustainable development, not only open up some additional opportunities for agricultural production but also will reduce the dependence on products imports, and will enhance the level of quality and environmental safety of products, the development of diversification of agricultural production and the socio-economic development of rural areas of the country's agricultural regions.

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