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SLOVAK BUSINESS ENVIRONMENT DEVELOPMENT UNDER THE INDUSTRY 4.0 AND GLOBAL PANDEMIC OUTBREAK ISSUES*

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Received 18 November 2020; accepted 10 March 2021; published 30 June 2021

Abstract. The current global crisis, triggered by the spread of the Covid-19 virus, is associated with the economic slowdown in many countries as well as global economy. The presented study deals with the social and economic impacts of a coronavirus pandemic issue on economic environment within Slovak companies and other organizations. Based on the executed e-questionnaire survey analysis, the main goal of the paper is to assess the opinions of workers in different types of companies, while the key parameter is the intensity of impacts on the economy development. The survey was conducted within the period of 30th September to 14th October 2020, it involved 302 respondents and provides data on how different groups of people perceive the current situation from the status of an employee - women, men, different age categories, inhabitants of individual regions in Slovak Republic. The data assessment output reveals the selected labor market trends in terms of new employment possibilities. At the same time, the paper demonstrates a relatively negative economic period within the Slovak society, while mapping the overall macroeconomic situation in Slovak Republic and world economy, caused by the global covid-19 pandemic outbreak. Results show that the Industry 4.0 elements adequately incorporated into the organization of labor are the correct tools to handle the current economic crisis affected by pandemic outbreak within the Slovak entrepreneurship environment.

Keywords: home office; work organization; information and communication technologies; Covid-19 pandemic; international economics

Reference to this paper should be made as follows: Grenčíková, A., Navickas, V., Kordoš, M., Húževka, M. 2021. Slovak business environment development under the industry 4.0 and global pandemic outbreak issues. *Entrepreneurship and Sustainability Issues*, 8(4), 164-179. [http://doi.org/10.9770/jesi.2021.8.4\(9\)](http://doi.org/10.9770/jesi.2021.8.4(9))

JEL Classifications: F66, J16, J21, O11, Q55

* This paper was supported by the Slovak Ministry of Education's scientific grant agency VEGA: "Assessment changes in the qualitative structure of international economic relations under the influence of Industry 4.0 with implications for the EU and Slovak economic policies". Project registration number: [Reg. No.: 1/0462/20].

1. Introduction

According to Toth, Maitah, Maitah, K. (2019), Besenyő, Kármán, (2020) and Wójcik, Ioannou (2020) since the beginning of 2020, the term Covid-19 has gradually become a society-wide phenomenon, which has made us realize how unstable and difficult it is to predict the environment in which we live and work. Although the pandemic initially was profiled primarily as a health problem, the diversity of its effects was already apparent after a few weeks. Emerged multilateral changes have caused the civilized world began to understand this pandemic issue as a crisis. Just as the Great Depression of the 1920s and 1930s or the Global Financial Crisis (Great Recession) of 2008 and 2009, the current crisis, characterized by the spread of the Covid-19 virus, is associated with the economic slowdown in particular countries as well as global economy (Hnát, Zemanová, Machoň, 2016; Maitah, Smutka, 2019; Leduc, Liu, 2020). The difference between the three mentioned crises lies mainly in the causes of their occurrence - while the first ones were the result of problems culmination in financial markets, the primary cause of the current crisis is the spread of contagious respiratory disease, which paralyzes the possibility of social interaction - whether study, work or leisure (Nenckova, Pecakova, Sauer, 2020). Dudáš, Grančay (2019) and Gärtner, Sadílek, Zdražilová (2017) argue that if the cooperation of people is understood as a necessary element for the functioning of their economic and social life, then the consequent restriction of physical contact has economic, social and also psychological manifestations. At the same time, the circumstances that can be seen today significantly underline the significance of Industry 4.0 elements such as communication technologies and artificial intelligence as an essential part of people's lives and society (Grmelova, 2018a; Hanulakova, Dano, Drabik, 2019). The different views of economists and relevant institutions on the pandemic issue development, especially the economic impact, can be summarized in three basic statements. The first is the general belief that the current crisis is primarily the result of an ongoing pandemic and will be deeper but probably shorter than the previous one (Gräbner, Heimberger, Kappeler, 2020; Tajtakova, Zak, Filo, 2019; Thivant, Machková, 2017). The second group of authors such as Krajňáková, Vojtovič (2017) and Roškot, Wanasika, Kreckova Kroupova (2020) underline the fact that the prognostic trends before the pandemic outbreak have already indicated an impending economic recession, but with the emergence of pandemic just accelerating the activation of these processes. The crisis of larger proportions is indicated by the long-term accumulation of risk trends, such as high fiscal deficits and public debts, demographic development in developed countries, growing risk of deflation and commodity price collapse along with currency depreciation, digital economic disruption associated with extending social disparities, deglobalization in terms of protectionist measures and export restrictions, the decline of democracy as a result of economic uncertainty and propensity for populism, geostrategic distance between the USA and China, etc. (Lipkova, 2018; Svacina, Rýdlová, Boháček, 2018). The third observation is determined by theoretical threats - there is a realistic assumption that liquidity problems of households, businesses and government organizations will result in a chain reaction in terms of insolvency and bankruptcy, resulting in a vortex of financial and economic crises within the global economy (Saroč, Smejkal, 2018; Jiránkova, 2012).

The presented study analyzes the impacts of Covid-19 pandemic on work organization within the Industry 4.0 concept in companies operating in Slovak Republic and on the employees within these entities. The real-status detection provides us with the information necessary for further analysis of rate development and, in particular, analysis of potential impact on labor market. Therefore, the main goal of the research, presented in the paper, is to reveal and estimate the effect of Slovak entrepreneurship environment being able to adopt to particular measures regarding the current global pandemic outbreak. Additionally, we estimate if this change is to result in any massive outflow of workers or the emergence of new jobs. The data collected aim to bring specificity to the discussion and open up opportunities for further action by providing perspective to human resource managers at strategic employers, who are among the leading players in new trends and are key players in the implementation of future workforce strategies. For these reasons, we have been dealing with this issue for several years being the solvers of the Slovak Ministry of Education research grants Vega 1/0430/18 and Vega 1/0462/20. The object of

interest of the research was the opinion of employers on the actual development in companies. The conducted research was focused mainly on technical problems and solutions, and there were the views being introduced in Slovakia to this issue that drew attention in a different direction to the impact on labor market and other changes being brought by. The outline of this paper features in Section 1 a short introduction and a literature review in Section 2, followed by the proposed goal and research methodology in Section 3. Finally, the results are presented and consequently discussed in Section 4 and ended up by brief conclusions in Section 5.

2. Theoretical background

In January 2020, the first reports regarding the spread of Covid-19 in mainland China appeared in the media. It was expected to be a local epidemic only. Only the first cases in the south of Europe and on other continents made most countries pay attention to the disease and its impact on the economy. To prevent the transmission of the virus, most states have restricted their trade, services, transportation links and contacts with foreign countries (Shehzad, Xiaoxing, Kazouz, 2020; Zemanova, Drulakova, 2020). Already in the first quarter of 2020, the first symptoms of the approaching economic recession appeared - Slovak GDP decreased by 3.7% year-on-year, in the second quarter of 2020 even by 12.1%. A similar situation was faced by the entire EU economic bloc - in the first quarter, EU GDP fell by 2.7% year on year, in the second quarter by even 14.4%. To better illustrate the effects of the Covid-19 pandemic on the economy, the Figure 1 presents the GDP development of selected countries and EU in a year-on-year comparison for the last quarter of 2019, the first and second quarters of 2020.

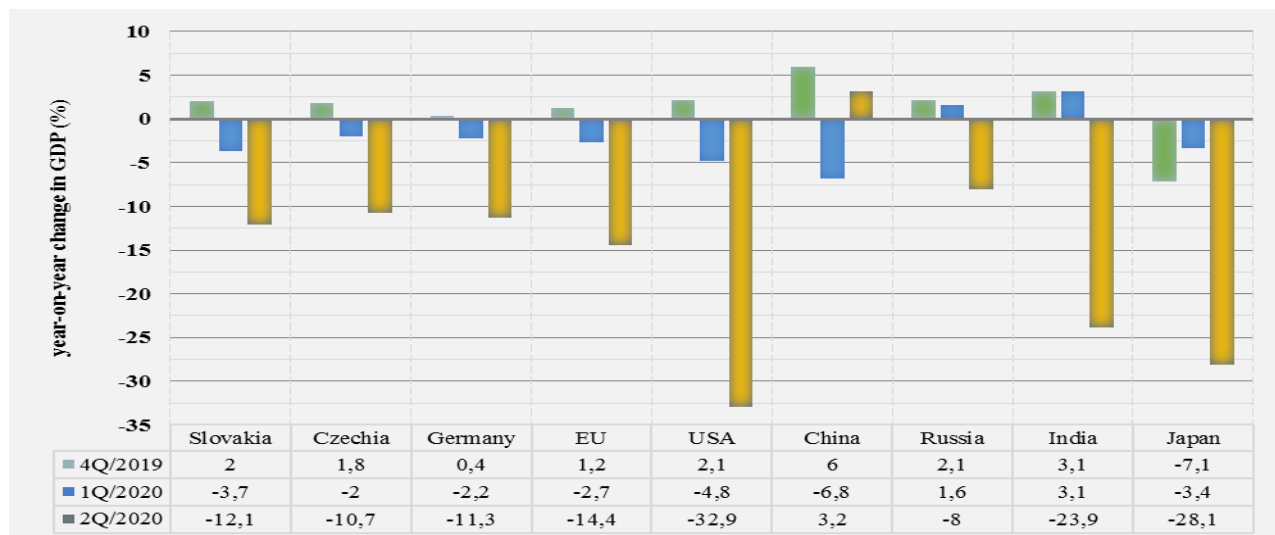


Figure 1. Year-on-year changes in GDP in 4Q / 2019, 1Q / 2020 and 2Q / 2020 - comparison of selected world economies (Q - quarter)

Source: own processing by Our World in Data (2020) and Slovak Statistical Office (2020)

According to Fabus (2018) Slovak economy is too small to significantly influence those statistics. As it depends on foreign demand, the economic slowdown in Slovak main foreign trade partners, the economic slowdown is also anticipated in Slovakia. The closing of borders has disrupted supply in markets, followed by increased unemployment and reduced economic growth - for example, the area of tourism has been severely affected (Leduc, Liu, 2020; Gorlevskaya, Kubičková, Fodranová, Žák, 2018; Mura, 2019). The sectors most affected are those most targeted by the restrictive measures of national governments. Verification of this claim is, inter alia, a

survey carried out by Eurofound (2020). The number of workers who reported that their working hours were reduced during the restrictive measures is above average (compared to the EU as a whole) in all Mediterranean countries (Cyprus, Greece, Malta, Spain, Italy). In these countries, tourism accounts for a significant share of GDP and total employment. As transport is one of the sectors most affected by the global pandemic, the causality of the slump in tourism is indisputable (De Castro, Vlčková, Hnat, 2017; Fojtikova, Stanickova, 2017; Hnat, Sankot, 2019; Lipkova, Hovorkova, 2018; Grmelova, Sedmidubsky, (2017).

As OECD indicates, global GDP will fall by about 4.5% this year, while in the spring of 2020 the prediction was about 0.9% (according to Morgan Stanley), respectively 1.25% (according to Goldman Sachs). The International Monetary Fund (IMF) and the World Bank (WB) have called on the world's largest G20 economies to temporarily refuse to withdraw loans from the world's poorest countries due to the ongoing pandemic. The impact of coronavirus on the world economy is very serious, but especially low-income countries have been hit by the crisis (Cepel et al., 2020; Kostynets et al., 2020). The tendency of a pandemic to significantly affect poorer regions or countries is also confirmed by the opinions of many other experts. The emerging economies and low-income countries recorded the largest outflow of capital to date. Besides this idea, it is also appropriate to mention the growing economic polarization within the Eurozone area as one of the effects within the Covid-19 pandemic. This impact is estimated to be more severe in the southern Eurozone countries than in the northern ones. According to authors such as Sauer, Hadrabova, Kreuz (2018), Taušer, Arltová, Žamberský (2015) and Drulakova, Zemanova, (2020) the causes of this phenomenon can be found in the period before the outbreak of the Covid-19 issue. The polarization processes between the north and southern Eurozone states have been known for a long time (especially since the debt crisis) and are caused by heterogeneous structural resilience of individual Eurozone member states. In other words, the uneven effects of the pandemic are due to the lower resilience of southern Eurozone due to their more vulnerable economic structure. Korauš, Kaščáková, Felcan (2020), Svarc, Grmelova (2015) and Varadzin (2016) concede that the key parameter of economic production determining the potential for economic growth today is undoubtedly innovation and technology in particular. The economic dominance of northern Eurozone countries such as Germany, Netherlands, Belgium, Finland, etc. is thus justified by another factor - before the crisis, these economies accumulated enough technological capacity to compete successfully on international market. Dano, Lesakova (2018), Sauer, Kolinsky, Prasek (2019) and Zemanova (2020) indicate that technological sophistication is more important than price competitiveness. For these reasons, macroeconomic forecasts point out to a more pronounced rise in unemployment due to the economic downturn in southern European countries such as Greece, Italy, Spain and Portugal. Deeper decline in GDP in these countries will exacerbate existing economic difficulties compared to the richer north (Helisek, 2018; Peracek, Noskova, Mucha, 2017). Miklosik, Kuchta, Evans, Zak (2019) and Petriashvili, Mansoor, Sahatqija, Zaganjori (2019) concur that following deteriorating macroeconomic indicators, like a sharper decline in government revenues, are also expected, that limits these countries' ability to increase governmental spending and stimulate a pandemic-damaged economy. In contrast Daňo, Drábik, Hanuláková (2020), Zagata, Sutherland, Hrabák, Lostak (2020) dispute that governmental spending is rising on a much larger scale in northern Eurozone countries, reflecting the existence of better automatic economic stabilizers compared to the southern states in Eurozone monetary group of European countries (Caruso, 2020). The outbreak of the global Covid-19 pandemic and its consequences are thus becoming not only the cause of emerging economic problems, but also the accelerator of already existing macroeconomic difficulties of many developing countries. The impact of a pandemic is therefore very asymmetric, and the intensity of the impacts is thus cardinaly dependent on the economy status before the outbreak of a new type of coronavirus (Křečková, Zdražilová, Řezanková, 2016, Grmelová, 2020).

In terms of the GDP negative development in most countries of the world (and thus also the negative development of its global modification), the area of labor migration cannot be neglected as an important determinant of world economy performance (Mentlík, Helisek, 2018). Boksa, Saroch, Boksova (2020) state that restricting mobility is a fundamental tool to handle the spread of Covid-19, and international labor migration falls into this area. However,

limiting international labor migration does not only affect the global economy - the potential impact on remittances for families, communities and national economies of states can be also outrageous (Abel, Gietel-Basten, 2020; Krnacova, Drabik, 2018). According to Drabik, Zamecnik (2016), Helisek (2019) different countries, at different times, durations and intensities, take restrictive measures to partially curb the movement of people - not only at the international level, but often also within their domestic territorial divisions. Machkova, Sato (2017) and Sadilek, Zdražilová (2016) concede that some states enforce the issue of mobility regulation even more vigorously, allowing only the mobility of workers necessary for the proper functioning of the state (servicing the necessary infrastructure - power plants, waterworks, heating plants, gas, security forces, food, medicine, drugstores, oil production, etc.). The impact of restrictive measures taken in this area can make a significant contribution to the downturn in the world economy - migrants generate around 10% of global GDP (WEF, 2020; Grmelova, 2018b; Saroch, 2015).

3. Research objective and methodology

The fallouts of a global pandemic have also affected Slovak companies. It has been possible to change the organization of work in many organizations due to the advanced implementation of communication technologies. The home-office institute has found wide application in all institutions of the public and business environment (Vasilyeva et al., 2018). The aim of the presented study is to assess the impacts of the Covid-19 pandemic on work organization in companies operating in Slovak Republic and on the employees of these entities. Their evaluation is one of the ways to reveal selected trends in labor market in the way of employing people. Based on current circumstances, the questionnaire method was considered the most suitable means of obtaining information in the subject area, as it allows us to address a relatively large number of respondents in a short period of time, while absolutely eliminating health risks resulting from physical contact with survey participants. In case of our study, it is specifically an e-questionnaire, which was sent to a wide range of potential respondents with an unlimited possibility of further dissemination. The survey was conducted from 30th September 2020 to 14th October 2020 and involved 302 respondents in different age structures. As one of the main criteria of the questionnaire was also the size of the organization in which the respondent works or worked, we defined the company based on the division of the Statistical Office of Slovak Republic as follows:

- small business (up to 49 employees, where we also included micro-enterprises up to 9 employees);
- medium sized companies (50 - 249 employees);
- large enterprises (over 250 employees).

The title of the questionnaire was "Impacts of the COVID-19 pandemic on workers with an emphasis on the home office". The title determines the key areas of the survey, which are the consequences of a pandemic in relation to employees, organizations and work from home (home office) as one of the current expressions within the increasingly massive implementation of modern communication technologies into human work activities. We processed the data obtained from the questionnaire survey by means of statistical methods and the findings are presented in this study.

4. Results and discussion

In the following part of the study, we present the obtained results from the survey conducted in October 2020. The survey was focused on issues related to home office and work productivity. The structure of respondents involved in the survey indicates an almost balanced representation of employees in all size categories of enterprises - 34.4% (104 people) work in small companies, 35.8% (108 people) in medium companies and 29.8% (90 respondents) in large companies. Of the eight Slovak regions, only Košice is absent, the Trenčín region was the most represented in percentage terms (55% of respondents), followed by the Žilina region (21.9% of

respondents). The share of other regions individually did not exceed 9%. The input data also show that about 60% of the survey participants were women. The age structure of respondents is shown in Figure 2.

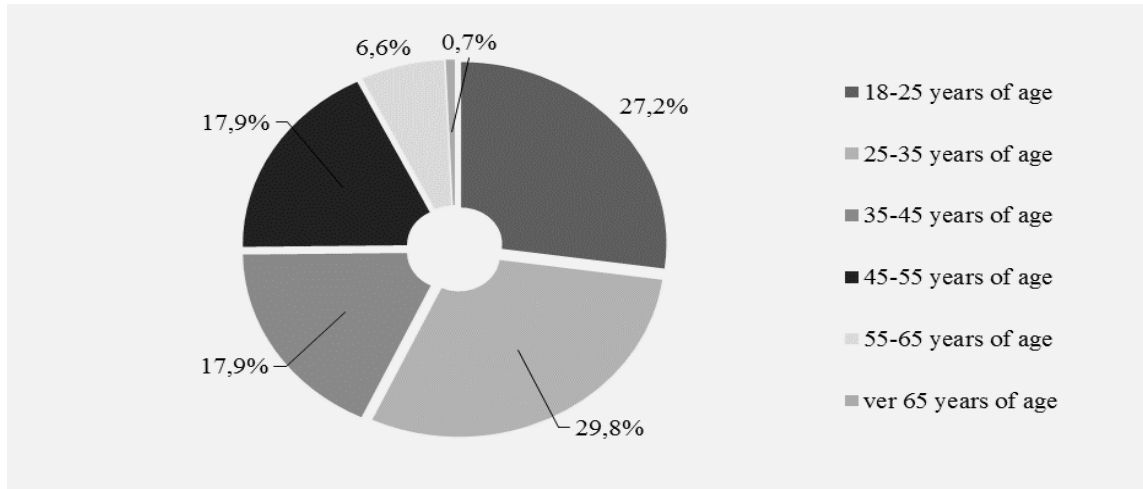


Figure 2. Survey respondents' age structure (in %)

Source: own processing

The GDP level of a state and thus its overall economic performance is cardinally dependent on the private sector properly functioning. It is precisely entrepreneurs and companies that form the backbone of a national economy and determine its current and future potential. That's why the respondents were asked the following question: "To what extent the company you work in has been economically affected by the Covid-19 pandemic?". In total, 80.8% of respondents described their company as affected by a pandemic; however, in a partial breakdown 28.5% as "significantly affected" and 52.3% as "marginally affected". Only 12.6% of respondents consider the organization in which they work to be "unaffected", the rest described the option "I do not know / do not want to answer" (6.6%). The filtered results of the survey question provided significant data.

We tried to evaluate the obtained data without the representation of Trenčín Region (TSK). In this variation of the questionnaire, a total of 82.4% of respondents described their company as affected, namely 20.6% as "significantly affected" and 61.8% as "marginally affected". In contrast, respondents from Trenčín Region, who were the largest group in the survey, described the organization in which they work as "significantly affected" in almost 35% cases, 44.6% of survey participants from this region chose the "marginally affected" option. The measured data in terms of several parameters are shown in Table 1.

Table 1. Percentage of answers to the question: "To what extent the company you work in has been economically affected by the covid-19 pandemic?"

applied filter	answer options			
	<i>severely affected</i>	<i>marginally affected</i>	<i>no affected</i>	<i>I can't judge / I don't want to answer</i>
the whole SR	28,5	52,3	12,6	6,6
SR except Trenčín region	20,6	61,8	7,4	10,3
Trenčín region	34,9	44,6	16,9	3,6
small businesses	28,8	50	17,3	3,8
medium-sized enterprises	22,2	59,3	7,4	11,1
large companies	35,6	46,7	13,3	4,4
Women	28,9	54,4	8,9	7,8
Men	27,9	49,2	18	4,9
18-25 years of age	28,9	54,4	8,9	7,8
25-35 r years of age	26,7	55,6	13,3	4,4
35-45 years of age	29,6	55,6	0	14,8
45-55 years of age	33,3	44,4	14,8	7,4
55-65 years of age	40	50	10	0

Source: own processing

It follows from the obtained data that the number of respondents in Trenčín Region who described their company as "unaffected" by the pandemic outbreak is more than a quarter higher compared to the results from the entire Slovak Republic. If we compare this number with the results of Slovak Republic without TSK, the number is even higher by more than a half. However, analogous results also appear from the opposite side of the imaginary scale - almost 35% of respondents from TSK consider their company to be "significantly affected", which is a one fifth more than 28.5% of respondents in whole Slovakia. When comparing the Trenčín region with the results from Slovak Republic without TSK, the difference is even higher, over 40%. Only 44.6% of respondents from Trenčín Region chose the "marginally affected" option, which is the smallest share in the inter-regional comparison. This suggests that Trenčín Region is economically very diverse and the impacts on local companies are in line with this fact. The number of companies in TSK was hardly affected by the covid-19 pandemic issue (and the restrictive measures associated with it), but on the other hand there is the highest share of unaffected companies and organizations (within the inter-regional comparison).

Besides regional differences in answers to question, the different answers depending on the gender of a respondent are also evident. While for the "significantly affected" and "marginally affected" options, the percentages are relatively evenly represented; for the "not affected" answer there is an obvious difference (Table 1). Women, compared to men, have described their company as unaffected twice less, and this fact can be determined by several reasons. Firstly, women are generally more likely to work in positions that are currently most affected by the pandemic (sectors such as healthcare, social care, education, trade and services, tourism, etc.), and they have to face much more work pressure. In addition, they often have to pay increased attention to childcare and household, as many school and pre-school facilities remain closed or operate on a restricted basis. The third reason has existed for a long time, but the pandemic situation highlights it dramatically - it is the gender inequality. As a result of a pandemic, bigger significant drop in women's employment is expected, as well as a deeper gender pay gap - even before the pandemic, it was on average at 16%.

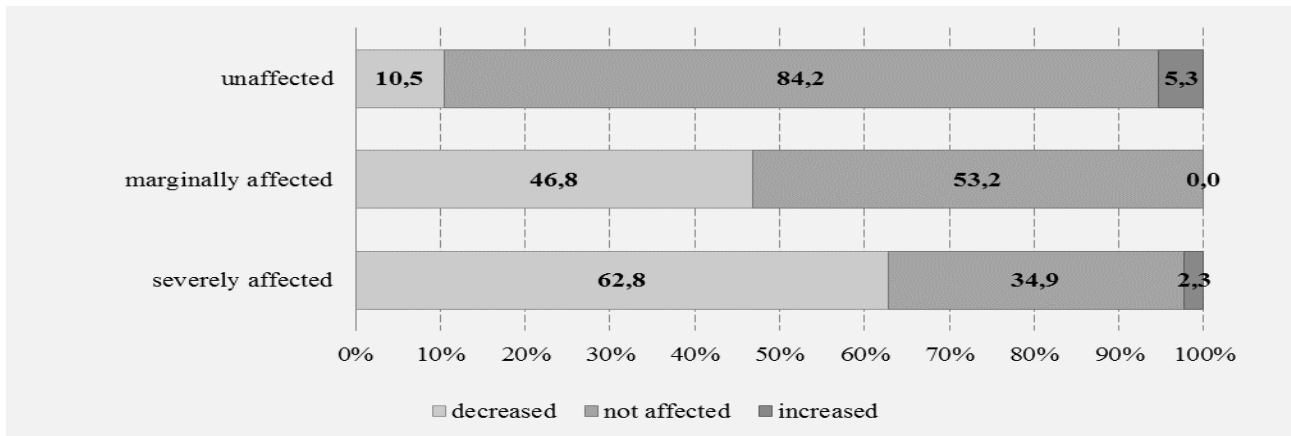


Figure 3. Relationship between respondents' answers to questions regarding the degree to what extent their organization was affected by a pandemic and the changes in their salary as a result of a pandemic.

Source: own processing

The Figure 3 indicates that there is a direct relationship between the intensity for economic disability perception in organization and the development of workers' incomes during the pandemic situation. Answers to the questions in questionnaire "To what extent the company you are working has been economically affected by the Covid-19 pandemic?" and "How did the Covid-19 pandemic outbreak affect your income?" confirm this assumption. It can be implied that respondents' responses describing their organization as "severely affected" had the highest proportion (compared to other options) of those who lost income as a result of the pandemic (almost two-thirds of respondents identified the "decreased" option). At the same time, the share of responses "not affected by" was the lowest - only a little more than a third of participants in the survey stated that their income stagnated (34.9%). With a lower degree of economic impact on a company, expressed by the option "marginally affected", the number of respondents who confirmed a decrease in their income also decreased (46.8%). The proportion of those whose income did not change ("not affected") jumped to more than half of all responses. Compared to the previous data, the situation was most marked in the answers of the respondents who described their organization as "unaffected". Here, the share of those who reported a reduction in their income reached only 10.5% (almost six times less than in the answer "significantly affected"). In contrast, even 84.2% of respondents stated that their income was the same as in the period before the pandemic outbreak, which is the highest value measured in this respond. As in the whole set of respondents (more than 300) there were only 1.3% of replies indicating that the income of a respondent increased due to the pandemic (the option "increased"), we present these data just for information and do not consider it relevant to deduce from them any assumptions and dependencies with other survey parameters. At the same time, we also omit the answers to the option "I can't judge / I don't want to answer", as their essence automatically excludes the possibility of comparison with other questions of the survey.

Table 2. Percentage of answers to the question "How did the Covid-19 pandemic outbreak affect your income?"

applied filter	answer options		
	decreased	not affected	increased
the whole SR	47,7	51,0	1,3
small businesses	50,0	48,1	1,9
medium-sized enterprises	50,0	48,1	1,9
large companies	42,2	57,8	0
18-35 years of age	44,2	53,5	2,3
35-55 years of age	55,6	44,4	0
over 55 years of age	36,4	63,6	0

Source: own processing

The overall results of the answers to the question concerning the changes in the respondents' income and their variations are presented in Table 2. The proportions of the answers “decreased” and “not affected” were relatively similar not only in the overall assessment (the whole SR), but also in different applied filters - the survey results show that they were almost identical within the interregional comparison; small differences indicate results regarding the company size (only employees from large companies report a reduction in their income less often than those working in small and medium-sized enterprises). There is also no indication of existing causality between the genders of respondents and their income development. However, the development of income is clearly influenced by the age structure of workers. We found out that younger survey respondents (categories 18-25 and 25-35 years) reported a decrease in their income on average in 44.2% of cases, while the category 35-55 years (combined categories 35-45 and 45-55 years) up to 55.6%, which is already a statistically significant difference. However, a group of respondents over the age of 55 reported a reduction in their income in only 36.4% of cases - at least within the entire filter of answers. It can be assumed that until a certain age of an employee, the risk of a decrease in income due to the Covid-19 pandemic can rise gradually, while after reaching a peak, this trend generally acquires the opposite tendency and gradually falls down. However, the explanation of this phenomenon requires a larger volume of data and their deeper analysis, so that issue can be the object for the next study.



Figure 4. Respondents' answers to the “home office” question: "Which of the following statements do you agree with?" In percentage terms

Source: own processing

Another interesting aspect of the survey are the differences in the answers of men and women to the question - whether they consider work from home to be a loss of social contact or not (Figure 4). While almost 7 out of 10 female respondents chose the yes option, in case of men it was 59%. It has been revealed that women perceive the negatives associated with social isolation during the home office, to a greater extent than men (by about 15%). It can be noticed that answers to this question differed only minimally in terms of age structure. Based on that it can be concluded that attitudes to this question are determined by factors other than the age of a respondent. These and previous information thus confirm the data obtained from our survey - women perceive the situation regarding the pandemic more negatively than men.

In addition, there are also differences in answers when it comes to the survey participants' age structure (Table 1). While young people at the age of 18 - 25 consider the society in which they work to be "severely affected" in 28.9% of cases, the category of respondents at the age of 55 - 65 states this option in 40% of cases. There are several reasons why older people evaluate the state of their company more negatively than the younger population. There could be objective reasons - for example, a higher concentration of older employees in companies and organizations that operate for a long time and, unlike modern companies, have not yet required significantly more advanced technical knowledge and skills from their employees. This is now the reason for the risk of economic difficulties, respectively, their demise (due to unpreparedness and inability to reflect on current trends related to the use of communication technologies and other tools enabling, for example, home offices). Workers at this age, currently called as Generation X, they often keep one job during their live in the same company, so they perceive any threat to their job more negatively - their adaptability in this direction is naturally limited compared to the younger generations. Another explanation for the more negative view of the situation in companies in case of senior survey respondents may also be the health context of the pandemic - usually older people are directly proportional to the higher risk of health problems, resulting in natural concern for their health. Last but not least, it is probably the life experiences from more economically difficult periods (transition from a centrally planned economy to a market economy, the years of privatization in 90's, the global financial crisis in 2008) that mostly negatively affect the expectations and assumptions of older people in connection with current events around the pandemic.

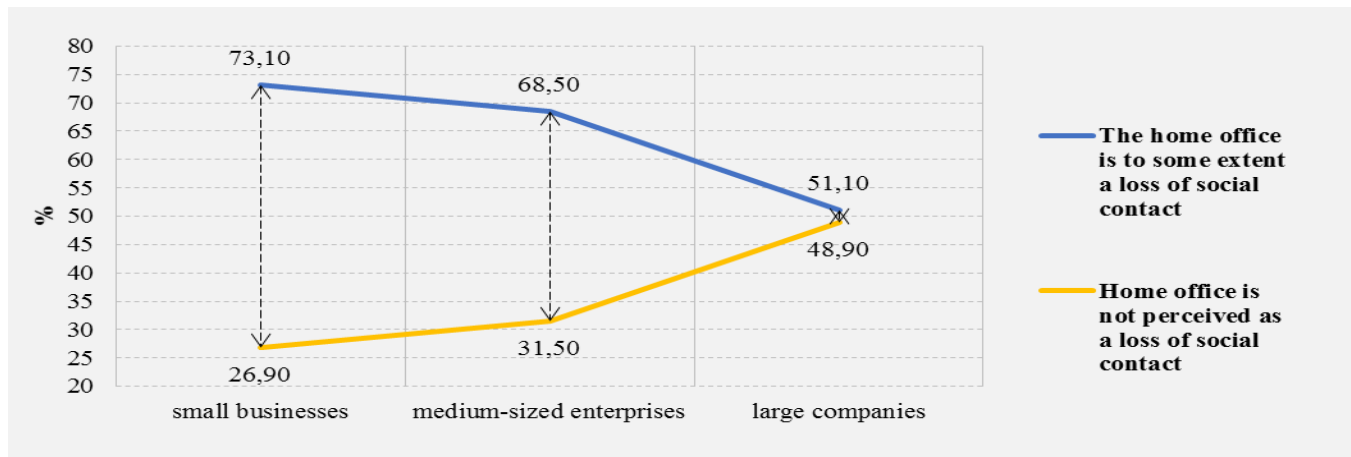


Figure 5. Respondents' answers to the question "Which of the following statements are you identified with?" highlighting the size of organization you work in (%)

Source: own processing

In the next decomposition of survey results, a causality between the size of the company (organization) and the perception of social aspect of home office has been observed (Figure 5). It has been noticed that while respondents working in small businesses (up to 49 employees) perceived work from home as a loss of social contact in almost three quarters of cases (73.1%), with the growing number of employees in the company this share had a declining trend - in medium-sized enterprises (from 50 to 249 employees) was this issue at 68.5% and in large companies (over 250 employees) it even decreased to the value of 51.1% of respondents. Based on two answer alternatives to the question, the second answer had a logically opposite tendency - its share grew with a larger size category of the organization (company). In large companies, 48.9% of respondents did not perceive the home office as a loss of social contact, in medium-sized 31.5%; in contrast, in small organizations only 26.9% of respondents chose this option. Based on these findings, it can be assumed that there is a causal relationship between these two variables - the size of the company affects people's attitudes in terms of the home office issue. The explanation for this relationship is relatively well logically justified - small companies often operate as a larger "family" - employees know each other and there are often more personal relationships existing between subordinates and superiors. However, the higher the number of people working in organization, the lower appearance of personal contacts among people across the company. In large companies, where hundreds to thousands of employees often work at the same time, such relationships are a complete abstraction. Thus, it is reasonable to expect that due to the unfavorable epidemiological situation the employees of small companies and enterprises perceive assigned work from home more negatively than people employed in large organizations, usually operating in a much more formal and less personal regime.

Conclusions

Considering the research results, it can be concluded that while the exponentially growing significance of communication technologies and artificial intelligence across the sectors of national economies has been already assessed many times within the context of Industry 4.0, the current Covid-19 pandemic and its consequences is still a new and unexplored issue. Nevertheless, there is a close link between the two seemingly incompatible entities. The whole situation regarding the spread of Covid-19 can be seen as a kind of accelerator to implement the ideas of intelligent industry concept into economic production. Even though the effects of the first wave of the pandemic in Slovakia and in other countries are already known in clearer outlines, the overall and longer-term consequences can only be estimated so far. Either way it can be predicted that a Covid-19 pandemic will be a part of people's lives for longer than initially expected. In order to learn to coexist with a pandemic, we must understand its impact on human lives and try to adapt to new conditions - in every aspect of how the society and economy work.

The research study has revealed that the Covid-19 pandemic has a severe impact on economic life in a society and healthcare systems. The most exact evidence of this statement is the extraordinary fluctuations of main macroeconomic indicators, which have seemed stable for a relatively long time. National economies have been forced to cope with unprecedented constraints, which often persist to this day. To summarize the results of the research, the year-on-year decline in GDP by tens of percent was recorded in several countries, such as the USA, China and Japan from the G20. Here, however, it is necessary to realize that the macroeconomic results of each country are determined by its internal economic development. In particular, the private sector such as firms and companies represent the performance of any economy. For this reason, we conducted a survey focused on private sector in Slovakia in particular - the respondents were employees who provided unique information about the situation in which companies are operating. A synergetic result of the survey is also the assessment of the ordinary worker's view on the implementation of existing trends (e.g. home office) depending on gender, age, region workplace and the size of an organization. The main uniqueness is that the survey results would serve as a tool for a better understanding of the multidimensional impacts of the Covid-19 pandemic. At the same time,

they make it possible to reveal some trends in behavior of different groups of workers and to work with these trends in such a way that the economic impact on companies is to be minimized in the future.

To broaden the topic, the further research will continue with exploring the role of Industry 4.0 and its impact on labor market development within the world economy, particularly in the U.S. and EU economies. Regarding the Covid-19 global pandemic outbreak issue within the Industry 4.0 the smart quarantine is to be a crucial issue. That's why our next research will also deal with the implementing of smart quarantine in Slovakia. As research limitation it can be mentioned that some questioners from the survey had to be void and some answers were not relevant. The set of companies, which were the subject of the research, is a limiting factor. The selection of companies based on their regional operation, size and business sector does not correspond to the structure of companies in all Slovakia. Slovakia's industry structure is specific for its automotive focus, having the greatest number of cars produced per capita in Europe. Therefore, the responses of large companies in the sample reflect the automotive industry.

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Acknowledgements

This paper was supported by the Slovak Ministry of Education's Scientific grant agency VEGA: "Assessment changes in the qualitative structure of international economic relations under the influence of Industry 4.0 with implications for the EU and Slovak economic policies". Project registration number: [Reg. No.: 1/0462/20].

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