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Volume 3 Number 1

March 2021

CONTENTS

Massimiliano Mazzanti. FOREWORD

Vitor Vieira Vasconcelos.

**SOCIAL JUSTICE AND SUSTAINABLE REGIONAL DEVELOPMENT:
REFLECTIONS ON DISCOURSE AND PRACTICE IN PUBLIC POLICIES
AND PUBLIC BUDGET**

10

Marcel Lincényi, Jaroslav Čársky.

**RESEARCH OF CITIZENS' BEHAVIOR IN A POLITICAL CAMPAIGN
IN SEARCHING FOR AND MONITORING POLITICAL ADVERTISING
IN THE SLOVAK REPUBLIC**

29

Mindaugas Laužikas, Aistė Miliūtė, Mukhammad Khalili.

**INTERNATIONALIZATION IMPACTS ON TEAM INNOVATION
IN LITHUANIAN HIGH-TECH FIRMS**

41

Anatolijs Kriviņš, Jānis Teivāns-Treinovskis, Vladas Tumalavičius.

**ISSUES OF STATE AND NATIONAL SECURITY: RELIGIOUSLY INSPIRED
TERRORISM IN THE BALTIC STATES INTERNAL AND EXTERNAL FACTORS**

65

**Ismail Elhassnaoui, Zineb Moumen, Manuela Tvaronavičienė, Mohamed Ouarani,
Mohamed Ben-Daoud, Issam Serrari, Ikram Lahmidi, M.A.S. Wahba, Ahmed Bouziane,
Driss Ouazar, Moulay Driss Hasnaoui.**

**MANAGEMENT OF WATER SCARCITY IN ARID AREAS:
A CASE STUDY (ZIZ WATERSHED)**

80

Marcel Lincényi, Matej Mindár.

**COMPARATIVE ANALYSIS OF THE VIEWS AND ATTITUDES
OF ELEMENTARY AND SECONDARY SCHOOL PUPILS FROM
THE CZECH REPUBLIC AND SLOVAK REPUBLIC ON THE DIVISION
OF THE CZECH AND SLOVAK FEDERATIVE REPUBLIC (ČSFR)**

104

Anna Shevyakova, Eleonora Munsh, Malika Arystan, Yelena Petrenko.

**COMPETENCE DEVELOPMENT FOR INDUSTRY 4.0:
QUALIFICATION REQUIREMENTS AND SOLUTIONS**

124

Sunday Oseiweh Ogbeide, Henry Usunobun Ogiugo, Isaac Olufemi Adesuyi.

**CORPORATE GOVERNANCE MECHANISMS AND FINANCIAL REPORTING
QUALITY OF LISTED COMMERCIALBANKS IN NIGERIA**

136



FOREWORD to
INSIGHTS INTO REGIONAL DEVELOPMENT
2021 Volume 3, Number 1 (March)

Dear readers,

Is the current systemic crisis a new type of shock? Yes and no. Its global diffusion is certainly a partial novelty. On the other hand, the evolution of human societies has always been characterized by shocks (pandemics, plagues, wars, capitalist recessions, etc.), which generate destructive and creative effects on the socio-economic side, even radical changes, and require responses of policy in the short and medium term. Political (economic) responses to crises have common characteristics, but they can 'exploit' the crisis to introduce new elements aimed at addressing not only the present - the crisis - but also the future, the post.

The point, after the most critical phase and the peak of the pandemic, will be to structure 'exit' strategies that take into account both health and socio-economic aspects, in order to make a transition towards a post crisis where policies and investments should, or they will have to be guided by cultural and theoretical approaches to sustainability and wellbeing.

These investments would make our human societies and economic systems even more resilient and prepared to deal with future shocks, whether economic or health, or otherwise. Without a mitigation of the inequalities between territories and citizens, there can be neither stable economic growth, nor a 'consensus' for the radical ecological transition. The ecological transition and sustainability depend a lot on 'technè', new technologies and forms of social organization, but it will not be achieved without a broad social consensus, which passes through a better distribution of income and opportunities, which depend primarily on investments in health and public schooling.

The question that arises is: within the fiscal policy response aimed at minimizing socio-economic costs, will the Green deal be even more central or will it become a residual part? The importance of a broad fiscal response is important for the effects on 2020-21 GDP: whether or not we will put the Green deal at the center is a political decision that can have medium-long term impacts. One choice can be to extend the Green deal and Just transition, formulating a broad Wellbeing deal, with the environment, education, health, or human development at the center. Moreover, it would not be a conceptual revolution, we have known for decades that those are the real determinants of development, but it would be a radical political revolution.

With my respectful greetings,

Prof. Massimiliano MAZZANTI
Director, CERCIS Research centre



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SOCIAL JUSTICE AND SUSTAINABLE REGIONAL DEVELOPMENT: REFLECTIONS ON DISCOURSE AND PRACTICE IN PUBLIC POLICIES AND PUBLIC BUDGET

Vitor Vieira Vasconcelos

Universidade Federal do ABC, Alameda da Universidade, s/n, São Bernardo do Campo, São Paulo 09606-045, Brazil

E-mail: vitor.v.v@gmail.com

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Abstract. Considerations are presented on discourses and practices of public policies and public budget, regarding territorial development. The considerations are based on the author's experience in government institutions, at state and national level, in the executive and legislative powers in Brazil. This experience is compared to theoretical and applied studies on sustainable regional development, including agrarian reform, small-scale farming, ecological-economic zoning, transport infrastructure, city network hierarchies, and budgetary policies. The discussion shows how, behind discourses of regional development, there may be strategies for maintaining political power which may not always be the most appropriate for improving people's quality of life.

Keywords: regional development; public policies; public budget; sustainable development; politics

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Additional disciplines: law; political sciences; sociology; ecology and environment

1. Introduction

In the Brazilian Constitution, there are several principles to guide territorial development. Such principles can be observed in Articles 3 and 170 of the Constitution:

"Art. 3 The fundamental objectives of the Federative Republic of Brazil are:

I - build a free, just and solidary society;

II - guarantee national development;

III - eradicate poverty and marginalization and reduce social and regional inequalities;

IV - promote the good of all, without prejudice as to origin, race, sex, color, age, and any other forms of discrimination.

(...)

Art. 170. The economic order, founded on the valorization of human work and free initiative, aims to ensure a dignified existence for all, according to the dictates of social justice, observing the following principles:

(...)

IV - free competition;

(...)

VII - reduction of regional and social inequalities;

VIII - pursuit of full employment; (...)"

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It is interesting to interpret these concepts not only from a normative point of view, but as they were written based on influences of social groups that were not totally in agreement with each other. The construction of the constitutional text reflects the electoral bases, the economic sectors that finance political campaigns, and the strategies of maintaining power of political representatives. Thus, it can be said that the constitutional principles present a quasi-coherent quasi-dialogue (Potseluev, 2010; Wodak and Rheindorf, 2017). This article intended to explore this perspective of discourse construction, without relegating conflicts or even the distance between these discourses, and the effective practice of public policies.

The purpose of this text is not to present or discuss a theoretical overview of regional development issues and relations between metropolises, medium-sized cities, and rural areas, and much less to present conclusions about these theories. For a reader interested in entering into the theoretical or applied aspects of the dynamics of concentration or regionalization of development, and its relationship with public policies focusing on the Brazilian context, the studies by Lemos (2009), Galvanese (2018), Rocha et al., 2018; Cardoso et al., 2018; Muniz et al., 2018; Monni et al., 2018 are recommended.

More modestly, this article presents reflections based on the author's personal experience in his activities in public sector activities related to regional development, in the executive and legislative powers. It begins by discussing experiences in the area of rural extension and environmental regularization of small farmers and agrarian reform settlers. Next, it covers the applied cases of territorial development plans, in the areas of transport and ecological-economic zoning, and how these experiences led to reflections on the regional development of medium-sized cities or depressed areas. Then, experiences related to the activities of the legislative power and their influence on budget planning and implementation are discussed. These experiences were permeated by academic studies in the areas of geography, law, economics, and environmental sciences, which led to polemical questions, even if not always with satisfactory answers.

2. Reflections on agrarian reform settlements and small-scale farming

In 2006, fresh out of university and research institutes when I started my job as a technician at the National Institute of Colonization and Agrarian Reform—INCRA—my older colleagues at this institution warned me about the emotional burden that is involved with rural extension work with the poorest communities in the interior of Brazil. As warned, the emotional shock was striking. Especially in the first contact I had with the camped and settled farmers, when faced with their situation of poverty, living in canvas tents, with difficulties in accessing water or public services.

The government programs foresaw the implementation of several actions for the structuring of the settlements, such as construction of houses and roads, drilling of wells, environmental regularization, land georeferencing, implementation of infrastructure for collective agro-industries, and credit for production. Such programs instilled dreams and hopes in the newly settled, however, the lack of officers in INCRA, as well as the lack or blocking of budget allocation, meant that such measures were implemented very slowly, taking more than 20 years for a large part of the settlements. This situation caused real discomfort among public officers, who in the exercise of their function, when explaining government programs, realized how they were generating expectations about something that would be implemented with great difficulty.

The low living conditions of the settlers and their stance of pleading for government assistance was a highly contrasting reality when compared to the scenario of cultural appreciation of rural people broadcasted at the

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universities by professors who defended family farming. This is not to say that it was not possible to perceive the country culture, especially in the older members of the rural communities. However, with the arrival of electricity, the time dedicated to experiencing and transmitting culture was practically all filled with television and radio, meaning that the younger generation kept little of their grandparents' culture. Additionally, in a society in which access to human rights and quality of life depends on the level of income, urban culture was identified with wealth, thus leading to a lower appreciation of local culture (as well as observed by Ferreira, 2006).

The difficulties of life in the countryside go beyond the cultural sphere, and we cannot say that they were restricted to the inhabitants of the rural area, as expressed in the following statement by geographer Milton Santos:

"I'm not a fan of the countryside. I think it is a horrible business to condemn the person to live in the country. [...] The key is people, and their needs and rights, and not where they are. [...]. From the point of view of the people, it is perverse to condemn a young person to a worse education, less careful medical care and limited information and, consequently, limited political participation. Because information is politics..." (SANTOS, 2000, p. 57-58).

From this contact with family farming, it was possible for me to distinguish two very different "worlds". Small horticulturists in green belts supplying large urban centers had viable businesses with greater productive efficiency. However, in areas far from green belts, families on small farms sought to live predominantly from livestock and generally made losses in their accounts, maintaining themselves through government social assistance in the form of family care allowance, rural retirement, and other complementary public policies. Corroborating this view, Alves (2012) shows that based on data from Brazilian agricultural censuses, agricultural properties focussed on livestock, especially family farms, tend to have a loss in their net income, with the opposite occurring in properties focussed on agriculture. This situation becomes more worrying when considering that in 2006, 59 million hectares were used for grazing for family farming, and only 22 million hectares were used for agriculture (IBGE, 2006). A regionalized version of this polarization appears when comparing family farmers in the South and Southeast regions of Brazil (more integrated with urban markets) in relation to family farmers in other regions of the country (Kageyama, 2003). According to Alves (2012), it is a challenge for Brazil to discover how to treat the 2.9 million poor rural establishments with negative net income (out of a national total of 4.4 million rural establishments).

In these areas far from urban centers, it became notorious how various projects started with public resources and were later abandoned, such as flour factories, candy factories, fish farms, and seedling nurseries. Drilled wells were abandoned due to lack of maintenance, and materials destined for the fencing of springs and conservation reserves were left to rot. Such failures in the application of public funds were never officially accounted for, as the government was not interested in publicizing its flaws, nor did it want to upset groups of voters who had benefited from the investments.

According to my personal observation as well as the opinion of other more experienced extension technicians, the main cause for these failures in development projects, as well as the general obstacle to rural development and improved quality of life in small family farms in these depressed areas, was due to the limits of managerial capacity (productive and domestic) of the families, and not the need for deep technical knowledge or investment capacity. Habits such as covering cisterns, adhering to hygiene procedures related to food preparation and home maintenance, assessing when it was necessary to go to the doctor, fertilizing and adding limestone powder to the soil, stopping burning the pasture and instead implementing management of pasture rotation and silage, and planting in level ranges perpendicular to the slopes are some examples of relatively simple practices which rural extension workers reported a lot of difficulty in being assimilated, mainly by family farmers who had low access to formal education.

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The differentiation between these two “worlds” of family farming was also felt in the evaluation of financing granted under the National Program for Strengthening Family Agriculture - PRONAF. Despite the generally positive results in relation to the compliance with PRONAF, widely disseminated by the government (Belik, 2000), it is necessary to understand that this public policy instrument cannot be directly compared to other bank loans, because in several of the PRONAF modalities, there were subsidies and debt relief justified by social assistance (Guanzirol, 2006). There was, markedly, a big difference between the percentage of default on loans in the areas surrounding urban centers (good payers), and in the most marginalized interior areas in which many projects failed due to difficulty in integrating into the market, as also verified by Guanzirol (2006). In addition, family farmers in areas with better economic dynamics gained more access to PRONAF, in terms of number of contracts and total volume of resources, while farmers in the most depressed areas found it more difficult to organize the process needed to access the resource, as indicated in the studies by Aquino and Schneider (2010). Studies that have closely followed the use of PRONAF in the properties (Ferrari; Abraão, 2008) have shown that family farmers normally invest a large part of the money obtained in other unrelated activities, such as paying local debts, health treatments, expanding housing for sheltering newlywed siblings, and buying cars; then, to repay the PRONAF installments, the farmer would have to work much harder than if he had invested the money properly in productive activities. The formulation of the discourse of the social movements in defense of agrarian reform and family farming often included some fundamentals regarding the conservation of the environment, which are worth presenting:

- The environmental impact of family farmers occurs as they need to produce in order to prevent hunger.
- With the improvement of rural productivity, the farmer needs to deforest less areas for production.
- Traditional knowledge has developed sustainable ways of working with nature.
- The countryman wants to stay in the countryside.

On the other hand, what was perceived in the experience of professionals from government agencies of rural extension or environmental regularization, is that social and economic development in previously depressed areas increases the rate of deforestation and environmental degradation, while farmers abandon the traditional methods in favor of modern production models. I was able to perceive this modernization transition specifically when accompanying the Veredeiros (traditional farmers in wetland ecosystems called veredas) in the northwest of Minas Gerais State, according to the study by Vasconcelos and Seingyai (2013). Also relevant is the observation by Gazolla and Schneider (2005) and Toledo (2009) that access to PRONAF in general has marked the abandonment of traditional techniques in favor of mechanized cultivation with a high application of pesticides and other modern agricultural inputs.

In another aspect, INCRA technicians also observed the constant pace of abandonment of land allotments by land reform settlers returning to the cities. Many of these settlers, either from urban peripheries, or hired rural workers without their own land, had joined social organizations for rural land in the hope of returning to the life of rural production which their parents and grandparents led. However, shortly after settling, they became frustrated in face of the difficulties of life as family farmers, informally selling their lots, even though such sale was, and still is legally prohibited (Abramovay, 2005; Vasconcelos, 2011).

3. Territorial development plans

After my time at INCRA, I worked at the Technological Center Foundation of Minas Gerais State—CETEC-MG— in 2009, with the preparation and analysis of planning studies for territorial development. Then from 2009 to 2010 I worked at the Brazilian Institute of Environment and Renewable Natural Resources—IBAMA—, in

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which I used these territorial planning studies to analyze and monitor the social and environmental impacts of projects in the context of their environmental licensing processes. These experiences allowed me to develop some reflections which are detailed in the next sections of this article.

3.1. Ecological-Economic Zoning

Zoning for territorial development seeks to show the development potential of natural resources and socio-spatial articulations, as well as showing their environmental and economic weaknesses. In rural areas, zoning of agricultural suitability, agroclimatological suitability, and optimal classes of land use are presented as consolidated methodologies for assessing the occupation potential of a region. Regarding mineral resources, mineral prospecting mappings are also part of these territorial plans for land use.

Based on a broader understanding of public policies for the territory, ecological-economic zoning (EEZ) is an attempt to integrate the aspects of natural, social, and economic resources in a territorial proposal for sustainable development. This zoning seeks to answer the question of how, through the organization of the space, “to obtain the best results from this process, that is, to maximize social and economic results” (Raimundo Garrido, Secretariat of Water Resources / Ministry of the Environment, Brasil, 2001, p. 178-179). Ronaldo Seroa da Mota (Institute of Applied Economic Research—IPEA—, Brazil, 2001, p. 99) stresses the importance of an instrument such as the EEZ, as an integrator between economics and ecology, endeavoring to give information to users to analyze whether the socio-environmental cost of a given use of natural resources is greater or less than its benefits.

In the State of Minas Gerais, experience with EEZ (MINAS GERAIS, 2007a) showed how areas with greater fragility of natural resources (for example with scarcity of water resources, fragile soils, steep sloping relief) often coincide with areas that historically have lower economic development, and social development problems. The maps of environmental vulnerability and social potential in the Minas Gerais EEZ (Figures 1 and 2), show this pattern well, in which the north and northeast of the state present, at the same time, the worst indexes for both maps. In virtue of environmental limitations (such as water scarcity, low soil fertility, greater propensity to erosion or desertification), these areas usually developed uniquely adapted ecosystems with several endemic species, but in fragile ecological relationships of low resilience. Additionally, despite the natural fragility, these areas ended up preserving relatively more of their native ecosystems due to occupation difficulties; whereas the areas with better aptitude for soil occupation and locomotion usually suffered greater impact to their native vegetation throughout history (which can be observed when analyzing the remaining native vegetation in Minas Gerais in Figure 3, similar to the maps in Figures 1 and 2). The simple translocation of conventional public development programs to these regions with the most fragile social and environmental situations, in addition to enhancing environmental damage, may fail in sustainably maintaining economic projects, due to the low capacity to support water resources and soil fertility.

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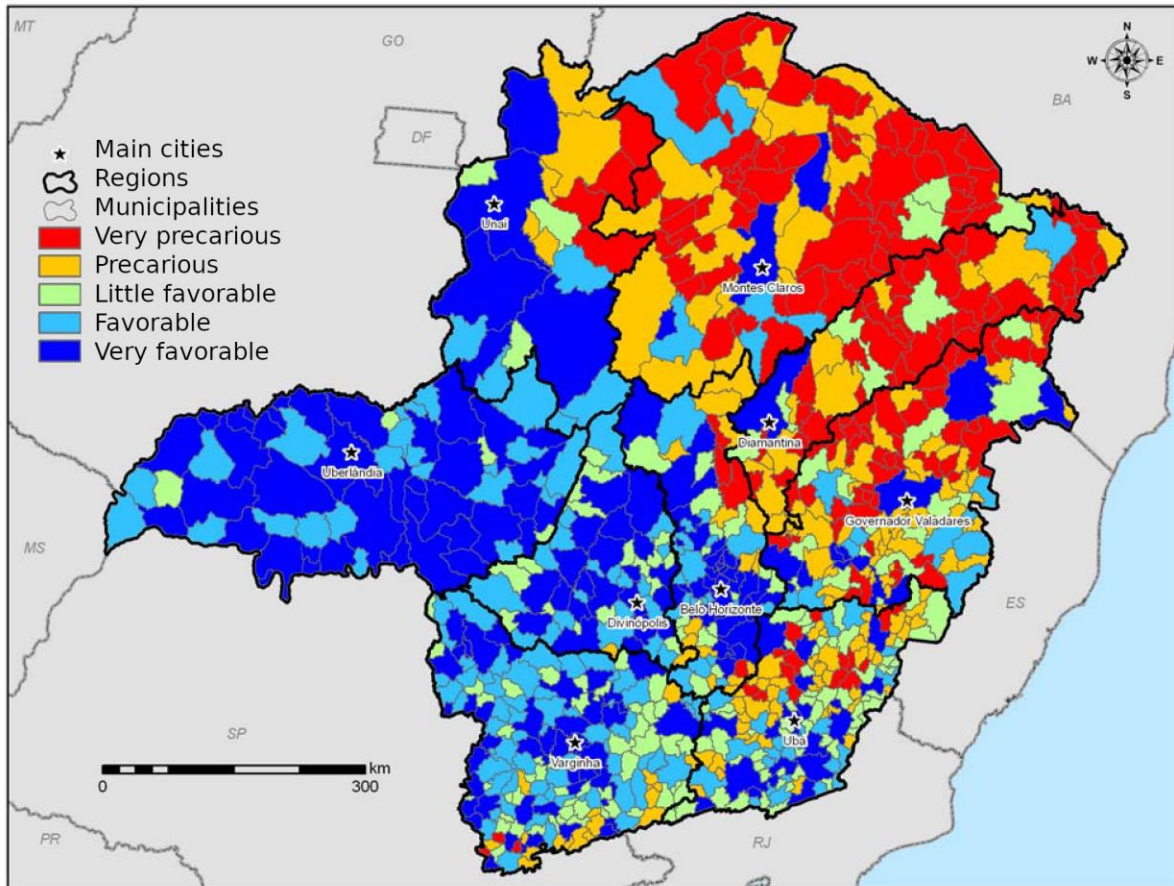


Fig.1. Social potential in the ecological-economic zoning—EEZ—of the State of Minas Gerais.

Source: adapted from Minas Gerais (2007a).

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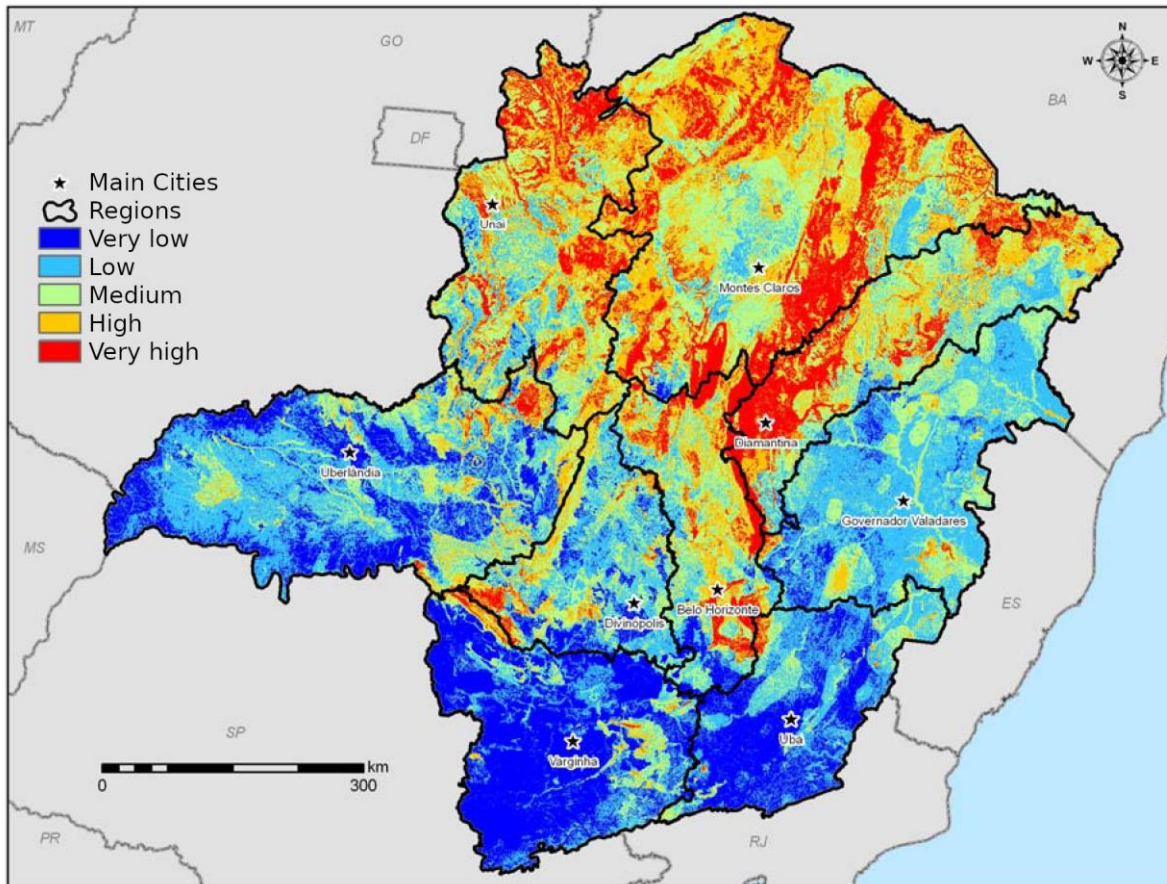


Fig.2. Natural vulnerability in the EEZ of Minas Gerais.

Source: Adapted from Minas Gerais (2007a)

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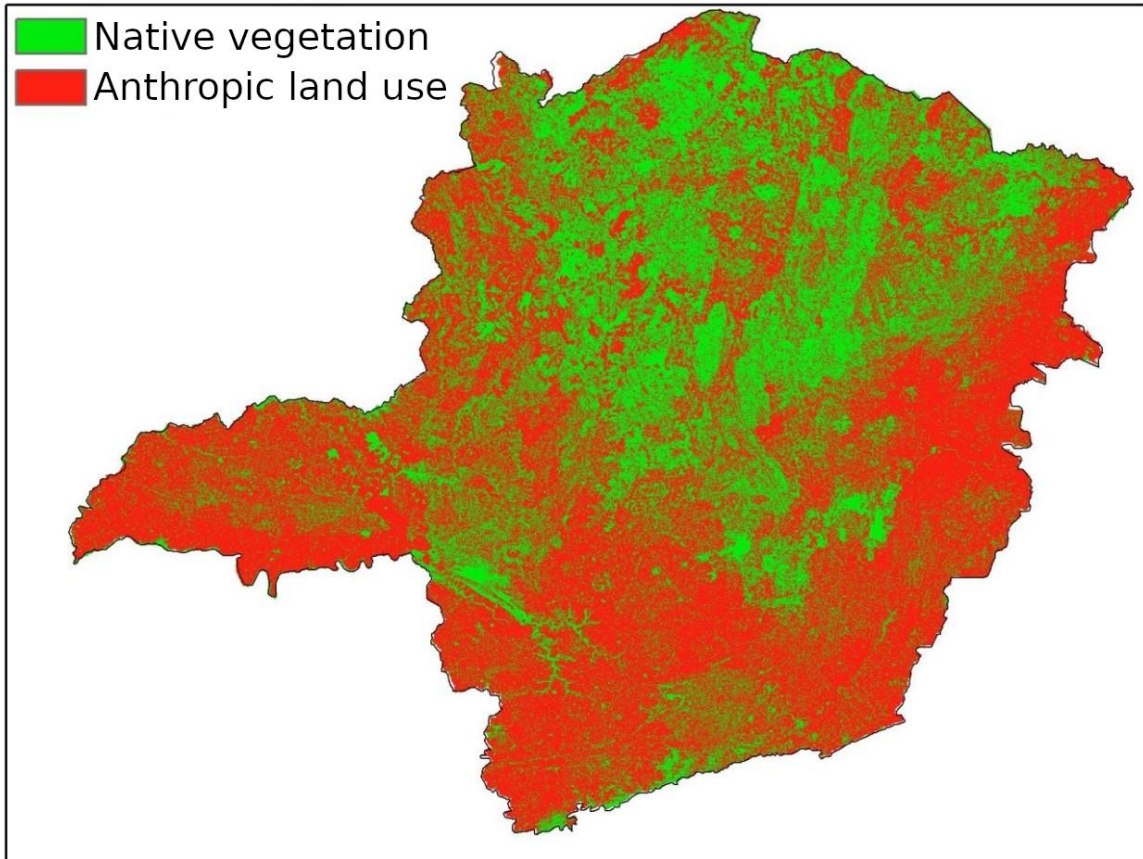


Fig. 3. Native vegetation in the State of Minas Gerais in 2007.

Source: adapted from ALMG (2011), based on data from Carvalho and Scolforo (2008)

In addition to analyzing ecological attributes, it is in the zoning of economic potential—both in the EEZ and other zonings—that the most conflicting issues remain. In a context in which the government is placed in the position of spatially planning the allocation of its scarce resources, it would be appropriate to identify in these plans which investment strategies would bring the greatest social and economic benefit to the population, in short, medium, and long term scenarios. In this context, spatial cost-benefit assessments of investments often show that the economic return on public investments in the most developed areas is greater than the investment in remote areas; as will be discussed in the following section on transport infrastructure. In some way, the economic inequality of territorial development guided by the free market initiative of investors already latently represents the results obtained in these zonings.

These zonings often create tension due to differences in the guidelines in a technical document, and the political-budgetary priorities of government decision-makers. There was a widespread perception among technicians from public institutions (such as CETEC-MG, Institute of Applied Geoscience—IGA—and João Pinheiro Foundation) who have prepared territorial planning studies since the time of the military dictatorship in Brazil (1964-1985), that, despite significant financial resources employed to carry out these studies, the final reports would have had

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little influence on the decisions of political leaders and administrative heads responsible for decisions regarding the allocation of public resources.

3.2. Transport Structure and Regional Implications for Socioeconomic Development

An interesting experience regarding public planning for regional development was the Strategic Planning for Transport Logistics of Minas Gerais (Minas Gerais, 2007b). The work aimed to provide a spatial perspective of the road network, its transport flows, the degrees of congestion and the conditions of road infrastructure. This data was combined with models for forecasting spatial regional development in Minas Gerais, and how this development tends to increase traffic on the road network. Thus, it was possible to conjecture about the bottlenecks and gaps in road connections, both in relation to the moment of the study and in the form of prognosis. The analyses generated from this information base led to interesting discoveries and conclusions, allowing to observe the trends of traffic congestion and the greater need for maintenance of pavements in the vicinity of large urban centers, as well as the acknowledgement of the importance of the railway network in trade transport, and correlation between economic activities and their raw material and goods transport flows.

Consequently, in the same project, the state government's infrastructure projects portfolio and those projects already provided for by the federal government's Growth Acceleration Program (PAC) were simulated in the database. Aiming for a more informed choice about the priority of resource allocation for projects regarding road and rail networks, a model simulated and mapped the impact of each project on the variables of employment rate, GDP, poverty index, tax collection, and purchasing power, among others. The impact on traditional logistical variables, such as average transport speed, regional cost, and average cost per vehicle was also modeled. This simulation would allow the government to better prioritize and plan transportation infrastructure projects, especially those that would most contribute to accelerating the economic growth of Minas Gerais State.

Nevertheless, the question about the relationship between technical reasoning and political decision could not be hidden. The strategic planning showed that works on transport infrastructure for access to large urban centers would bring greater economic impact. However, due to the political demands of regional development in the marginalized areas of the state, a complementary index was created which showed the potential of infrastructure works to reduce regional inequalities in the state. Not coincidentally, this index was based on inequality between municipalities (it was only spatially based), not taking into account the amount of population in each of the municipalities. Therefore, an index was created to support investment choices that were not necessarily aimed at improving the quality of life of the majority of the population, but rather at creating a less spatially unequal “map” with regard to socioeconomic inequality indices.

A similar logic of regional development was applied in the interstate benefit analysis of these transport projects. The economic models incorporated a greater appreciation of infrastructure projects with development endogenous to the state, reducing the priority of works that would bring greater economic development to the country if these development benefits were mainly directed to other states.

Assessing the transport investment policy of the State of Minas Gerais from attaining strategic planning until 2014, it can be observed that the flagship investment carried out by the state government were the “Minas Pathways (Caminhos de Minas)” and “ProAcesso” programs, with the objective of expanding paved accesses to isolated municipalities. Compared with the strategic planning analyses, the infrastructure projects that would bring more economic development to the state or the country were relegated, due to a political choice of application of resources in marginal areas of the state. This choice was largely reflected by the pressures which

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deputies and mayors put on the state government, and agreements which they made, so that investment in asphaltting in small towns would maintain an alliance of political support for parties in government in subsequent elections. Attention should also be paid to the local effects in small towns that have benefited from paved connections to large urban centers. In the short-term, it drew attention to how the population of the small cities started to make purchases and contract services with the larger urban centers, causing economic disruption to trade and services that previously existed in these small local centers. In the medium term, as paved access made it easier for young people from rural areas to study in larger urban centers, it was common for families to observe that these students generally ended up migrating to the urban center where they studied, justified by the search of better working conditions and quality of life. An analogous phenomenon was also studied by Camargo (2009) regarding the migration of young people to urban centers in the state of Goiás, in Brazil.

These observations raise the hypothesis that paving investments in small municipalities, initially carried out under a regional development discourse, ended up accelerating the trend of concentration of development and population in large urban centers that provide goods, private services, and public services. Such observation is compatible with the econometric models of Domingues et al. (2009), in which investments in infrastructure in Minas Gerais, despite contributing effectively to the economic development of the state, would increase regional inequality. It can be seen that such uneven development, shown in Figure 4, is very consistent with the spatial pattern of social potential for development present in the ZEE-MG, in Figure 2.

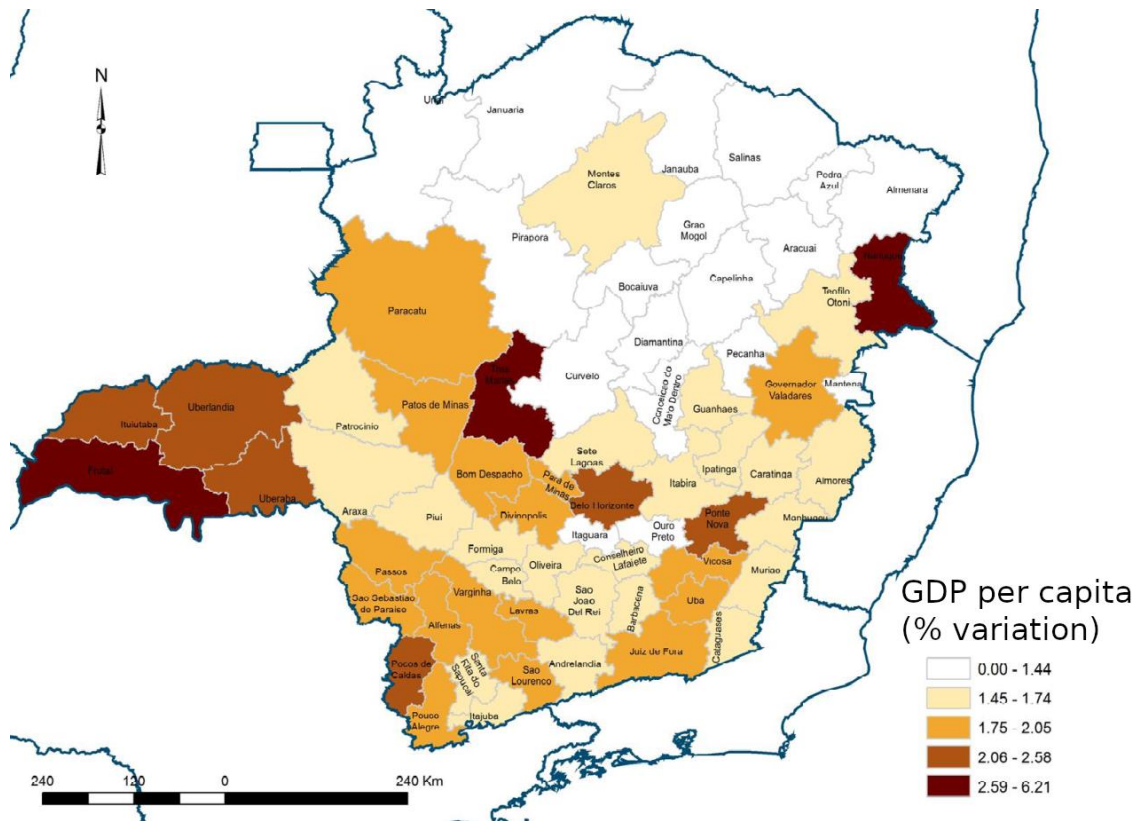


Fig. 4. Long-term impact on GDP per capita due to the infrastructure projects of the Growth Acceleration Plan in Minas Gerais.

Source: adapted from Domingues et al. (2009)

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3.3. City Network Hierarchies

The theory of medium cities is based on the perspective that with the problems resulting from the swelling of large metropolises, it would be consistent to invest in infrastructure in medium-sized cities, in order to attract the rural exodus to themselves (Amorim; Serra, 2001). This theory originated in post-World War II Europe, and the example of the countries of that continent in generating a social welfare state was taken as a model that could help the Brazilian context.

With a very different approach, Southeast Asian countries, especially China, structured their greatest development into megacities, under the perspective that even with their diverse problems, these large cities would bring greater economic development, and subsequently, improvement in quality of life (Zacharias; Tang, 2010). In the last 20 years of the 21st century, the economic depression and constant crises on the European continent, in contrast to the rapid economic growth and quality of life indicators in China, may lead to rethinking the limits of the development of large urban centers. Perhaps contemporary technological and managerial advances have started to improve the quality of life of the population more rapidly in large urban centers than in medium-sized cities. This hypothesis is consistent with the theory of urban hierarchy in Brazil, from Santos and Silveira (2013), that the social-technological advances and the fading of the rural exodus would lead the intra-urban exodus to concentrate the population more and more in metropolises, while smaller cities would only maintain some size to the extent that it was necessary to provide technical assistance services to more distant agricultural or mining hubs.

However, migrants miss their life in the rural environment or in smaller cities, as shown in studies of human geography based on phenomenology (Ferreira, 2006; Felipe; Kuhnen, 2012). Many of the researchers of theories of regional development and medium-sized cities have as one of their personal motivations the fact that they lived or grew up in small cities. The investigation of whether this personal origin leads to any impartiality in their theories, or whether they enrich them with the wealth of personal experience, is beyond the scope of this text.

Nevertheless, what causes the migrant to leave for the metropolis usually goes beyond the concern of individual feelings, because it is strongly related to their concern with the quality of life of their descendants. Despite the economic, social, cultural, and emotional difficulties faced by migrants, their hope is that their siblings will have a better life than theirs, as they grow up in the metropolis, also well characterized by Menezes (2002). Through similar reasoning, concern for a sustainable development strategy by governments would address the following question: would certain public policies on regional investment, instead of bringing development, be creating yet another generation of descendants who will live in poverty in a depressed region, or is it better to direct more scarce resources to help migrants make the transition to the metropolises, so that the next generation has a more productive life in large urban centers? However, in my professional experience both in the executive and legislative branches, at state and national level, I have constantly observed how those responsible for decision-making in the application of public and budgetary policies are more concerned with short-term reasoning. Their first priority is about which option will bring political-electoral credit to maintain the government in the next elections (in a scheme consistent with the theory of public choice (Lessa, 2010)), making it difficult to consider the planning of scenarios in the medium term and, much less, in an intergenerational timespan.

4. Budgetary Policy and Legislative Power

In my experience as a legislative consultant for the Legislative Assembly of Minas Gerais (ALMG) from 2010 to 2014, I was able to closely observe the power networks that link electoral strategies to the allocation of the public

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budget. Paradoxically, in spite of its core competence to make laws, what was observed instead is that the laws with the most significant impact on society were submitted by the State Governor, and were processed with priority and ease, given that the governor's support base was hegemonic within the parliament. Parliamentarians, for the most part, were not dedicated to the bills and relied on the guidance of their advisers and on the executive power. The main focus of the deputies, to whom they almost exclusively dedicated their time and also the human and financial resources of their offices, was to undertake actions for the direct benefit of their electoral base, in order to guarantee these votes for the next election. Among these actions, perhaps the most important was the strategy of applying political influence over the federal and state governments to release financial resources and perform public services for the areas of their electoral bases. Such observation is consistent with the studies by Ames (1995a, b) and Pereira and Rennó (2003; 2007), which showed that the most important factor for the reelection of a deputy in Brazil would be his ability to direct public resources to his electoral base, which resulted from the good relationship between the deputy and the executive power.

In the state capital of Minas Gerais (Belo Horizonte), even with a large number of voters, electoral competition was higher than in the other municipalities in the state, with an excess of candidates in relation to the number of voters. The electoral base was also more volatile, changing its votes from election to election more easily. This same pattern of greater electoral competitiveness in the capitals in relation to the other interior cities was found in the rest of the country, in the studies Vieira (2012) and Silva (2013).

In the interior regions of Minas Gerais State, contrarily, it was much more common for lasting regional leaders to maintain power, being elected for several consecutive mandates. For the deputies, it became a fundamental strategy to conquer and maintain maximum hegemony in these regions. Such an electoral dispute strategy for spatial hegemony in interior regions was also characterized in the State of São Paulo, in the studies by Avelino et al. (2011) and Braga and Amaral (2013). Vieira (2012), similarly, also showed that deputies from Pernambuco and Rio Grande Sul who had electoral hegemony over a clustered region had higher percentages of reelection than those who had a more dispersed electoral base in their state.

In Minas Gerais, the term “majority region” thus replaced the term “electoral corral” , from the historical origins of Brazilian politics. Also common was the term “making mayors”, which meant creating political alliances with local mayors, at the time of the elections, to then favor these mayors with the approval of parliamentary budget amendments or even influencing the distribution of resources by the executive power to those referred municipalities in the structural programs of the state and federal governments.

The essential role of legislative power thus becomes to maintain the political power structure between the federal, state, and municipal executive powers. For the federal and state executive powers, yielding to the pressures to release resources demanded by the deputies becomes the price to pay to maintain the majority support of the parliament and to be able to approve the bills of their authorship (including the annual budget laws).

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The discourse of the reduction of regional inequalities was appropriated by the parliamentarians, in their electoral speeches for their “majority regions”. Jacobs et al. (2009), Campello and Zucco (2009), Montero (2010) and Silva (2013) point out that the spatial hegemony of deputies is stronger to the proportion that the regions are poorer, with the lowest level of education and the lowest degree of urbanization. This link between the election of state and federal deputies and the distribution of budgetary resources to the interior regions of the state was quite evident to the population. It was very common to hear on the streets, after public hearings in the countryside, people saying phrases such as “I know that our deputy is corrupt, but if we don't elect him, our region will stop receiving government resources”. The risk for a municipality that failed to elect a political representative in the state or federal parliament was that it would be purposefully forgotten by the government regarding the distribution of public resources, especially for infrastructure such as paving roads, and installing and renovating hospitals and schools.

The map in Figure 5, officially published by ALMG (2015), exemplifies these relationships, showing the legal changes for the redistribution of solidary ICMS (tax on the circulation of goods and provision of interstate and intercity transport services and communication) in Minas Gerais, in 2014. The political discourse of the revision of this law called the Robin Hood Act was precisely about the need to redistribute the collected taxes in order to reduce social and regional inequalities. Despite the broad technical support of internal legislative consultancy of ALMG in addition to that given by officers of the State Secretariat for Planning and Management, it must be recognized that the weights and respective results of tax redistribution were ultimately influenced and approved according to the regional political interests of the elected deputies.

The distribution of resources has increased to several (though not all) municipalities with less social potential identified in the EEZ (Figure 1). This distribution has not however taken into account the number of poor people per municipality, and may be questioned regarding all of the controversies relating to sustainable development already discussed in subsections 3.1 to 3.3. Perhaps the most thought-provoking aspect of the map in Figure 5 is that it colors only the municipalities where there has been an increase in the allocation of resources, hiding information about the municipalities that have lost resources (due to the lesser influence on legislative representatives), in a classic example of intentional manipulation of the effects of communication by omitting spatial information.

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Comparative spatial distributions of changes in the Solidary ICMS by the Robin Hood Act

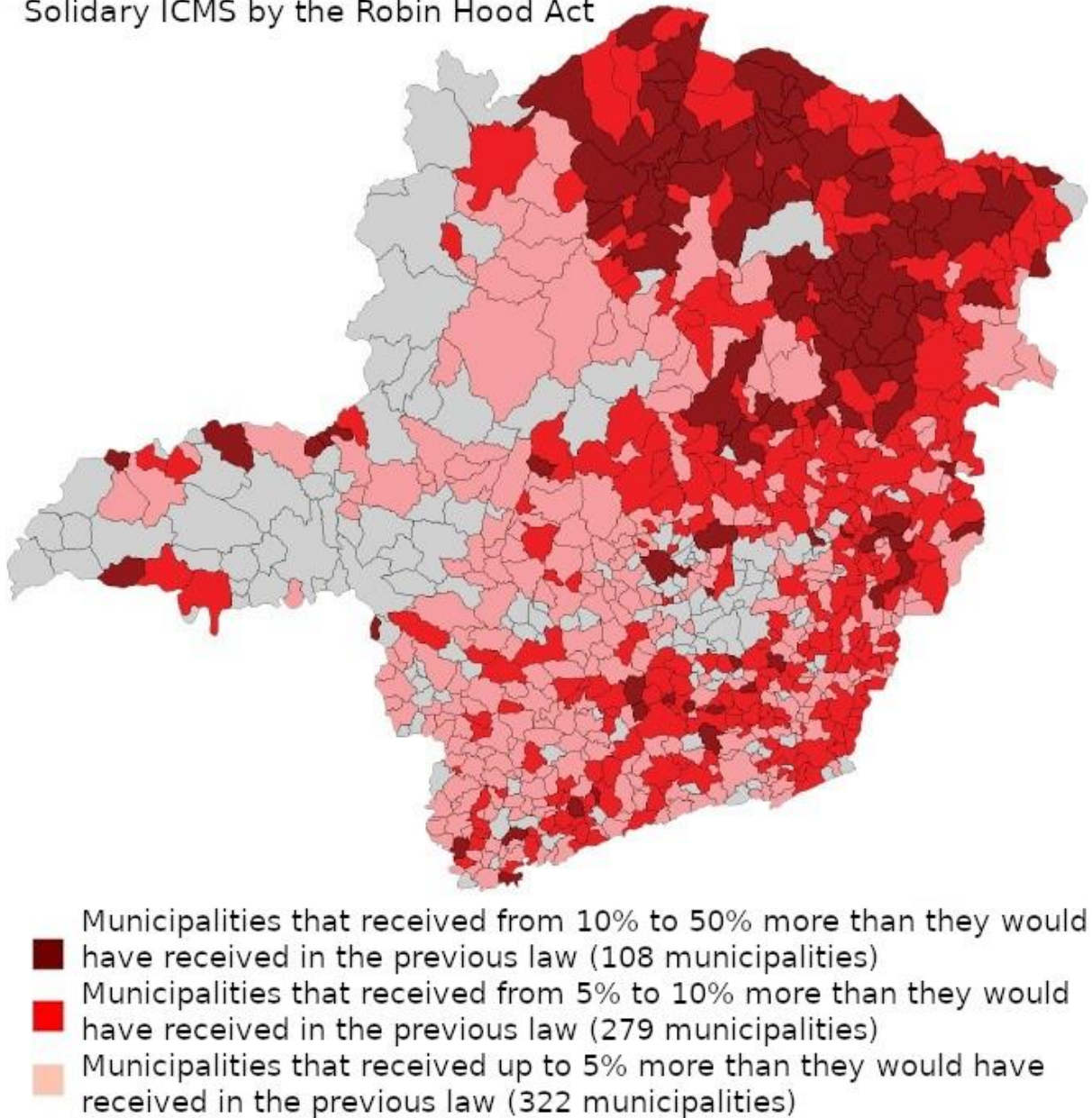


Fig. 5. Impact of changes in the redistribution of solidary ICMS in 2015.

Source: adapted from ALMG (2015)

These characteristics of the political and budgetary system do not appear to be exclusive to Brazil. During my experience abroad, following the legislative power in Thailand in 2013 and 2014, I was able to observe how the Red Shirt Party (Pheu Thai Party) achieved political hegemony with loyal voters in the countryside, through the

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distribution of resources through local political leaders. This situation was the main reason that led to the protests in 2013 and 2014 of the urban population, in a crisis of political representation of the population in large urban centers. It is the moment when the population realizes that the political scenario becomes a stage for the dispute of interests between the diverse economic and social groups, both regional and national, transforming the democratic system into more a game of influences than a space for dialogue for the common good. In this context, the political crisis therefore consists largely in the perception that representatives are chosen not because the voter agrees with their proposals or their ethical and political values, but because it may bring benefits to their social group or region.

Such a crisis of confidence in political representativeness has also been present in the electorate of Minas Gerais, as well as in the rest of Brazil, according to a study by Baquero and Vasconcelos (2013). Corroborating this thesis, many of the banners and demonstrations observed in the anti-World Cup protests that took place in 2013, in Belo Horizonte and in the main cities of Brazil, also reflected this crisis of representation and confidence of voters in the political class, as documented and analyzed by Cavalcanti (2013) and Borja and Caldas (2013).

Final Considerations

Several studies in critical and human geography strive to demonstrate the socio-spatial marginalization of depressed areas. However, many of these works may have been captured by discourses that cover up strategies for maintaining political power. At stake is also a question of representation of scale: a map showing that a large proportion of investments are in larger cities and not in the smaller cities can be used as a flag of spatial injustice. However, if mapping is carried out on the metropolis scale and it is shown that investments are being channeled to slums and poor neighborhoods, then it is understood that there would be a higher number of inhabitants benefitting.

The most appropriate would be for public investments to be directed to where they could bring greater social and economic development to the population, and not just to aesthetically equalize maps of regional inequality. Spatial inequality can be an ideological banner to cover up strategies for maintaining power, instead of resolving social inequalities. At the same time, zoning that combines economic and social aspects can reveal divergent scenarios with the objectives, discourses, and practices of regional public investment. In this context, it is also necessary to reassess the investment approaches. In depressed areas, with a predominance of a poor rural population, higher investment in education (formal, informal, and extension) may be more efficient and advantageous than using the same public policy schemes employed in other regions with greater economic dynamism. If there is really no productive possibility in the depressed region, investment in education will at least assist in a less difficult transition in case the person or their descendants decide to migrate to an urban center. In addition, there are some lasting questions that are difficult to answer, and an anguish without remedy. Should communities on the fringes of development processes have the right to defend and maintain their lifestyle and work, learned from generation to generation, even when it is no longer economically viable and when their children dream of another type of life? Should they therefore continue their productive model, relying on government aid, while as far as possible providing education so that their children can choose their future, by either following the lives of their parents, or other opportunities? How should a government position itself when proposing an infrastructure project or a new enterprise (or enterprise chain) in the perspective of economic development, but which disturbs these traditional social models?

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The answers are not simple and will not leave decision makers in peace, especially when the allocation of a budgetary resource to a social demand means limiting resources to other social demands that are also pressing. In a conception of society in which constant improvement in quality of life is sought, economic development projects play an essential role and cannot be relegated. However, the cry of the oppressed by these modern cycles of renewal (which always involve destruction in the face of a new recreation) echoes in the bosom of the entire population, and leaves us with this worrying anguish. Could this be a moment when the logic of economic development would give more place to the logic of compassion and solidarity? Beyond the reverberation in the feelings of the citizens, the echo of this cry is also well captured by the strategies of the political representatives and translated in their speeches to maintain electoral bases. Simple speeches that can camouflage complex realities, but in many cases can win votes much more effectively.

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Vitor VIEIRA VASCONCELOS is assistant professor of Ecological Dynamics Applied to Territorial Planning at Federal University of ABC (UFABC). He did a Post-Doc in Stockholm Environment Institute and has a PhD in Natural Sciences with major in Environmental Geology and Conservation of Natural Resources, a PhD stage in Water Engineering, a Master in Geography, a Diploma in Soils and Environment, a Bachelor in Environmental Sciences, a Bachelor in Philosophy, a graduation in Geography Teaching, and two technician degrees in Environment and Industrial Informatics.

ORCID ID: <https://orcid.org/0000-0002-3063-2776>

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RESEARCH OF CITIZENS' BEHAVIOR IN A POLITICAL CAMPAIGN IN SEARCHING FOR AND MONITORING POLITICAL ADVERTISING IN THE SLOVAK REPUBLIC*

Marcel Lincényi ¹, Jaroslav Čársky ²

^{1,2} Alexander Dubček university of Trenčín, Študentská 1639/2, 911 01 Trenčín, Slovakia

E-mails: ¹ marcel.lincenyi@tuni.sk ; ² jaroslav.carsky@tuni.sk

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Abstract The research study thematically focuses on the behaviour of citizens of the Slovak Republic in the campaign for active search and monitoring of political advertising. The authors tried to find out the degree of effectiveness of the use of marketing tools and forms of political advertising. Among other things, the research showed that most of the interviewed Slovaks are actively interested in political advertising in the election campaign. Research has shown that the most effective political advertising is in the audiovisual and online media and, conversely, the least effective in the print media, pre-election leaflets and billboards.

Keywords: Slovak Republic; politics; public opinion; marketing; marketing tools; political advertising

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1. Introduction

Political marketing began in the second half of the 20th century and has since become an integral part of political science, but especially of election campaigns. "In Slovakia, marketing has been applied in politics since 1989." (Lincényi, 2011: 46) At the beginning of the 1990s, it was used as an essential tool in the final results of the June 1992 elections. The winners Václav Klaus and Vladimír Mečiar agreed on a peaceful and constitutional division of the Czech and Slovak Federal Republics into two independent states. (Mindár, 2019) In recent years, marketing has shifted to the online environment, where, according to Lincényi, the application of marketing principles on the Internet is applied. It is mainly about creating websites, advertising on the Internet, but also marketing research on the Internet, trading on the Internet and more." (Lincényi, 2011: 29) The very importance of online advertising as a part of complex integrated marketing communications has continuously been growing recently. Its effectiveness is high and other experts (Kádeková & Holienčinová, 2018, Bulanda & Vavrečka, 2019, Bulanda, Koprda & Kurimská, 2020) mention that in the near future, this form of advertising will dominate (Světlik, 2017; Stoian, Polozova, Didenko, Storozhenko & Moskvichova, 2018; Darsono, Susana, Prihantono & Kasim, 2019; Yunus, Susilo, Riyadi, Indrasari & Putranto, 2019; Pavlovaite & Griesiene 2019). A new trend that is beginning to be used in politics is online marketing (Winter, Litvinova, Babaskin, Babaskina, & Savinova, 2019; Lysytsia, Martynenko, Prytychenko, Gron & Us, 2019; Ajina, 2019; Danko, Kiselev, Chaykovskaya, Smelov, Sekerin, & Gorokhova, 2020).

The effectiveness of online political marketing we can monitor through various social networks such as Facebook or Instagram. The effectiveness of political marketing on social networks can be monitored through likes and also by the number of shares. Politicians are thus getting closer and closer to the citizens of the gifted base, because if a politician publishes something on the Internet, an attitude or an idea, it automatically allows the citizens to react. Politicians thus receive feedback from citizens, which is also crucial for them when creating politics. Communication between politicians and the public is vital for the healthy functioning of society. Online marketing, respectively, internet marketing means, application of marketing principles on the internet. Online marketing, like other marketing tools, has evolved and tried to be as addressable as possible to the consumer. A political party or political representatives need to determine the target group. According to this target group, political communication itself will take place, followed by political marketing. The size of the target group is also an important factor. A political party or political representatives must take into account their financial resources, which they can spend on a political campaign. The goal of political marketing and political communication is to reach the target group. Therefore, at the very beginning, the question is to determine the target group so that political marketing is targeted. Political communication plays an essential role in shaping public opinion. Public opinion, in turn, influences the election results. From this point of view, it can be concluded that political communication is one of the critical factors for the election results. About ten years ago, domain creation was widespread; today, a social network page is enough. Time is moving forward very fast, and marketers are coming up with the most convenient way to sell information to ordinary people. "The most popular social network today is Facebook, which has about 2 billion users. This significant interest in the social network Facebook was also noticed by political marketers and politicians themselves." (Čársky, 2019: 53) People spend a lot of time on social networks, so, understandably, political advertising or other political content cannot be avoided. There are many political leaders on social networks who publish their thoughts, attitudes and opinions on current events in society every day. They draw attention to possible risks and, in particular, communicate with the general public through comments. The number of registered users is increasing on social networks every day. On this basis, the potential base of supporters of the given political parties or political representatives may also grow. Online marketing is not a novelty, but it can be effectively published in Slovakia. It is clear that in today's digital age, the public has better resources and a chance to find any political mistakes. It is well known that political wrongdoing harms the politicians involved. (Brosius, 2020) "However, some scientists consider populist attitudes only as a further measure of existing and established concepts, such as

political trust and external political effectiveness." (Geurkink, Zaslove, 2020, p. 247) Based on established marketing communication, politicians try to gain as many supporters as possible. On the other hand, it can be a problem not to slip into populism. (Čársky, Lincényi, 2020) Populism is currently a potent political marketing tactic too. An example is that in the last decade, nationalist and populist political parties, such as Alternative for Deutschland, the Dutch Freedom Party, the French National Front, the Czech Freedom and Direct Democracy, and the Slovak Kotleba - People's Party of our Slovakia, have entered their national parliaments with this tactic. (Laczko, Lincényi, 2020) However, populism does not provide real solutions to the political demands of citizens, so it is usually just an incorrect introduction of voters to gain power. Trends in the use of a populist strategy to shape current political processes are often associated with unrealistic political agendas and promises (eg, double-wage increases). " (Vlčej, 2018: 79) Populism can be seen as one aspect of the marketing strategy. Populism is generally and currently taken negatively. If a political leader has the label of "populist" for many, he becomes untrustworthy. There are several definitions of populism, and they agree more on something less. In English, the term populism can be characterised as "a loaded word", i.e. a term that encompasses everything, but its exact meaning or meaning is not clear. Populists do not hesitate to use tools such as misinformation, hoaxes or deceptive propaganda in their political marketing. "It is crucial to know how to protect against false messages on the Internet. We should adhere to the principle that any information we choose to trust should be verifiable from multiple independent sources." (Laczko, 2019: 146)

2. Methodology and methods

The main goal of the presented research was to analyse the behaviour of citizens in the political campaign in searching for and monitoring political advertising in the Slovak Republic.

The secondary goal of the research was to determine the degree of effectiveness of the use of tools and forms of political advertising in marketing from the perspective of the citizens of the Slovak Republic.

As part of research planning and design, we preferred the concept of creating research questions to identifying research problems. We have identified the following three issues:

RQ1: To what extent do Slovak voters actively search for and watch political advertising in the campaign?

Explanation RQ1: We think that despite the low confidence of citizens in political institutions in the Slovak Republic, citizens are still actively interested in political events. The answer to this research question will be determined based on the responses from items 1 and 2 of our questionnaire.

RQ2: From which tools of political marketing do the citizens of the Slovak Republic obtain the most frequent political information?

Explanation RQ2: We think that the digital revolution in the world is also having an impact on the political space. Therefore, there is a presumption that citizens will not obtain information from tools that were in place twenty years ago. Therefore, we consider it essential to gain knowledge about the preferred marketing tools in politics. The answer to this research question will be found from the items of questionnaire no. 3-4.

RQ3: Which tools of political marketing are considered by the citizens of the Slovak Republic to be the most effective and which, on the contrary, are the least effective?

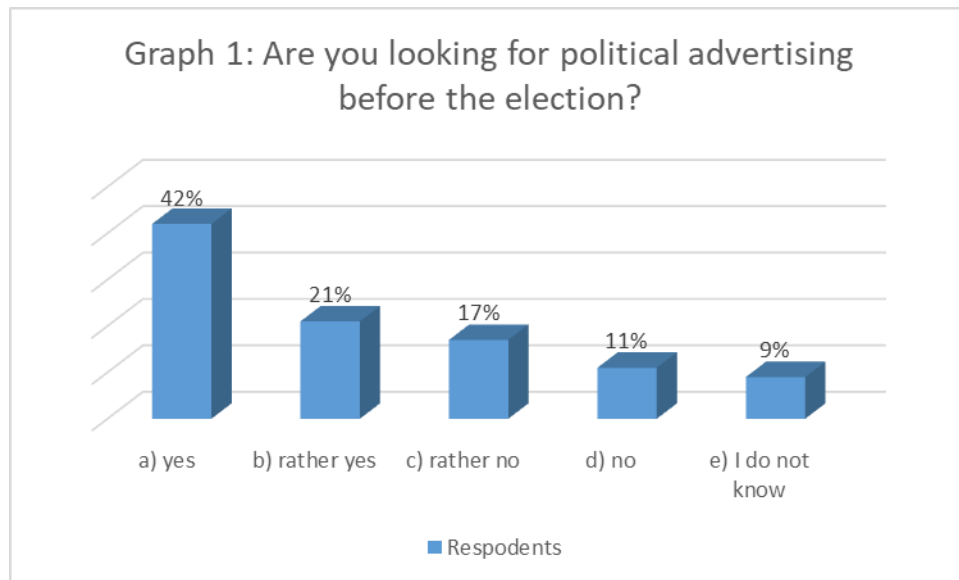
Explanation RQ3: We perceive it important to obtain information on influencing citizens in political marketing. The researched data can thus meet the recommended nature of applicability for practice. The answer to the above research question will provide us with answers from questions no. 7, 8, 9, 10 of our questionnaire.

At the end of 2019, we conducted the survey on a research sample of 968 respondents, while its completion was ensured by 20 trained, experienced interviewers in person in the field.

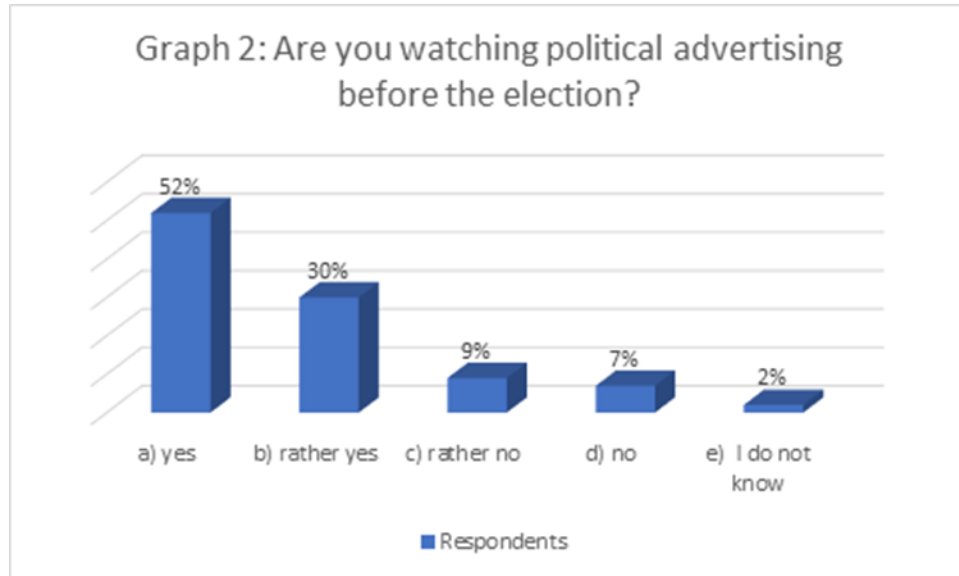
The research sample consisted of 500 men and 468 women. If we look at the research group by age, 401 respondents were 18 to 29 years old, 123 were aged 30 to 39 years, 184 were aged 40 to 49 years, 182 were aged 50 to 59 years, and 78 respondents were aged 60 years and older. Respondents from the research group came from the Bratislava Region (132), the Trnava Region (186), the Nitra Region (120), the Trenčín Region (102), the Žilina Region (145), the Banská Bystrica Region (89), the Košice Region (100), and the Prešov Region (94).

3. Results of the analysis

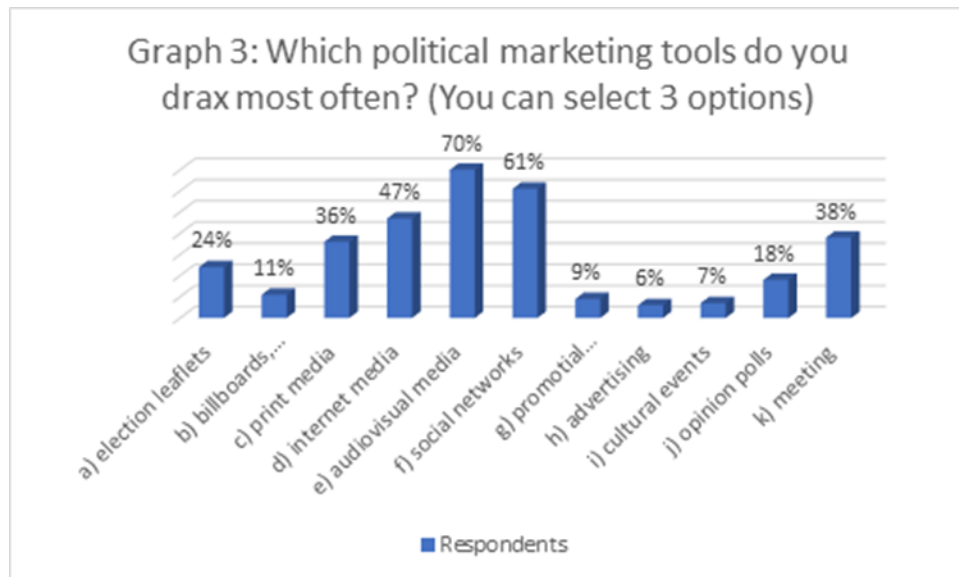
The research showed that two-thirds of the interviewed Slovaks are actively looking for political advertising, of which 410 respondents are definitely looking for, and 208 respondents are looking for political advertising. One-third of the respondents have the opposite opinion, while the remaining respondents could not answer this question. (More: Graph No.1)



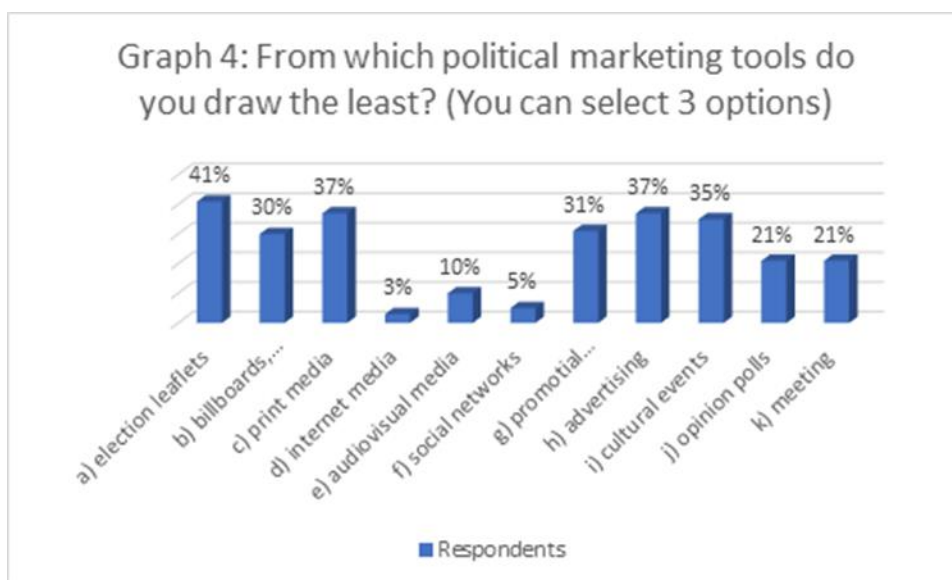
The presented research showed that more than two-thirds of Slovak respondents watch political advertising, of which 499 respondents certainly watch political advertising, and 296 respondents watch political advertising. Less than one-third of the respondents were of the opposite opinion, and the remaining respondents could not answer this question. (More: Graph No.2)



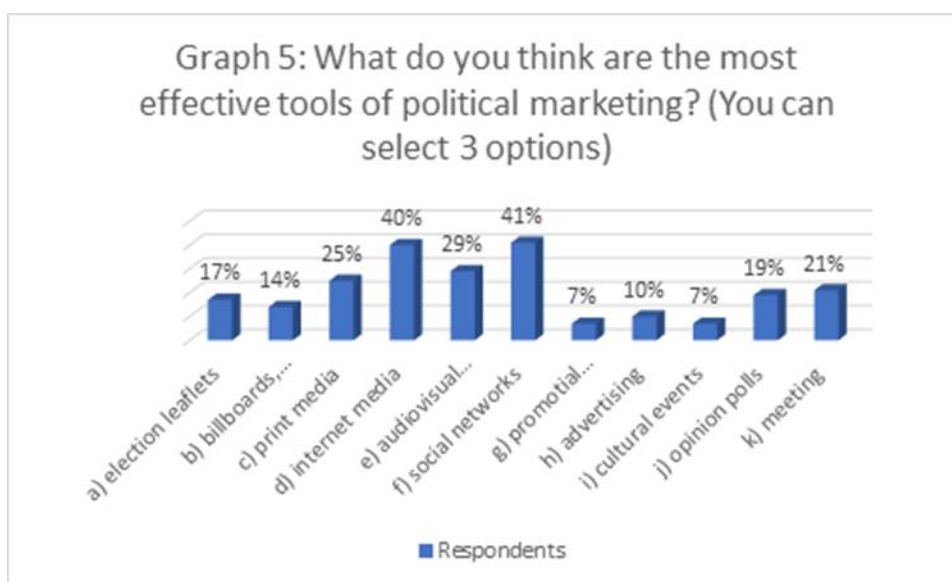
Almost three-quarters of the Slovaks surveyed said that they get the most frequent information about politics and political events through audiovisual media. In the second place, responding Slovaks mentioned social networks, where 598 respondents chose this option. In third place was the Internet media, selected by 460 interviewed Slovaks. (More: Graph No. 3)



More than one third, it's 401 Slovak respondents stated that they get the least information about politics and political events from election leaflets. One-third of Slovak respondents stated that they do not obtain information about political events through the print media, where 365 respondents indicated this possibility and from promotional materials chosen by 302 respondents. (More: Graph No. 4)

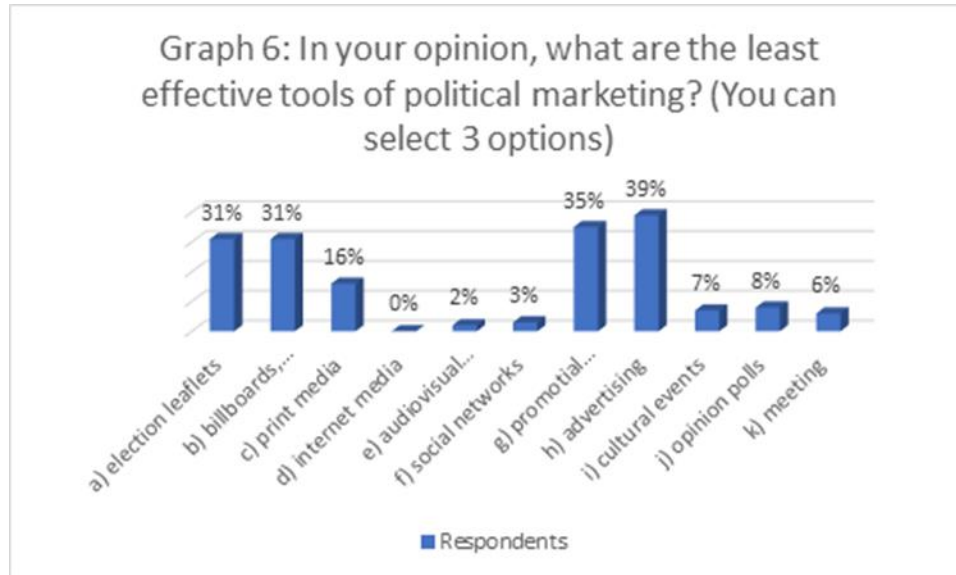


In the following question, we found out which of the tools of political marketing are perceived by the citizens of the Slovak Republic as the most effective. More than a third of respondents mentioned social networks and internet media, of which 403 respondents think that social networks are the most effective tool for political marketing, followed by internet media, where 388 respondents mentioned this option. In third place was the audiovisual media, where 286 respondents indicated this possibility. (More: Graph No. 5)

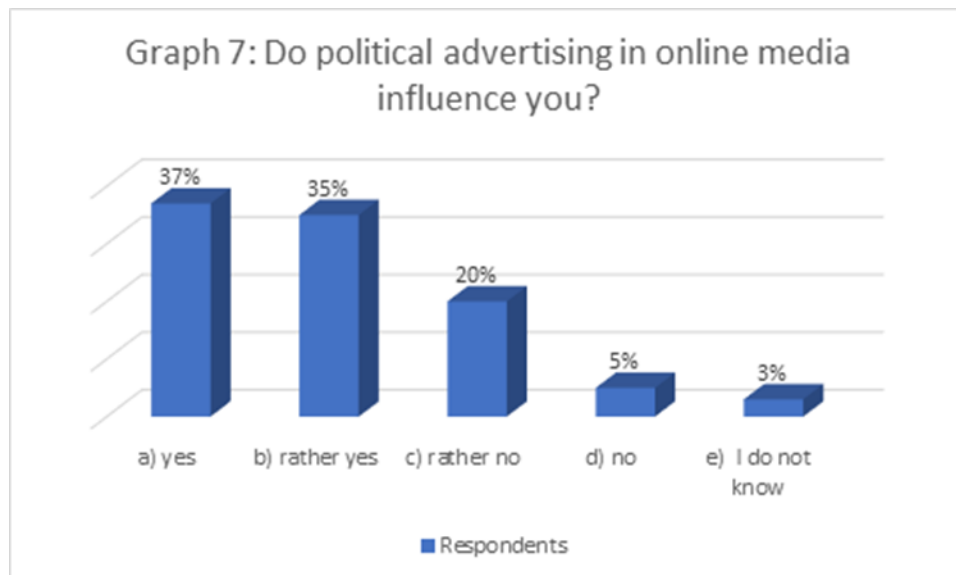


Our research shows that more than one-third of Slovaks surveyed think that the least useful tool for political marketing is paid to advertise. In the second place, citizens consider promotional materials to be the least

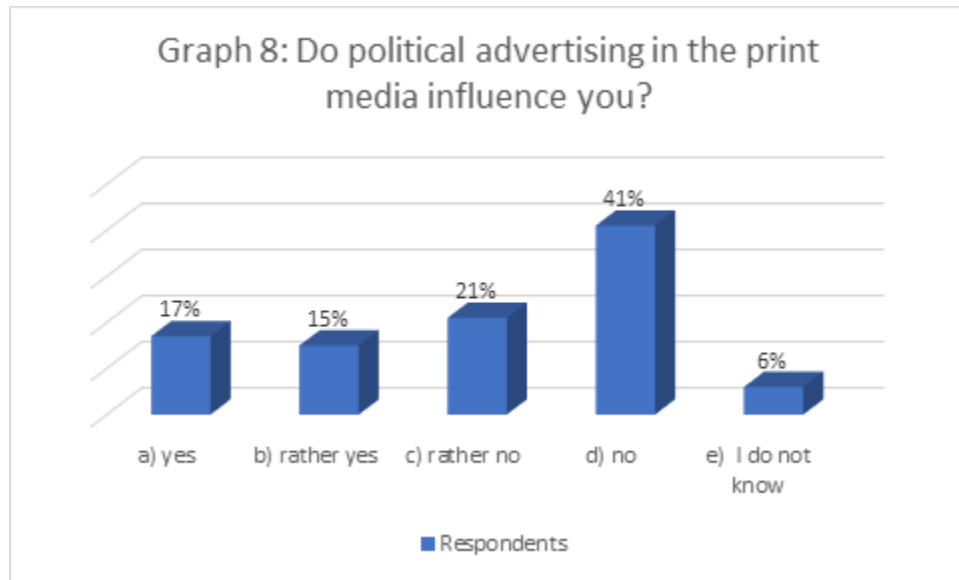
effective, where 343 respondents indicated this possibility. In third place, 301 respondents cited election leaflets and billboards, billboards and city lights as least effective. (More: Graph No. 6)



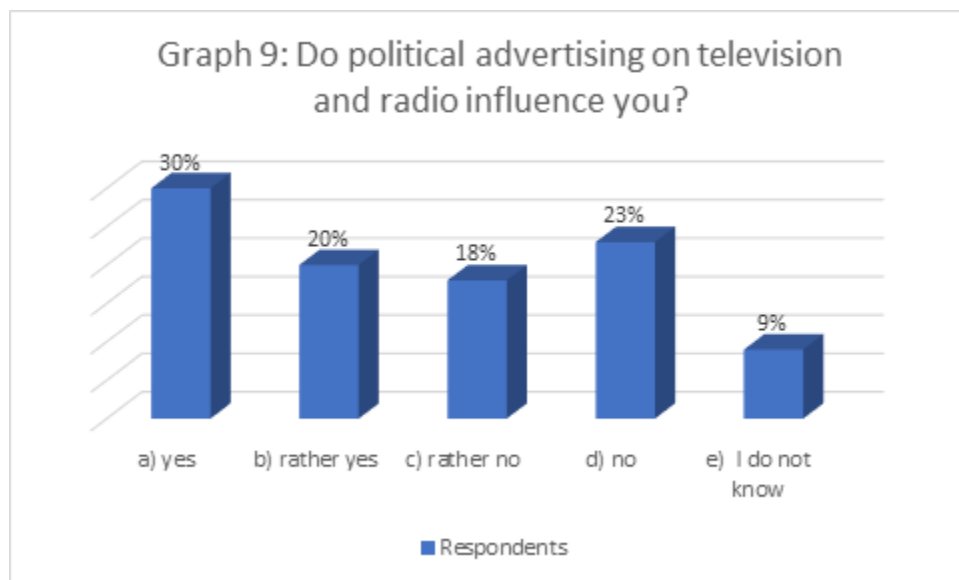
In the seventh question, we asked the respondents how they are influenced by political advertising in the online media. Two-thirds of the surveyed Slovaks stated that they are influenced by political advertising in this type of media. Of these, 361 respondents stated that internet media certainly influence them, 342 respondents indicated that they slightly influence them. Almost one-third of Slovak respondents have the opposite opinion. The remaining respondents could not answer this question. (More: Graph No. 7)



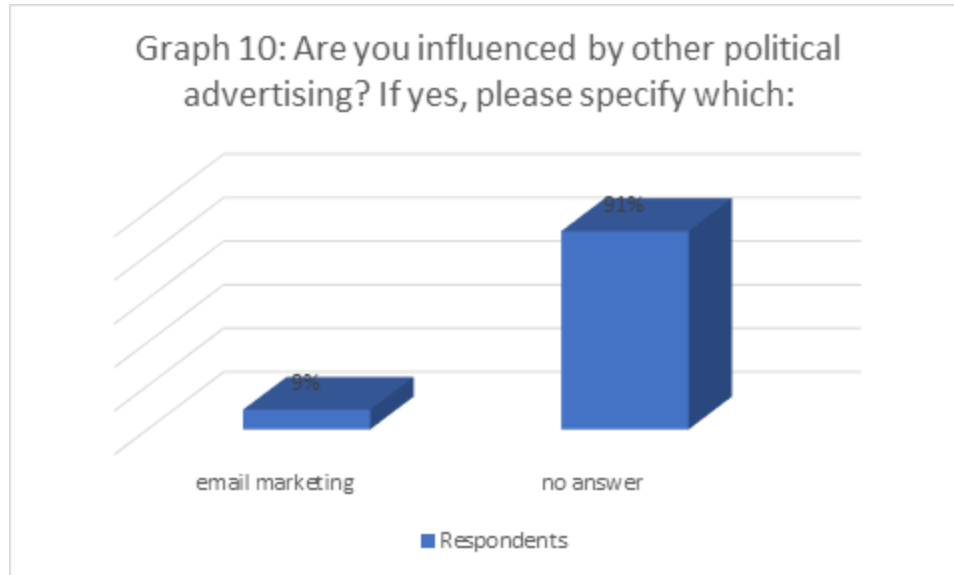
In the eighth question, we found out from the respondents how much they are influenced by political advertising in the print media. Two-thirds of Slovaks surveyed said they did not feel influenced by print advertising. 399 respondents stated that their advertising in the print media did not affect them at all. Rather, political advertising in the press does not affect 204 respondents. One third of respondents are of the opposite opinion. The other respondents could not answer this question. (More: Graph No. 8)



In the ninth question, we asked the respondents' opinion on the influence of political advertising on television and radio. Half of the interviewed Slovaks stated that they are influenced by television and radio. Of these, 298 respondents chose the possibility that their political advertising on television and radio influenced them, 194 respondents stated that they rather influence them. More than one-third of Slovaks surveyed had the opposite opinion. The remaining respondents could not answer this question. (More: Graph No. 9)



In the last question, we asked the citizens of the Slovak Republic, whether they are also influenced by other political advertising than they have been mentioned so far in the questionnaire. Almost all interviewed Slovaks (887 respondents) stated that they are not influenced by political advertising other than those mentioned in the questionnaire. Eighty-one respondents indicated political advertising in the form of e-mails. (More: Graph No. 10)



Discussion

In the first research question, we believed that despite the relatively low confidence of the citizens of the Slovak Republic in political institutions, the interest in political events is still relatively high. This assumption was confirmed in the research, as the majority of citizens of the Slovak Republic still perceive the need to be interested in political events. As many as two-thirds of respondents are actively seeking information on politics. Of interest was the fact that more than three-quarters of respondents watch political advertising.

In the second specific research question, we thought that the citizens of the Slovak Republic would not obtain information from the tools that were current twenty years ago. We wanted to point out that humanity is experiencing a digital revolution that is also having an impact on the political space. People buy print media less, but get information from online sources. We were not able to unequivocally confirm this statement based on the respondents' preferences. Research shows that the most common citizens use audiovisual media to find out about politics, while the least frequent ones are through ballot papers. Among the most effective tools of political marketing, respondents mentioned social networks, while other promotional materials are the least effective.

In the last specific research question, we focused on the impact of political advertising on individual media. It is clear from the results that citizens have seen the most significant impact of political advertising on online media. Television and radio came in second, and citizens mentioned print media in the last place. The last research question, therefore, demonstrably shows that the digital age also has an impact on the political space. Citizens are thus focusing on information through the internet, and information in print is coming back.

Conclusions

Political marketing has become an integral part of political life in the 21st century. Increasingly, political leaders are focusing on quality communication with the public than on the political agenda. Thanks to modern technologies, which can also include social networks, communication between political representatives and the public are becoming easier. The public can directly ask which policy can solve problems. Today, no politician can implement marketing strategies just during an election campaign. With the help of marketing tools, political leaders are always trying to convince citizens of their ideas. In the Slovak Republic, political marketing began to develop after 1989, i.e. after the liberation of the then regime. Following the fall of the totalitarian regime, political parties were allowed to run in elections, creating political competition. As the country developed, so did marketing in politics itself. Trends have changed, they have improved the tools of political marketing, and nowadays, there are many ways to do marketing in politics. Political leaders currently appear most often on social networks. Social networks have become an integral part of every person in today's modern society. This space was used by political leaders to present their ideas and the political campaign itself.

Based on the sociological research of the perception of political marketing by the citizens of the Slovak Republic, several starting points and conclusions emerge:

The results of the research provided information on the current state of operation of various political marketing tools. Within the current trends, the citizens of the Slovak Republic are most influenced, or rather they are most affected by the mass media that are located in the online space. Citizens thus obtain political information primarily from their mobile devices. Among other things, the research also confirmed the information that the interviewed citizens are aware of political advertising and its influence on their voting behaviour.

By carrying out this research study, the authors do not claim a comprehensive view of the analysis of the impact of political marketing tools on the citizens of the Slovak Republic concerning the research group. The research topic offers several other processing options. One of them is a survey of voter behavior during the election campaign, in which the influence of individual political parties would be examined on the basis of the use of political marketing tools. Research on political advertising in selected media could be beneficial for science and practice. It would also be interesting to compare the results from Slovakia with other countries of the Member States of the European Union.

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Marcel LINCÉNYI, PhD. in Media studies, obtained at Constantine the Philosopher University in Nitra, currently at Department of Political Science as associate professor, Trenčín University of Alexander Dubček in Trenčín (TnUAD), Slovakia.

ORCID ID: <https://orcid.org/0000-0002-9076-026X>

Jaroslav CARSKY, Mgr. is currently internal PhD. student at the Department of Political Science, Alexander Dubček University of Trenčín in Trenčín

ORCID ID: <https://orcid.org/0000-0002-2497-7161>

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INTERNATIONALIZATION IMPACTS ON TEAM INNOVATION IN LITHUANIAN HIGH-TECH FIRMS

Mindaugas Laužikas ¹, Aistė Miliūtė ², Mukhammad Khalili ³

¹*Global Innovation Learning Ecosystem (GILE) Experts, Corradino Industrial Estate, Paola, Malta*

²*JSC AKVAVITA, Neravų st. 100, Viečiūnai, Lithuania*

^{1,2,3} *Vilnius University Business School, Saulėtekio Av. 22, LT-10225 Vilnius, Lithuania*

E-mails: mindaugas.lauzikas@gmail.com; aiste.miliute@yahoo.com; ³ m.louie.khalili@gmail.com

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Abstract. Given a well-established literature on internationalization processes and its main impacts on companies' performance (Begeny, 2018; Bužavaitė et al., 2019), it is worth examining how internationalization affects companies, driven by innovation at three different levels (individual, team and organizational) which is anchored in three main pillars: effectiveness, creativity and efficiency. The first pillar is related to strategic decision-making and business intelligence (along with data collection and analysis; setting efficiency criteria, strategic goals and outputs, as well as the tactics for each criteria). The second pillar covers a set of internationalization-related aspects, such as creative ideas generation, marketing and communications strategies, HR and R&D culture, leadership and talent development; while the third pillar is liaised with monitoring and execution of innovative activities. In line with studies with regard to innovation processes (Szopik-Depczyńska, 2015; Gries et al., 2017; Von Schomberg and Blok, 2018), the present paper continues examining the innovation performance; however, the main focus is on team innovation performance or the ways of unlocking the internationalization potential within team innovation processes via a set of aspects, such as effective decision-making, creative and divergent thinking, and efficient execution in teams. In light of the emergence of modern technology, employees of Lithuanian high-tech companies were selected for a quantitative survey, while scrutinizing the liaison between team internationalization and innovation commercialization success. Having the primary quantitative data (related to internationalization level, creative thinking, innovation performance in high-tech respondents' teams) collected and analysed, further on, the innovation performance improvement suggestions are provided for the leaders of high-tech international teams.

Keywords: internationalization; technologies; impacts; team innovation; high-tech; commercialization; creativity; effectiveness; efficiency

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1. Introduction

The process of internationalization has become a key research axis among various scholars during the past few decades, especially since companies have been forced to compete not only in highly competitive domestic markets, but also in foreign regions. Driven by the globalization trends that continuously reshape the competition rules and international trade agreements, various economies tend to reduce the import barriers in both the developed and developing regions (Šūmakaris & Korsakienė, 2017), while innovation and creativity at individual, team and organizational levels emerge as a main driver for organizational change and a key success factor in terms of improved competitive advantages of a firm.

Thus, the research practices in the area of internationalization are gaining its momentum in educational and professional environments. Although this notion is commonly used in literature, it is considered to be multi-faceted and holistic (Andersen, 1997). According to some scholars, internationalization first of all is related to the sequential and systematic participation in international activities and operations (Bilkey & Tesar, 1977). Others argue that the internationalization process as a whole is the investment in international markets (Coviello & McAuley, 1999). In addition to these two interpretations, the process of internationalization might be interpreted from the perspective of interactions, relationships and networks of organizations within a company and outside a firm (Johanson & Mattsson, 1988). All the above interpretations were integrated into a more holistic approach to the internationalization process by Beamish (1990, p. 77p), linking it to “the process by which firms both increase their awareness of the direct and indirect influence of international transactions on their future, and establish and conduct transactions with other countries”.

Over the past years, the traditional approach of Uppsala model was challenged by companies that were globally active from the beginning of their creation (Coviello and Munro, 1997). For instance, the international expansion of new technology-based firms showed an internationalization pattern when these entities were dependent on international agreements and attempted not to follow the gradual pattern of the Uppsala model. These companies were called ‘Born-Global’ by Rennie (1993), who represented a brand-new challenge for the internationalization of companies across the globe. The emerging multinational companies (meta-nationals) overcame their competitors by sensing, mobilizing and integrating their resources at the international level (Doz et al. 2001). Over the past decade, researchers in the field of international business have mainly used two theoretical frameworks to explain the internationalization of companies (Vissak & Francioni, 2013): the ‘Uppsala’ model (Johanson & Vahlne 2009) and the ‘Born-Global’ approach (Oviatt & McDougall, 2005a). Moreover, the process of internationalization has been frequently discussed in terms of globalization (Begeny, 2018), where the process of internationalization was considered to be a response to globalization. This can be observed on a corporate level, where companies are finally starting sharing knowledge, technologies, values and ideas on a global scale (Bužavaitė et al., 2019), where innovation brings various international stakeholders together in order to share resources and create a larger social value-added to the society.

The process of internationalization has been explained within many models and stages in the past few decades; however, three main models (the behavioural perspective of the Stages Models, the relationship approach of the Network Model, and the Foreign Direct Investment Model) are thought to be the traditional pathways to internationalization (Saarenketo et al. 2004). This is in line with the interpretation revealed five years prior to that, where one theoretical framework to explain the concept of internationalization was considered to be insufficient (Coviello and McAuley, 1999). On the contrary, Loane, McNaughton, & Bell (2004) recognized the influence of multiple factors affecting the internationalization of smaller firms.

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There are basically two-stage models of internationalization according to contemporary literature (Moen & Servais, 2002). The first one is the innovation-related model (Bilkey & Tesar, 1977), which indicates that internationalization can be achieved through the management of the continuous learning process (Moen & Servais, 2002), although the process can be jeopardized by weaker manager's skills and their adverse approach to risk. The second one is the well-known 'Uppsala' model, which is more widely used to describe the process of internationalization: companies focus on the acquisition, integration, and gradual adoption of the international market knowledge (Chetty & Campbell-Hunt, 2004), although the opponents argue that these two-stages models do not provide a sufficient explanation with regard to how and why the process of internationalization takes place (Andersen, 1993). Furthermore, these models do not help track company's progress throughout various stages. Thus, the Network Model was used as an alternative to explain a specific internationalization experience of companies that went through unique expansion pathways (Benito & Welch, 1994). Based on this model, companies intend to enhance their position in international networks via various types of expenditures and collaboration strategies (Coviello & McAuley, 1999). Within such networks, both inter-personal and inter-organizational relationships can be developed among companies and employees respectively. This can be achieved on a formal and informal level, and could involve customers, suppliers, competitors, private and public support agencies as well as friends and family members (Coviello, 2006). As a result, such relationships could drive and facilitate company's internationalization process, but they could also hinder it (Coviello & McAuley, 1999). Furthermore, the development of such networks might affect both the selection and the entry modes to international markets (Coviello & Munro, 1997). However, Coviello and McAuley still recommend combining this approach with the Stages Models in order to be able to explain the internationalization among smaller companies (1999).

Contrary to the Stages Model and the Network Model, the Foreign Direct Investment (FDI) model is not used to explain the internationalization of small companies (Coviello & McAuley, 1999). This model is instead being used to analyse the expansion of multinational corporations through three main streams: the ownership advantage, location advantage and internalization (Kumar & Subramanian, 1997). Multinational corporations own rent-yielding assets on a global scale, this grants them a substantial competitive advantage over their competitors in home and foreign markets alike. These corporations are also aware of the best entry modes for each foreign market by knowing its locational characteristics. Finally, thanks to the size of multinational corporations and the vast resources that they possess, business activities can be carried out by such organizations themselves (internalization), instead of outsourcing these activities to the third-party companies in order to reduce further corporate expenses. Some researchers (Morgan and Katsikeas, 1997) criticized the FDI model by claiming that it is not merely explaining a pattern of investment, while others consider FDI to be a managerial decision-making guideline (Coviello & McAuley, 1999). In conclusion, even though the above-mentioned traditional internationalization models may have some common points, they definitely have diverse visions and perspectives, while innovation might require a prompt revision of these models, along with reshaped strategies and tactics behind.

2. The Effects of Cultural Diversity on Team Innovation

In addition to the expansion and growth-related aspects of internationalization, the cultural diversity of human resources (for example, the number of employees of foreign origin, country specialists, employees with international education background or the number of languages a team can cover) becomes an important factor for innovation-driven businesses. According to Cox and Blake (1991), having a workforce with a diverse cultural background can benefit companies with several competitive advantages, such as the increase in flexibility, creativity, and problem solving: these advantages can give companies a valuable edge over their competitors by

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improving the acquisition of resources or reducing the cost base. Moreover, Payne discussed the positive impacts of the diversity on the team creativity and innovation (1990). On the other hand, Priem demonstrated that the team diversity can also have negative effects on essential processes such as strategic decision-making, due to the incapability to identify the main strategic direction and back the strategic focus with various business intelligence techniques (1990). This can be observed in teams with a diverse cultural background; where employees may have different habits, beliefs and traditions; where companies struggle in implementing a geocentric philosophy or lack competences and expertise of applying a holistic human resource management style in practice. Even though creating a diverse team might seem to be an effective human resource strategy in theory (Cox & Blake, 1991), bringing a diverse group of individuals to work together might trigger challenges and sometimes result in rather a fragmented and inefficient performance, if a creative and inspiring leadership is missing.

Another important internationalization aspect, which derives from the category of cultural diversity, is the lingual diversity of employees. Languages are communication media that possess a distinct ability to not only transform cultural and personal identities but also integrate them into a cultural group (Gollnick & Chinn, 2006). A company is said to be linguistically diverse when its employees have different language backgrounds, which might lead to the linguistic clusters (Welch and Welch, 1997). This can usually be observed in companies where employees from the mother company are sent to work to another country: they need to work with local people of the foreign branch; thus, the communication efficiency might be in danger. When one group of employees struggle in terms of languages, the whole communication system might be jeopardised (López-Duarte, Vidal-Suárez, 2010). A similar consequence can be triggered by the use of professional jargon among some team members, communication may be impeded and a smooth exchange of ideas is endangered (Maznevski, 1994).

The third aspect of internationalization in a company is the presence of employees with international educational backgrounds. This might seem insignificant to some employers, but the diversity in terms of educational background among employees increases the knowledge base and the creative potential of the company (Østergaard, et al., 2011). As a matter of fact, educational backgrounds tend to facilitate the exploratory competence of a company through both better problem solving and generation of new ideas (Quintana-García and Benavides-Velasco, 2008). Employees that have studied in international educational institutions are more likely to provide creative and innovative ideas. This is simply due to the fact that such employees had more interaction with different cultures and types of individuals abroad, helping them to think outside the box by reflecting on the knowledge and experience they gained abroad.

It was discovered that the cultural diversity leads to the development of a strategy, which contributes to a bigger economic and social value-added (Payne, 1990). Therefore, employees with a high level of international education are needed in companies that attempt to pursue rapid internationalization via higher productivity, creativity, and efficiency (Onkelinx et al., 2016).

Another important internationalization aspect is related to the knowledge of the client base, because in today's international environments, driven by modern technology, companies can acquire and absorb the market knowledge more easily (Hislop, 2002). In reference to the Network Model, the degree of interorganizational and interpersonal relationships within the network of a company has a substantial impact on the internationalization success (Axelsson/ Easton 1992). These relationships usually involve clients, suppliers and competitors, that can encompass both the business and the social aspect of organizational boundaries. Bell adds that interfirm relationships can influence the efficiency of high-tech companies (1995). This was supported by other researchers, indicating that 34% of SMEs used cooperative relationships at some point in their internationalization process (O'Farrell et al. 1998).

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In line with the already discussed internationalization aspects, the role of local and international partners within the process of internationalization is widely acknowledged in the international business and entrepreneurship studies, that consider networking to be one of the main structural models of cooperation (Holm et al., 1996) and recognize them as a major channel to enter new foreign markets (Johanson and Vahlne, 2009). The relation of such networks with internationalization is particularly emphasized in the international entrepreneurship literature (Kabbara, 2009). However, other studies disagree with this perspective and regard dyadic partnerships to be a more general network construct (Anderson et al., 1994), where dyads are defined as a pair of companies that maintain an exchange relationship. Studies that are represented by dyads and their emerging relationships show how such perspectives can be influential in setting the path, rhythm, speed and scope of the international growth of firms (Zucchella and Kabbara, 2013).

The dimensions of cultural diversity and internationalization can have both positive and negative impacts on team innovation and its performance. According to Kafouros et al. (2008), the process of internationalization can help companies improve their performance through innovation. Various researchers in the field of innovation and international business argue that a company's degree of internationalization (DOI) is the main moderator in the innovation performance relationship (Kotabe et al., 2002). Companies require a specific degree of internationalization in order to have the ability to access a broader range of markets, if they strive to efficiently benefit from their new product and processes. Moreover, it was found that member heterogeneity in teams acts as a catalyst in the idea creation process (Payne, 1990). It was also discovered that the interaction of ethnical diversity and growth strategy influenced important outcomes for a company (Richard et al., 2003). For example, it was demonstrated that within the banking industry the team diversity enhanced the performance for banks that were actively pursuing the innovation strategy (Richard et al., 2003). Some studies have also pointed out at some negative effects: the creativity may be hindered when one team member is more knowledgeable in a specific area than the rest of a team, if a necessary knowledge sharing mechanism is not established (Ochse, 1990).

Having six internationalization aspects tackled from theoretical point of view, these internationalization criteria will be further investigated via quantitative survey (where the correlation analysis is conducted and pertinent recommendations for decision-makers of the analysed firms are provided).

3. Internationalization strategies and industry characteristics

The internationalization process is continuously evolving; therefore, a close attention must be paid to the key industry factors that might have an impact on the process of internationalization in terms of speed, geographical scope and/ or entry strategy (Andersson et al., 2014). Moreover, the competition, structure, life cycle, concentration within an industry (along with the knowledge intensity) local cluster internationalization and global industry integration are significant internationalization drivers (Andersson et al., 2014). It was also found that the internationalization of new ventures depended on the complexity and variety of the environmental variables (Fernhaber et al., 2007). This was especially the case when Evers (2010) emphasized the importance of the industry structure as an environmental variable and its impact on new venture internationalization processes. The specific industry characteristics can also influence the adopted strategies of companies, especially when such characteristics restrict the choice of available strategic options (Porter, 1986). As a result, these industries reach the competitiveness, stretching from multidomestic to global (Porter, 1986). Companies have been highly dependent on the industry characteristics in the past, as different industries could either create barriers that might hinder international growth, or create drivers that might foster it (Andersson, 2004).

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Zedtwitz and Gassmann defined two main principal forces in internationalizing the corporate R&D department (2002). The first force is the access to local markets and customers, while the second one is the access to local science and technology. This is in line with Lauzikas and Miliute (2020), who emphasize the role of R&D while linking culture and innovation. The authors compare the positive experience of South Korean and Lithuanian IT firms and conclude that the R&D department could help improve the competitive advantage of a company if a necessary support is provided by other departments. Zedtwitz and Gassmann also discuss the following four major trends (2002): (1) Internationalization of Research, (2) Internationalization of Development, (3) Development follows Research, and (4) Research follows Development. Out of these four trends, companies tend to follow either the first or the second, since opting for internationalization of both (the research and development departments) at the same time will require vast resources from a company (Zedtwitz and Gassmann, 2002). In recent years, the R&D expenditure lines of foreign-owned companies have seen an increase in both absolute terms and as a share of total business R&D in the US as well as in nearly all EU countries (Iversen et al., 2016).

In terms of the expansion of a company, small and medium-sized companies gain the knowledge and experience during the process of internationalization, which in turn creates the incentives for the further expansion. This process, however, might explore the available resources, while creating various internal problems (Naldi, 2008). Moreover, some environmental forces may trigger the periods of rapid internationalization or de-internationalization, which might have a strong impact on strategies, utilized by companies in the context of their domestic and overseas' customers and business partners (Crick, 2002).

Moreover, in terms of homogeneous and heterogenous teams, proponents of the team diversity consider that heterogenous teams tend to attract diverse candidates to open positions within their company (O'Leary and Weathington, 2006). They perceive the process of internationalization to be a valuable opportunity for a company in gaining cultural intelligence which plays a vital role in attracting a more diverse base of customers/ clients and partners (O'Leary and Weathington, 2006). Empirical studies tend to justify the need for the diversity in companies when observing a positive relationship between the team diversity and problem-solving skills, since heterogeneous teams are often more creative and better at problem solving than homogeneous teams (Konrad, 2003). Konrad emphasises, however, that business cases that are centred on the diversity can have their limitations, since such approaches might lead to the marginalization of the minority groups within a company, where employees might be hired merely to represent a percentage of their respective group (2003).

In terms of digitalization and modern technologies, the empirical studies indicate that the process of internationalization not only promotes the acquisition of new technologies, but also actively contributes to the internal and external growth of a company in international markets (Naldi, 2008). Customers/ clients as well as business partners have higher expectations due to globalization and technological progress. This forces companies to introduce modern technologies into their daily work processes (Kos-Labedowcz, 2013). Kos-Labedowcz states that the main advantage for SMEs (Small-to-Medium Enterprises) is their ability to implement modern technologies in order to increase a company's capability of internal and external communication on a similar level to large enterprises (2013). The technology-driven communication was also scrutinized by Lauzikas and Miliute (2020) in their studies of Lithuanian civil service organizations. The public administration perspective also contributes with the valuable recommendation how to improve the organization's communication with its recipients, suppliers, partners, and even rivals; thus, adding new value to products and service, in light of the age of information (Kos-Labedowcz, 2013).

Innovations are strongly interlinked with social and economic developments and help transform the humanity into prosperity (Szopik-Depczyńska, 2015). The past decade has witnessed a significant increase of the expenditure

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into innovative activities and the technological change, which had a significant effect on the process, related to presenting the new opportunities for business, economy, and society (Gries et al., 2017). Innovation has a wide variety of interpretations, processes and classification; however, this paper will be centred on team innovation, because the authors aim to quantify the importance of internationalization on individual teams.

4. Internationalization in the context of innovation

The concept of innovation has evolved over the last century: it has been a driver for competitiveness in the global marketplace, which constantly required reshaping rules and regulations that deteriorated the economic growth due to a weak innovation culture as well as added a set of new dimensions, such as responsible and ethical innovation (Blok et al., 2017). For instance, the European Commission has encouraged business development and innovative entrepreneurship (2017), while Sternberg (2000) highlighted that developed countries could achieve the long-term growth if innovative products and services were continuously developed. Moreover, the European Union underlined the direction of Innovation Union, which called for the cohesion, sustainability and prosperity via various Research & Development activities and responsible allocation of available inputs for innovation with bigger social value-added (Blok et al., 2017).

The concept of innovation can refer to individuals, teams, entire companies or economies (Godin 2009). While tackling the evolution of the ‘Innovation’, Godin explains that the concept of innovation was used to describe the novelties on a very general level (2009): included imitation, invention, creative imagination, and change. Nowadays, however, the concept focuses on two main terminologies: ‘Technological Innovation’ and ‘Commercialized Innovation’ (Godin 2009). Such insight is supported by Lauzikas et al. (2016) who examined the service innovation commercialization factors in the fast-food industry. On the other hand, other researchers argue that the concept of Innovation should go beyond the usual intent of generating commercial value due to current global challenges (Blok, 2018).

In comparison to the ‘Innovation’, the term ‘Team innovation’ refers to the teams that are ready to specifically develop innovative solutions for a company. Therefore, the team innovation has been gaining its prominence in both the scientific literature and corporate practice, over the past decades (Thayer et al., 2018).

A meta-analysis that was conducted on a team-level showed a stronger relationship between creativity/ innovation and the team process variables, in comparison to input variables, such as the team composition and/ or the team structure (Hülshager et al., 2009). Hülshager et al. emphasized that ‘Team Innovation’ had a particularly significant relationship with certain factors (2009): team size, diversity, goal interdependence, cohesion, internal and external communication, in addition to the four dimensions of the team climate classified by West (1990). Most recently, two essential themes (that tackle team innovation) were proposed by van Knippenberg (2017): (1) the knowledge integration perspective, and (2) the team climate perspective. The first perspective proposes that innovation follows the integration of information, while the second one addresses the innovation diffusion within the team climate and supports the shared commitment towards innovation (van Knippenberg, 2017). Thus, the team innovation can be considered as an important function stemming out of the concept of innovation.

Innovation can be interpreted, based on a vast variety of characteristics and classifications, especially within the internationalization framework. Empirical studies divide innovations into two main fields: (1) the macro level and (2) the micro level (Coccia, 2006). The macro level considers innovation as new to the world, since the innovativeness of companies is dependent on exogenous factors, such as the familiarity of a specific innovation to its relative industry. The micro level, on the other hand, defines innovation as new to companies and their

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respective consumers. Innovations tend to be classified into various taxonomies (Garcia and Calantone, 2002). DeMarchi (2016), for instance, based on characteristics of certain scientific discoveries and technological innovations. Coccia (2018), however, categorized innovations by the taxonomic characteristics of interactions between different technologies in complex systems. This classification includes four categories: (1) companies that innovate through the acquisition of machinery and equipment, (2) specialized suppliers of capital goods and equipment that are in symbiosis with their customers, (3) science-based companies that exploit scientific discoveries of electronics, chemicals, pharmaceuticals and aerospace, and (4) scale-intensive companies that are involved in the mass production.

The two main traditional types of innovation are considered to be the incremental and the radical innovation (Coccia, 2018), and it is strongly believed that companies need to engage in exploratory and exploitative activities in order to support both incremental and radical innovations (Durisin & Todorova, 2012).

Kahn et al. emphasized the importance of details within the interpretation of innovation (2003). Indeed, many theoretical frameworks tend to analyse the different characteristics and patterns of technological innovation, but current approaches are still having trouble in explaining certain determinants that help advance incremental and radical innovations in the international markets (Coccia, 2017). Innovation can also be tackled from the perspective of the management of technology (MOT), while Abernathy and Utterback (1985) introduced the classifications, focused on the products, competition, a system of production and the market. They created a map with four main kinds of innovation including: (1) architectural innovation, (2) market niche innovation, (3) regular innovation, and (4) revolutionary innovation. All the above mentions different views and arguments regarding innovation characteristics and their classifications can be used as a groundwork for the development of further sophisticated theories in clarifying technological change (Coccia, 2018).

To continue scrutinizing the innovation development and implementation structure in terms of different departments or functions of a company, a team emerges as a fundamental unit, resulting in the stimulation of innovate ideas as well as increase in their response capacity (Tjosvold et al., 2004). The theory of this strategy explains that the confluence of diverse perspectives, skills and inputs of individual team members facilitates the development of new ideas, especially since the application of these concepts is entirely dependent on the collaboration of team members in a coordinated network (Axtell et al. 2010).

Once the conceived innovation is developed and deemed successful, the company can incorporate it into other teams and departments (Caldwell & O'Reilly, 2003). As a matter of fact, some companies create specialized innovation teams (IT's) that can be found under various job titles, such as entrepreneurial teams, new venture teams (NVTs), Research & Development (R&D) teams, or simply science teams (Thayer et al., 2018). Such teams would naturally have varying responsibilities and would operate in different environments. For instance, Research & Development teams are usually grouped together even though they tend to experience different risk and uncertainty levels (Bain et al. 2001). New venture teams, on the other hand, tend to create organizational policies and usually have a larger managerial discretion (Klotz et al., 2014), notwithstanding that all the above-mentioned dimensions, innovation teams have a common goal of developing and implementing new innovative products, processes and solutions (Thayer et al., 2018).

The process of innovation in individual teams can be influenced by many factors including: (1) leadership, (2) team characteristics, (3) team composition, and (4) external demand factors (González-Romá, 2008). These factors have been studied as part of empirical researches and highlighted in similar theoretical models with respect to innovation in individual teams (Anderson et al., 2004). Leadership is an essential factor in the innovation

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process in individual teams, since the team leaders tend to have a significant influence on the perception, affective responses, behaviours and performance of team members (Schaubroeck et al., 2007). In terms of team characteristics, González-Romá (2008) defines team members as a group of individuals that carry out specific tasks within a company. These tasks might strengthen the autonomy of individual teams and provide opportunities for learning, developing and social interaction; thus, influencing the team's level of task-orientation and resulting in an intrinsic motivation (González-Romá, 2008).

While drawing the attention to the team composition, the last few decades have seen a multitude of researches that explored the composition of teams through various indicators of diversity (van Knippenberg & Schippers, 2007). In general, the diversity within a team refers to the inclusion of employees with a set of diverse attributes. The visible attributes may include race, gender and age, while the invisible attributes may include personality, values, education and area of specialization. It is reasonably assumed that individual teams are much better disposed to develop innovative solutions when they possess a greater range of cognitive resources, such as information, knowledge, opinions, perspectives, in addition to the competences (Webber & Donahue, 2001). The individual teams must also keep innovating when being triggered by constant external demand factors, threats and uncertainties, such as the competition and time pressure (West, 2002). West argues that these external demand triggers play a vital motivational role in modifying the status quo in addition to certain patterns of functioning; thus, provoking the resistance of institutions and organizations that feel threatened by innovation (2002). Therefore, teams that fail to innovate and keep up with the external demand factors may lead to the downfall of their companies (Panne et al. 2003). On the other hand, the current trends in the market, such as the emergence of new technologies, the focus on strategic collaboration and resource sharing, social value-added and sustainability, sophisticated data and knowledge management as well as business intelligence techniques, encourage firms stepping out of comfort zone, breaking schema of thinking and rapidly adapting the newest communication technologies via creativity enhancement, leadership, innovative HR and R&D strategies or new holistic digital approaches to team innovation management.

5. Methodology: quantitative approach to team innovation in the context of internationalization

A wide variety of research disciplines, numerous studies and cases have extensively tackled the field of innovation; however, the experiences of scrutinizing innovation commercialization process in SMEs are still rather fragmented (Gronum et al. 2012; Omarkhanova et. al., 2020).

The present paper is centred on the review of scientific literature sources, then similar research methodologies are compared in order to prepare the questionnaire, to collect and smoothly interpret the descriptive data as well as reveal correlation analysis results in a structured and efficient way. To better structure the results, the conceptual model is developed after the scientific literature review (see the figure 1), which is later on tested while applying the hypotheses. The conceptual model is built on three pillars: internationalization criteria (that are more tangible and less subjective), perception-based intermediary factors (employees' perception on aspects from the creativity enhancement and decision-making to leadership and technology-driven collaboration), and the internationalization effects in terms of team innovation, effectiveness, efficiency and creativity.

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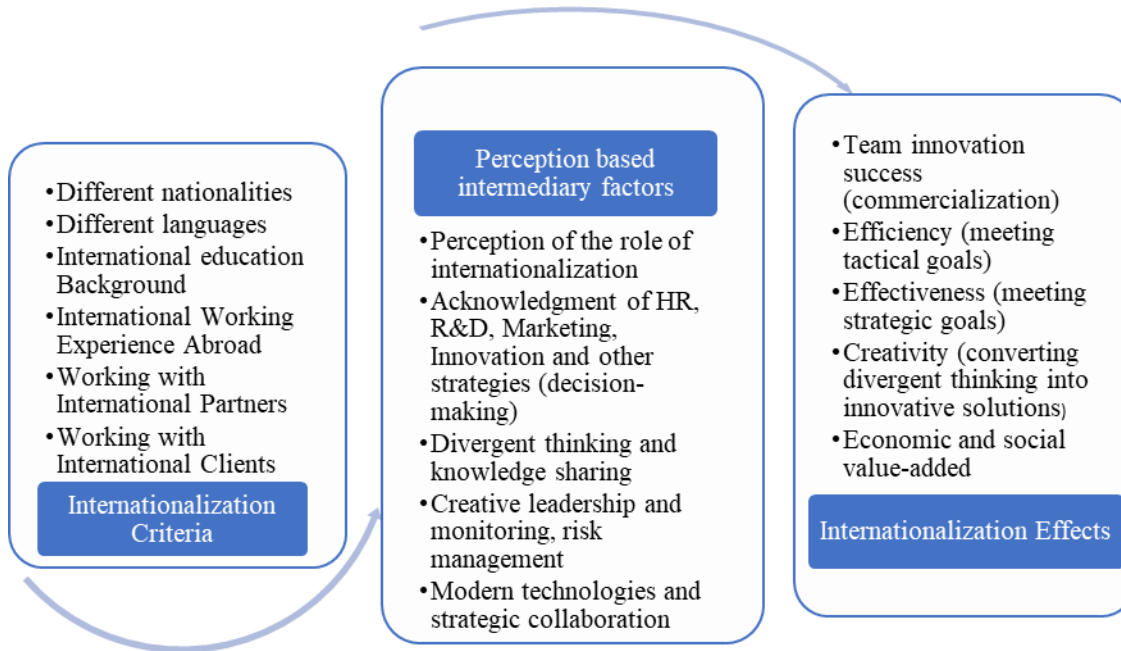


Fig. 1. Conceptual model of internationalization effects on team innovation via perception-based factors

Source: developed by the paper authors, based on the literature review

The process of commercialization could be defined as generating a commercial value from innovative products, processes, and services (Herdman, 1995), which differs from a creative idea and is oriented to gaining a competitive advantage in the marketplace. Small companies may become ideas generators for the development of new technologies that can also contribute to the development of larger companies (Libaers et al. 2016). Balancing between exploration and exploitation processes is quite difficult for small companies (Voss & Voss, 2013), especially when they have limited skills, experience, capabilities, and most importantly, insufficient access to financial capital, particularly in the context of internationalization and expansion, which is accelerating thanks to modern technologies and digitalization (Berends et al., 2014). However, these limitations can be overcome if companies focus on the global markets and the open-source models of innovation (Love & Roper, 2015), where internal skills gaps can be reduced through collaborative networks and complementary skills.

In terms of experience and knowledge resources, small companies have recently gained the capability of accessing a wide variety of external sources of innovation through the media, such as online communities, crowdsourcing, and Internet Platforms (West & Bogers, 2013). This access plays a crucial role in team innovation and has a substantial effect on the commercialization process.

Moreover, some scholars considered the effects of innovation to be strongly dependent on the size of a company (Cohen and Klepper, 1996), while others were not able to confirm such an association (Wang and Tsai, 2003). The researchers in technology-management fields, such as Kessler (2003), tend to argue that good infrastructure and understanding technologies result in high-tech companies focusing on integrating their external findings into the development of their products and processes. Kafouros et al. (2008) believe that investing in team innovation allows companies to be more competitive in the global markets and helps them achieve a higher economic

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performance through the development of new technologies, adaptation of more efficient production techniques and introduction of new products and processes. All these arguments indicate the importance on team innovation and its direct and indirect effects on the process of commercialization, where the development, access and commercialization of knowledge on the global scale help unleash firms' potential in generating bigger economic and social value-added.

To better tackle internationalization impacts on team innovation, the Lithuanian high-tech firms were selected as an object of the investigation. In spite of being a vibrant country with untapped potential in high-tech industries (Keliuotytė-Staniulėnienė & Smolskytė, 2019), Lithuanian managers and leaders at a team and an organizational level tend to underestimate the importance of internationalization and its impact on diverse thinking, innovation performance and efficiency (Šūmakaris & Korsakienė, 2017), which can only be accomplished by joining people from various backgrounds. This can ultimately lead to a lack of creativity inside a company, forcing it to spend financial capital while buying innovative solutions from third-party providers. As a result, the lack of team innovativeness can put such companies at risk of over-spending and weakens their competitive advantage. The present paper is based on the assumption that the level of internationalization in such teams has a direct impact on the level of their divergent thinking (team innovation), which in turn has an impact on their innovation performance, efficiency, and ultimately on the process of innovation commercialization.

Employees of 10 high-tech companies in Lithuania (with an average headcount of 20 employees) were contacted via LinkedIn and the primary data was collected while using the multiple-choice and Likert-scale questions. The population size reads 150 employees, while the minimum sample size stands at 108 employees, using a 95% confidence level and a 5% confidence interval. In total, 120 responses (above the minimum threshold) were interrogated.

In spite of the quantitative nature of the paper, in line with scholars, such as Jost et al. (2009), the most of respondents' answers were based on their perceptions and unique attitudes, which is particularly important while tackling the role of internationalization on team innovation. Moreover, the primary data from in-depth interviews with experts should be conducted within the next research of the same series. This would also help capture the decision-making process at different hierarchy levels, along with trans-disciplinary and cross-departmental innovation commercialization processes and team innovation specificities.

The aim of this research is to examine the relationship between the level of internationalization and the level of team innovation-related factors, such as creative thinking, innovation performance and efficiency in teams. Driven by the assumption that the level of internationalization in teams has a direct impact on the level of divergent thinking in teams (which leads to team innovation), this paper is also centred on the attempts to tackle the effects of internationalization on the innovation commercialization process.

The questionnaire consisted of 4 blocks of questions: the screening questions helped eliminate the answers of respondents who did not work in teams of high-tech companies; a set of 8 multiple-choice questions contributed to the identification of the internationalization level within a respondent's team; five Likert-scale questions revealed respondents' perception regarding the liaison between internationalization and team creativity (innovation) in their respective team; 5 multiple choice questions gathered the demographic information of respondents. After eliminating 10 (8.3%) respondents, because of their negative answers to at least one of the two screening questions, 110 valid responses were gathered.

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In order to test the theoretical framework model, deriving from the literature review, the null-hypothesis that the process of internationalization has no effect on team creativity, innovation performance and efficiency, was underlined. The following main hypotheses were pointed out: respondents who consider their teams to be more internationalized would also be capable to identify the positive effects of internationalization in terms of team creativity, innovation performance and efficiency.

6. Research on internationalization effects on team innovation in Lithuanian high-tech firms: employees' perspective

The descriptive analysis of the internationalization level among respondents' teams led to a rather detailed profile of an employee, team and company, which is critical to statistically analyse the liaison between internationalization and team innovation. More than one third (36.4%) of respondents were working in a team composed of 5-8 employees, which is close to the optimal team size of around 6 members, as stated by Beatty and Barker-Scott (2004). Although the distribution of demographic characteristics of respondents in terms of gender (40% of the valid respondents being male, and 60% being female) were rather in line with the national demographic proportions, the highest valid percentage (66.4%) of employees in terms of age belonged to the category between 20 and 24 years old, which corresponds to the nature of high-tech firms in Lithuania, driven by young talented researchers and international strategic collaboration. In light of such diverse employees' background, the valid result that nearly one third (26.4%) of respondents obtained a Bachelor's degree outside Lithuania was not surprising. In addition, one fifth of the interrogated employees (20.9%) had some experience working outside the country (versus 31.8% with no international work experience). In line with the origin of international education, 30.9% of respondents were of a foreign origin (versus 69.1% - Lithuanian).

It is interesting to note that a combined 50% of the respondents worked in teams that are larger than the average optimal number, while a mere 14.5% worked in teams smaller than the optimal average. Moreover, the distribution of answers with respect to different nationalities were in line with the usage of languages (in parallel with nationalities, the highest valid percentages of 36.4% and 33.6% respectively indicated 3 languages). Based on the theoretical framework model, international educational background and working experience abroad are critical to success. The survey indicated that teams in high-tech companies had 2-3 members with international educational background and/ or working experience abroad, suggesting that high-tech companies understood the potential of gaining valuable expertise through both the available national and international labour supply. The descriptive results revealed that teams have a unique potential of gaining valuable feedback from their international partners and clients in order to improve their products and services: on average half of the indicated partners were international, and the great majority of the employees characterised their clients as international.

Taken into account that internationalization manifests in teams in different ways and forms, our survey focused more on team innovation success, and first of all, on the main barriers to the innovation performance: c.a. one half of the valid respondents (50.9%) considered a lack of international working experience one of the biggest barriers to the innovation process in a team, with 44.5% of the respondents believing that this is due to a lack of connections with international business partners and 40% believing that this is due to the absence of international educational background. Surprisingly, only 15.5%, 20% and 29% of all the valid respondents considered a small pool of nationalities, a small pool of languages and a lack of connections with international clients (respectively) to be the biggest barriers to the innovation process in a team.

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110 responses

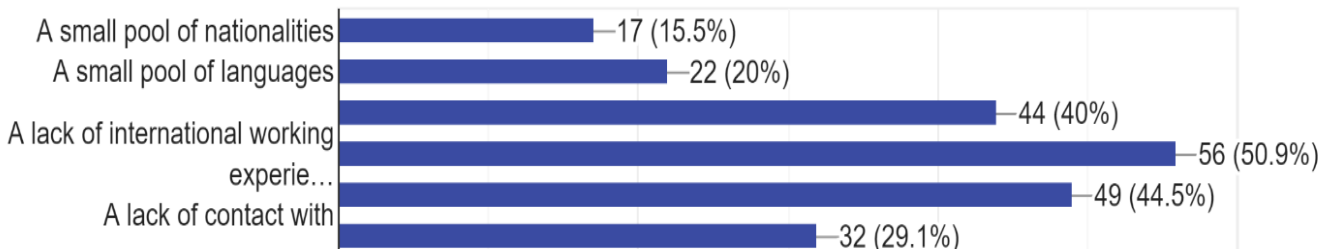


Fig. 2. The barriers to team innovation

Source: Developed by the paper authors, based on the research results

In addition to the identified barriers, international working experience, working with international partners, and working with international clients were considered the key criteria to encourage divergent thinking and team creativity (team innovation).

Correlation Analysis

Respondents who consider their team largely internationalized tend to believe that the six internationalization criteria (Different Nationalities, Different Languages, International Education Backgrounds, International Working Experience Abroad, Working with International Partners, Working with International Clients) are very important for their team's creativity, while respondents who characterize their team as not internationalized diminish the role of internationalization factors. From the produced correlation matrix, the relevant correlations are only the ones where each criterion of one row meets the same criterion in a column, while the rest of the correlations can be discarded. Even though the relevant correlations are positive, the relationships are considered to be weak (a correlation of 0.2 – 0.4). Moreover, out of the 6 relevant correlations that are highlighted in table 1, four of them have a significance level of 0.05 or less, meaning that these correlations are statistically significant. This correlation suggests that the more internationalized a respondent's team is, the more they see how important the internationalization criteria actually are for their team's creativity.

Moreover, respondents who consider their team very internationalized tend to indicate that the previously mentioned internationalization criteria are very important for their team's innovation performance and efficiency, while respondents who characterise their team as less internationalized do not find the internationalization criteria of significant importance. Within these positive relationships the rows represent the level of internationalization in a respondent's team, while the columns represent the importance of internationalization for team's innovation performance and efficiency. From the produced correlation matrix, the relevant correlations are again only the ones where each criterion of one row meets the same criterion in a column, while the rest of the correlations can be discarded. Most of the relevant correlations are positive, where a correlation between 0.2-0.4 is considered to be weak and a correlation between 0.4-0.6 is average. Moreover, out of the 6 relevant correlations, five of them have a significance level of 0.05 or less, meaning that these correlations are statistically significant (see Table 2).

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This correlation suggests that the more internationalized a respondent's team is, the more they acknowledge the role of the internationalization criteria on a team's innovation performance and efficiency.

Finally, respondents who believe that the six internationalization criteria are very important for their team's creativity also tend to believe that these criteria are very important for their team's innovation performance and efficiency. The rows represent the importance of internationalization for team creativity and the columns represent the importance of internationalization for team performance and efficiency. All of the relevant correlations are positive, where a correlation between 0.4 - 0.6 is considered to be average and a correlation between 0.6 - 0.8 is considered to be strong. Moreover, all the 6 relevant correlations that are highlighted in the Table 3 have a significance level of 0.05 or less, meaning that the relevant correlations are statistically significant. This correlation suggests that respondents strongly associate the interrelationship between the role of internationalization and both team innovation, efficiency (which leads to commercialization) and creativity.

Conclusions and Recommendations

Driven by the aim to investigate the relationship between the level of internationalization and the level of creative thinking/ innovation performance and efficiency in teams (built by high-tech companies in Lithuania), the qualitative research was conducted. Its results helped unlock the internationalization potential within team innovation processes while strengthening the competitive advantages of the analysed companies.

The results of the correlation analysis confirm that employees who consider their team very internationalized tend to indicate that the previously mentioned internationalization criteria are very important for their team's creativity. Moreover, employees who consider their team internationalized tend to believe that the previously mentioned internationalization criteria are very important for their team's innovation performance and efficiency. Last but not least, employees who believe that six internationalization criteria are very important for their team's creativity also willing to believe that these criteria are very important for their team's innovation performance and efficiency.

To conclude, the research findings indicated a weak positive correlation between internationalization and team creativity (innovation), an average positive correlation between internationalization and innovation performance, and a strong positive relationship between team creativity and innovation performance. Therefore, high-tech companies are highly recommended to actively pursue the internationalization of their teams, if they aim to stay competitive and mitigate the risk in terms of third-party service (ideas, knowledge, and etc.) providers. This could be achieved via more innovative and open HR strategies, while recruiting employees with international experience and foreign educational background, training team members and reshaping their perception, in parallel with modern technologies (such as shared value digital platforms) that provide the opportunities to transactionally communicate with international clients and partners in order to create a bigger synergy effect.

A future research could be conducted while applying a qualitative research method and using in-depth interviews with experts (top decision-makers) of Lithuanian high-tech companies or analysing industries of lower technological intensity firms in different countries. A set of concrete indicators how to measure internationalization effects on team innovation could be identified and used in HR technology solutions, oriented to team innovation improvement matrix, which could be further customized, based on the business development cycle, specificity of business model, industry development trends, management and leadership style, as well as the main strategic targets of a company, along with available inputs and expected outputs in different time perspectives.

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Annexes

Table 1. Level of Internationalization vs. Importance of Internationalization for Team Creativity

			14. Different Nationalities	14. Different Languages	14. International Education Backgrounds	14. International Working Experience Abroad	14. Working with International Partners	14. Working with International Clients
11. Different Nationalities	Pearson Correlation		.207*	.214*	.126	.175	.156	.166
	Sig. (2-tailed)		.030	.025	.188	.068	.104	.082
	N		110	110	110	110	110	110
11. Different Languages	Pearson Correlation		.119	.236*	.136	.163	.116	.126
	Sig. (2-tailed)		.216	.013	.158	.090	.229	.189
	N		110	110	110	110	110	110
11. International Education Backgrounds	Pearson Correlation		.174	.147	.121	.161	.181	.224*
	Sig. (2-tailed)		.069	.126	.207	.093	.059	.019
	N		110	110	110	110	110	110
11. International Working Experience Abroad	Pearson Correlation		.119	.187	.084	.123	.168	.213*
	Sig. (2-tailed)		.214	.051	.385	.199	.080	.025
	N		110	110	110	110	110	110
11. Working with International Partners	Pearson Correlation		.227*	.181	.100	.195*	.297**	.288**
	Sig. (2-tailed)		.017	.059	.301	.041	.002	.002
	N		110	110	110	110	110	110
11. Working with International Clients	Pearson Correlation		.175	.240*	.047	.181	.231*	.249**
	Sig. (2-tailed)		.067	.011	.627	.058	.015	.009
	N		110	110	110	110	110	110

Source: Developed by the paper authors, based on the research results

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Table 2. Level of Team Internationalization vs. Importance of Internationalization for Team Performance & Efficiency

			15. Different Nationalities	15. Different Languages	15. International Education Backgrounds	15. International Working Experience Abroad	15. Working with International Partners	15. Working with International Clients
11. Different Nationalities	Pearson Correlation		.310**	.271**	.288**	.219*	.106	.091
	Sig. (2-tailed)		.001	.004	.002	.021	.271	.346
	N		110	110	110	110	110	110
11. Different Languages	Pearson Correlation		.328**	.411**	.320**	.239*	.186	.173
	Sig. (2-tailed)		.000	.000	.001	.012	.051	.070
	N		110	110	110	110	110	110
11. International Education Backgrounds	Pearson Correlation		.221*	.138	.266**	.232*	.150	.187
	Sig. (2-tailed)		.021	.151	.005	.015	.118	.050
	N		110	110	110	110	110	110
11. International Working Experience Abroad	Pearson Correlation		.088	.160	.098	.178	.102	.138
	Sig. (2-tailed)		.360	.095	.307	.063	.288	.151
	N		110	110	110	110	110	110
11. Working with International Partners	Pearson Correlation		.232*	.307**	.227*	.223*	.416**	.460**
	Sig. (2-tailed)		.015	.001	.017	.019	.000	.000
	N		110	110	110	110	110	110
11. Working with International Clients	Pearson Correlation		.168	.287**	.198*	.253**	.405**	.455**
	Sig. (2-tailed)		.079	.002	.038	.008	.000	.000
	N		110	110	110	110	110	110

Source: Developed by the paper authors, based on the research results

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Table 3. Importance of Internationalization for Team Creativity vs. Importance of Internationalization for Team Performance & Efficiency

			15. Different Nationalities	15. Different Languages	15. International Education Backgrounds	15. International Working Experience Abroad	15. Working with International Partners	15. Working with International Clients
14. Nationalities	Different	Pearson Correlation	.490**	.418**	.442**	.506**	.500**	.548**
		Sig. (2-tailed)	.000	.000	.000	.000	.000	.000
		N	110	110	110	110	110	110
14. Languages	Different	Pearson Correlation	.527**	.651**	.430**	.423**	.321**	.411**
		Sig. (2-tailed)	.000	.000	.000	.000	.001	.000
		N	110	110	110	110	110	110
14. Education Backgrounds	International	Pearson Correlation	.464**	.404**	.574**	.588**	.559**	.522**
		Sig. (2-tailed)	.000	.000	.000	.000	.000	.000
		N	110	110	110	110	110	110
14. Working Experience Abroad	International	Pearson Correlation	.535**	.433**	.524**	.683**	.643**	.656**
		Sig. (2-tailed)	.000	.000	.000	.000	.000	.000
		N	110	110	110	110	110	110
14. Working with International Partners	with	Pearson Correlation	.406**	.372**	.380**	.538**	.728**	.713**
		Sig. (2-tailed)	.000	.000	.000	.000	.000	.000
		N	110	110	110	110	110	110
14. Working with International Clients	with	Pearson Correlation	.443**	.387**	.397**	.564**	.720**	.735**
		Sig. (2-tailed)	.000	.000	.000	.000	.000	.000
		N	110	110	110	110	110	110

Source: Developed by the paper authors, based on the research results

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Dr. Mindaugas LAUŽIKAS is a Professor at Vilnius University Business School, Doctor of Economic Sciences, Director of GILE Experts (Malta). Lecturing experience in countries, such as Georgia, Sweden, France, Spain, Italy, Malta, Moldova, South Korea and Lithuania, is supported by publications in the field of knowledge economy, entrepreneurship and innovation. Research interests: national systems of innovation, entrepreneurship, knowledge and innovation management, innovation and human resource strategies, business intelligence.

ORCID ID: <http://orcid.org/0000-0002-6113-7794>

Aistė MILIŪTĖ is a teacher/researcher at Vilnius University Business School and entrepreneur within the mineral water and healthcare industries, a founder of AKVAVITA company.

ORCID ID: <http://orcid.org/0000-0002-9667-3730>

Mukhammad KHALILI

ORCID ID: <http://orcid.org/0000-0003-2104-0696>

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ISSUES OF STATE AND NATIONAL SECURITY: RELIGIOUSLY INSPIRED TERRORISM IN THE BALTIC STATES INTERNAL AND EXTERNAL FACTORS

Anatolijs Kriviņš¹, Jānis Teivāns-Treinovskis², Vladas Tumalavičius³

^{1,2} Daugavpils University, Vienības Str. 13, Daugavpils, LV-5401, Latvia

³ The General Jonas Žemaitis Military Academy of Lithuania, Šilo Str. 5A, Vilnius LT-10332, Lithuania

³ Institute of Humanities and Social Sciences of Daugavpils University, Parades Str. 1, Daugavpils, LV-5401, Latvia

E-mails: ¹ anatolijs777@gmail.com ; ² janisteivans@inbox.lv; ³ vladas.tumalavicius@gmail.com

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Abstract. Global terrorism has become one of the most serious threats to the security in the world today. The number of suspects arrested for religiously inspired terrorism in the EU Member States increased approximately five-fold between 2009 and 2018. The aim of the paper is to evaluate the threats of Religiously inspired terrorism in the three Baltic States - Estonia, Latvia and Lithuania. The study was conducted using the methods of academic literature, statistical data analysis and qualitative content analysis. This study has applied quantitative technique and qualitative technique to explore the relationship between religiously inspired terrorism and relevant factors - Internal factors, Legal migration, Illegal migration, Participation in international missions and operations, Traveling to regions where terrorist groups have a stronger presence, Student exchange programs and foreign students, Employees from other countries e.c. The study has determined that the level of terrorist threats in the Baltics has not changed in recent years and remains relatively low. The Baltic States today is not a target for religiously inspired terrorism. The level of internal threat from existing religious communities has been low and remains low. No significant terrorism-related incidents have occurred in Estonia, Latvia and Lithuania in previous years. There is no reason to believe that these internal risks will increase in the near future. In turn, there are significant long-term risks associated with external threats. A balanced and neutral policy towards all religious denominations should continue in all Baltic countries. As a primary task, the authors conducted an analysis of a number of theoretical and practical tax incentives assessment models.

Keywords: national and state security; terrorism; illegal migration; security; religiously inspired terrorism; radicalization

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1. Introduction

Terrorism has been and remains one of the threats to the security and sustainable development of society since the end of the 20th century. Since the beginning of the 21st century, the manifestations of terrorism have intensified and take on various forms, including religious ones. The issues of terrorism were raised by many authors in previous studies (Teivāns-Treinovskis, Jefimovs 2012; Kis-Benedek 2016; Besenyő 2016; Avdeev et al. 2017; Beinoravičius, Vainiūtė 2017; Tumulavicius et al. 2017 (a); Tumulavicius et al. 2017 (b); Kordík, Kurilovská, 2017; Roško et al. 2019; Zeman et al. 2018; Beňová et al. 2019; Tvaronavičienė et al., 2020; Masood et al., 2020), but the question of the manifestation of terrorism on the basis of religious beliefs has not been studied much.

In the article, the authors defines terrorism as the use of intentional violence, generally against civilians, for political purposes (Fortna, 2015). Terrorism poses a real and serious threat to people's lives and is a menace for human rights and democracy. States have therefore a duty to protect society against terrorists and to take measures to prevent and punish terrorist activities effectively (Strasbourg, 2018).

Global terrorism has become one of the most serious threats to the security in the world today, endangering the lives of innocent people and society as a whole (MFA, 2019). The Global Terrorism Index (GTI) is a comprehensive study analysing the impact of terrorism for 163 countries and which covers 99.7 % of the world's population (Global Terrorism Index, 2018). According to the GTI 2018, the countries with the highest terrorism index (indicating the highest threat) are: Iraq (9.746), Afghanistan (9.391), Nigeria (8.660), Syria (8.315), Pakistan (8.181), Somalia (8.020), India (7.568), Yemen (7.534), Egypt (7.345), Philippines (7.181), Dem. Rep Congo (7.055), Turkey (7.036), Libya (6.987), South Sudan (6.756), Central African Republic (6.719) (Global Terrorism Index, 2018).

Terrorism, unemployment and the protection of the environment are the three policy areas where, on EU average, more than three-quarters of respondents call for more EU intervention in the future - respectively 77 %, 76 % and 75 % (Eurobarometer, 2019).

According to GTI data (Global Terrorism Index, 2018), the level of influence of terrorism in Estonia, Latvia and Lithuania is low enough: Latvia - 107th with index 0.458, Estonia 116th with index 0.229; but Lithuania ranked 138th with index 0.

This article evaluates the threats of religiously inspired terrorism in the three Baltic States - Estonia, Latvia and Lithuania. The number of terrorist arrests has grown and rapidly evolved in the European Union in recent years (Table 1). Particularly significant growth is in the religiously inspired terrorism segment.

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Table 1. Terrorist arrests by EU Member

Terrorist arrests / year	Religiously inspired terrorism	Ethno-Nationalist and separatist terrorism	Left-wing and anarchist terrorism	Right-Wing terrorism	Other: Single-issue terrorism and Non specified terrorism	Terrorist arrests by EU Member (Total)
2009	110	413	29	22	13	587
2010	179	349	34	1	48	611
2011	122	247	42	5	68	484
2012	159	257	24	10	87	537
2013	216	180	49	3	87	535
2014	395	154	54	34	137	774
2015	687	168	67	11	144	1077
2016	718	84	31	12	157	1002
2017	705	30	36	20	428	1219
2018	511	30	34	44	437	1056

Source: Developed by the authors according to the source Europol.

The number of suspects arrested for religiously inspired / jihadist terrorism in the eu member states increased approximately five-fold between 2009 and 2018: 110 persons in 2009, 179 in 2010, 122 in 2011, 159 in 2012, 216 in 2013, 395 in 2014, 687 in 2015, 718 in 2016, 705 in 2017 and 511 persons in 2018 (Europol, 2019).

The diversity of religion and beliefs is woven into the fabric of modern European societies. European countries have highly diverse traditions for and approach to religious diversity as well as the place of religion and non-religious beliefs in public space (council of Europe, 2016).

There are many different religions in the world and many atheists. In theory, a supporter of any religion can radicalize - adopt of “extremist” ideas that promote and eventually lead to acts of terrorism (Malthaner, 2017).

The reasons of terrorism and other conflicts are similar, but there are different means and ways. Three of them characterize terrorism: 1) intentional usage of violence, 2) directed to civilians or civil objects, 3) in order to achieve the political goals (Beinoravičius, Vainiūtė, 2017).

However, in the 21st century, it has become particularly popular to associate terrorism with Islam. The terrorist attacks in the united states in September 2001 (Smith, Zeigler, 2017), led to an increased fear of radical Islam and suspicion towards people of Arabic descent throughout Europe (Chisholm et al., 2011, 120).

In the European Union, there were many terrorist acts in the 21st century that raised the issue. For instance: in 2005 Danish newspaper published 12 caricatures of Muhammad. The cartoons led to attacks on Danish embassies and the embassies of other Nordic and European countries across the Middle East and North Africa. More than 100 people were reported to have been killed in clashes related to the demonstrations (CBC, 2015). In 2011 the offices of the French satirical magazine Charlie Hebdo in Paris have been destroyed in a petrol bomb attack. It comes a day after the publication named the prophet Muhammad as its “Editor-in-Chief” for its next issue. The cover of

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the magazine carried a caricature of the prophet making a facetious comment (BBC, 2011). In 2015 the deadly shootings in the Paris offices of Charlie Hebdo, a weekly news paper that caricatured the prophet Muhammad (CBC, 2015), left 12 people dead – including the top editor, prominent cartoonists and police officers (Bilefsky, Baume, 2015). In 2016 an assailant rammed a truck into a crowd celebrating Bastille Day in nice, France.

So, terror incidents lead many westerners to perceive Islam as interently extremists. However, one must agree that small numbers of terrorists make headlines, but they are representative of a complex and diverse religion of 1.6 billion adherents (Kristof, 2015).

European culture has always included Muslim elements, as early as the 8th century (Vaisse, 2008). The exact number of Muslims in Europe is unknown. Many European countries do not ask a person's religion on official forms or in censuses, it has been difficult to obtain accurate estimates (Kent, 2008). As show by statistics (Pew research center, 2011), the number of Muslims in Europe is growing and is projected to crow in the future. However, does this also mean an increase in the terrorist thtreat in the EU and the Baltics?

2. Methods

This study has applied quantitative technique and qualitative technique to explore the relationship between religiously inspired terrorism and relevant factors - Internal factors, Legal migration, Illegal migration, Participation in International missions and operations, Traveling to regions where terrorist groups have a stronger presence, Student exchange programs and foreign students, Employees from other countries e.c. For this purpose, data is collected from various sources including online data portals, annual reports and public discourse. Data is collected for the time period of 10 years (2009-2018) with annual observations. The study was conducted using the methods of academic literature, statistical data analysis and qualitative content analysis.

3. Internal factors

The Latvian polling agency SKDS has also gathered information regarding the religious affiliation of Latvia over the years. In 2018, 26 % of the population was Orthodox, 20 % identified as Catholic while 17 % was Lutheran, and 3 % were Old Believers. 14 % believed in God without being affiliated to any religion, while 15 % declared himself as atheist. A further 3 proc. belonged to other Christian sects or religions (Kaktins, 2018). If the persons to be married belong to the Evangelical Lutheran, Roman Catholic, Orthodox, Old Believers, Methodist, Baptist, Seventh Day Adventist or believers in Moses (Judaism) denominations and wish to be married by a minister of their denomination who has the relevant permission from the leaders of the denomination, then they shall be married in accordance with the procedures of the denomination concerned (The Civil Law, 1937, 51).

The predominant religion in Lithuania is Christianity, with the largest confession being that of the Catholic Church (about 77.2 % of the population) and smaller groups of Orthodox Christians (4.1 %, Orthodox - Old Believers (0.8 %), Evangelical Lutherans (0.6 %), Sunni Muslim (0.1 %) (Statistic, 2013). The Lithuanian state recognizes Islam (albeit only in its Sunni Hanafi rite) as one of the nine “traditional” religious communities in Lithuania (Racius, 2012, 171).

The following religions live in Estonia: Lutheran 9.9 %, Orthodox 16.2 %, other Christian (including Methodist, Seventh-day Adventist, Roman Catholic, Pentecostal) 2.2 %, other 0.9 %, none 54.1 %, unspecified 16.7 % (Statistic, 2011). The state's attitude towards the various religions is remarkably positive and the legislation concerning religious organisations is very liberal (Vakker, Rohtmetts, 2008).

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It should be borne in mind that the size of Muslim communities and the level of activity of these communities vary across the EU. As far as the Baltic States are concerned.

It should be borne in mind that the size of Muslim communities and the level of activity of these communities vary across the EU. As far as the Baltic states are concerned, Muslims in Latvia, Lithuania and Estonia have lived here for a long time. The arrival of adherents of the Islamic faith to the eastern Baltic rim dates back to the first part of the fourteenth century when thousands of recently Islamized Turkic-speaking Tatars started settling on the territory of the Grand Duchy of Lithuania (Racius, 2012, 171). The medieval Grand Duchy of Lithuania of the Polish–Lithuanian Commonwealth included several Muslim lands in the south. From the second half of the seventeenth century the situation in Lithuania was specific, because the aim of the annihilation of the Christians was not only ascribed to rabbinic Jews, but also to Karaites and Tatars-Muslims (Siauciunaite-Verbickiene, 2008).

The first few Muslims who settled in Estonia came as allies of Ivan IV during the Livonian War in 16th century and the first noteworthy Tatar community appeared in the 18th century (Lepa 2016, 193). A small community of Muslim Tatars was established in Riga in the late nineteenth century (Poljarevic, Svanberg, 2009, p.103).

The Muslim communities in the Baltic States are not large. In 2011 the total Muslim population in Latvia was estimated at about 5000 (Stasulane, Priede 2015, 65) and 1,508 in Estonia (but there is still reason to believe that the real figure is today closer to 4,000) (Lepa, 2016, 195). Currently, only several thousand Lithuanian Tatars remain, making up an estimated 0.1 proc. of the country's population. However, with the restoration of Lithuanian independence, they are experiencing a kind of national revival with evidence to suggest there are several hundred non-Tatar converts to Islam (Racius, 2013).

It should be noted that only converts who convert to Islam under the influence of radical ideas and are ready to prove their allegiance to the new religion by violence can display a security threat. The current discourse on radicalisation, however, is based on a strong association between terrorism and Islam, especially fuelled by far-right parties and groups. This only causes more fear and mistrust in societies, from which follows all the more racism and segregation, providing again a fertile ground for radicalisation (Gruening, 2018). The great divide is not between faiths. Rather it is between terrorists and moderates, between those who are tolerant and those who “otherize” (Kristof, 2015).

In the contemporary Western climate, counter-terrorism discourse dealing with so-called Islamic extremism appears to be obsessed with trying to understand the motives behind what prompts somebody to turn to terrorism (Sian, 2017). In this respect, the author of the article shares the view that the radicalization of one Muslim shouldn't be viewed as representative of the whole Muslim community (Latvian Public Broadcasting, 2016). There are many individuals with extreme opinions, but only a slight fraction of them ever take measures to perform a terrorist attack (Zeman et al., 2018). In 2017, Latvia's Muslim community mainly engaged in private activities and did not have a direct impact on security. The vast majority of Muslims in Latvia are law abiding, loyal members of society. However, it has identified several members of the community who take an interest in radical interpretation.

So far, Muslim communities in the Baltic States have not promoted violence and the immediate threat of terrorism. However, threats can come from outside. For example, according to National Threat Assessment, radicalization of the Lithuanian Muslim community could be externally induced by representatives of foreign controversial Islamic organizations and movements exploiting its division and eager to alter local traditions,

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promote radical interpretation of Islam, attempt to seize the leadership of the Muslim communities and create isolated groups (National Threat Assessment, 2019).

The dialogue between Christian and non-Christian religions is nearly non-existent and there seems to be no will to intensify interrelations. If problems emerge, the representatives of the various religions turn to the state rather than discuss them among themselves (Vakker, Rohtmets, 2008).

Predicting these types of terrorist acts is difficult enough. Members of different social groups, irrespective of gender, age, ethnicity or occupation, may be at risk of radicalization (OSCE, 2014). In this sense, the most important terrorist threat in the Baltic States is the potential radicalization of individuals under the influence of various ideologies justifying violence. In this context the most likely threat continues to be lone individuals or pairs inspired by jihadist ideology (Bergen, Sterman, 2019).

Although the threat from indigenous residents is low, there are several contact points with countries with a terrorist threat. Therefore, the follow-up to the article will look at different groups whose religious radicalization is more likely than existing communities.

4. Legal migration

According to Kis-Benedek (2016), the connection between illegal migration and terrorism is in the focal point of security dilemmas since the beginning of the flow of migration. 2015 year saw record-breaking levels of forced migration; over 60 million individuals were pushed from their homes. Neither the refugees nor the better life seeking are terrorists. The refugees look for protection against persecution often perpetrated by terrorists. However it should be taken into consideration that the terrorist organizations can use the illegal migration to send operatives to the target countries.

There's no avoiding the risk that people connected with terrorism may arrive in Latvia, Lithuania or Estonia, but it's a risk that can be dealt with by conducting thorough background checks. If we are dealing with the situation in the EU, we need to pay attention to official statistics. When analyzing migration volumes, observing the national context is key for a correct reading of the results, as European averaged results would hide the manifold nuances in national situations (Eurobarometer, 2019). The Baltic States have been very sensitive to immigration from outside the European Union and stringent about maintaining their ethnic balance, as well as protecting their languages and cultures. The Migrant Integration Policy Index (MIPEX) has continuously noted the anti-immigrant sentiment that exists in all three Baltic countries (Birka, 2019). Under a 2015 EU plan to allocate asylum seekers more equitably across the bloc, Estonia, Latvia, and Lithuania were obliged to accept 1,679 refugees in total. Despite this relatively small number, the issue of refugees has been deeply unpopular in the Baltics, contributing to the governments' sluggish response in meeting quotas and hesitation to pledge to take in more refugees. For example, in 2018 Latvia granted refugee status to just 23 individuals (Birka, 2019).

To prevent them from becoming attached to radical ideologies, it's important to integrate the immigrants into society in a timely and systematical manner. Journalists of the Public media of Latvia followed the results of the pilot project lasting for half a year in Jelgava, where the local government provided support to refugees and persons acquiring the alternative status, providing them with a dwelling. Thus 450 asylum seekers can be currently placed at the same time in the asylum seekers accommodation centre in Mucenieki (Silina-Osmane, 2018). In Estonia, the policy for a new database was worked out that would store all of Estonian residents' fingerprints and possibly other biometric data in order to make document fraud and false identity usage

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impossible (EMN, 2019). Estonia decided to maintain its immigration quota, which was fulfilled already in January 2019 (EMN, 2019). Finally, refugees who do end up in the Baltics often move on to wealthier EU countries (Birka, 2019).

On the other hand, it must be concluded that asylum seekers from countries at risk or in conflict do not aspire to the Baltic States. The salary disparity between the Baltic countries and Western Europe, as well as the unfavorable popular perception about the economic situation of the countries, makes it highly unlikely that migration will significantly increase (Birka, 2019). The number of migrants residing in Latvia, Lithuania or Estonia, is not significant by Western European standards (Subhan, 1998). The analysis carried out shows that the threat to Baltic security from asylum seekers - both in number and in citizenship - is currently minimal.

However, it must be borne in mind that migration and the perceived threat from Islamisation are key topics on the agenda of right-wing extremists (Europol 2017). In this case, terrorism is directed against migrants and refugees or those supporting them, motivated by racist political ideologies and anger against policies promoting integration or universal access to entitlements (Gruening, 2018).

In 2015, there were some incidents in the Baltic States that affected this topic. 09/03/2015: Assaultants set fire to an asylum seekers' center in Vao village, Laane-Viru County, Estonia. No one was injured, but the center was slightly damaged in the blaze. No group claimed responsibility for the incident (Global Terrorism Database, 2019). On September 24, 2015 the Riga municipal police broke up an unsanctioned Muslim outdoor prayer in a Brivibas Street courtyard attended by around 30 men for violating the public statutes on organization of public entertainments and festive events (Krenberga, 2015). On September 27, unknown persons painted islamophobic title in English on a wall of a mosque in Riga. Commenting the incident, representatives of the Latvian Islam Cultural Centre drew attention to increasing level of Islamophobia in Latvia and called mass media to be more careful in the way information regarding Islam is presented (LCHR, 2015).

5. Illegal migration

Alongside the problem of official migration, there is the problem of illegal migration, which can significantly increase the risks of terrorism. For example, in Latvia, 104 third-country nationals were detained in 2017 for irregularly crossing the green border (in 2016 - 369; in 2015 - 463, in 2014 - 139; in 2013 - 49; in 2012 - 79, in 2011 - 38; in 2010 - 7, in 2009 - 49; in 2008 - 56 and in 2007 - 17). The key groups of detained persons consisted of the nationals of Vietnam, Bangladesh, India and Iraq.

Both the EU and the Baltic States are contributing to the strengthening of border control. For example, in Bulgaria, a joint operation with neighboring Greece was carried out. In Latvia, a joint project with Lithuania and Estonia was implemented for the development of a common information exchange mechanism (EMN, 2019). The Council of the European Union adopted on 6 December 2018 a common set of operational measures to more effectively target migrant smuggling criminal networks. Furthermore, a Western Balkans task force was set up that included Balkan countries. The Joint Operational Office organised a conference to share good practices for combating smuggling and trafficking in human beings and launched the Internal Security Fund (ISF) supported 'Silk Road' project in 2018, with the goal of combating irregular migration and people smuggling concerning Afghanistan, Iran, Pakistan and Turkey. Further partners in the project were Bulgaria, Hungary and Interpol (European Migration Network, 2019).

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The EU is taking some steps to regulate migration flows, however *as* controls tighten over the direct route from Greece into continental Europe, the route through Moldova, Ukraine and into the Baltic may become more popular (Sytas, Mardiste 2016). In any case, however, the Baltic States are not the target, but transit countries for illegal migration.

6. Participation in international missions and operations

Estonia, Latvia and Lithuania participate in the EU Civilian and Military Operations, the NATO Military Operations and the Organization for Security and Cooperation in Europe (OSCE). For example, Estonia first began participating in international operations in 1995. Estonia has participated in the NATO peace support mission in Kosovo (KFOR – Kosovo Forces) since 1999. Estonia began its military involvement in Afghanistan in 2002 in the US-led Operation Enduring Freedom. Since 2003, Estonia participated in the NATO-led International Security Assistance Force (ISAF). Estonian Defence Forces serve in the United Nations MINUSMA mission in Mali since September 2013. Estonian Defence Forces infantry platoon and staff officers serve in UN peacekeeping mission in Lebanon since May 2015. Starting in 2015, Estonia is taking part in the European Union military operation EUNAVFOR MED. Estonian Defence Forces participate in the Inherent Resolve operation in Iraq since 2016. Estonian officers have participated as military observers in Middle-East with UNTSO (United Nations Truce Supervision Organisation). Estonian observers are serving in rotations in Israel, Lebanon and Syria. Since 1996, when Latvian soldiers first participated in operation in Bosnia and Herzegovina managed by NATO, Latvia has got involved in all NATO operations in the Balkans, Iraq and Afghanistan (MD, 2019). Thus, Lithuania's contributions to international and NATO operations began in 1994.

This review shows that the Baltic States are actively involved in international operations, including in countries with a large number of terrorists (Iraq, Afghanistan, Syria). Certainly, participation in such missions poses some risks. Several specific incidents can also be mentioned in this context: 11/04/2010 - in Nyala, Janub Darfur, Sudan, eight gunmen kidnapped three Latvian helicopter crew members in a Nyala neighborhood. The two pilots and one mechanic were working for the World Food Program and were taken to an unknown location by motor vehicle. No casualties were reported and the hostages were released unharmed on 12/08/2010 in an unknown area of Sudan. No group claimed responsibility for the attack (Global Terrorism Database, 2019).

01/24/2012 - An explosive device detonated, targeting a patrol of soldiers taking part in a North Atlantic Treaty Organization (NATO) operation in Nad Ali district, Helmand province, Afghanistan. An Estonian soldier was injured in the attack. No group claimed responsibility for the incident. 05/03/2012 - An explosive device detonated next to a North Atlantic Treaty Organization (NATO) Special Operations Squadron in southern Afghanistan. Three Lithuanian soldiers were injured in the blast. No group claimed responsibility for the attack. 09/19/2013 - Assailants fired on a European Union Rule of Law Mission in Kosovo (EULEX) convoy near Zvecan village, Kosovska Mitrovica district, Kosovo. One EULEX officer from Lithuania was killed in the assault. No group claimed responsibility for the attack. 11/18/2018 - Assailants fired missiles at a North Atlantic Treaty Organization (NATO) base housing Lithuanian forces in Kandahar, Afghanistan. No casualties were reported in the attack. No group claimed responsibility for the incident (Global Terrorism Database, 2019).

Theoretically, participation in international missions could increase the risk of terrorist acts on the territory of the Baltic states, as retaliation by terrorist organizations (such as the Madris bombings of 11 March 2004). However, such risks can be assessed as sufficiently low for a number of reasons. *First of all*, the military presence of the Baltic States, and thus the influence on the course of events, is not large in international missions; *secondly*, they do not form missions in the Baltic States, but join them. *Third*, terrorist's acts are a complex and labor-intensive

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process, but the Baltic territory is neither a European political nor an economic center where terrorists can achieve a particular terrorist effect. No matter how attractive it may seem, the Baltic States should not exclude themselves from international processes, because only by providing a helping hand to other nations can they count on the support of other countries, if necessary.

7. Traveling to regions where terrorist groups have a stronger presence.

Another key factor in radicalization is traveling to regions where terrorist groups have a stronger presence. Analysis of terrorist trends indicates that traveling to regions where terrorist groups have a stronger presence can facilitate people's exposure to the violent ideology preached by terrorist groups and the establishment of contacts with terrorists. Upon their return, they may adversely affect the security interests of the Baltic.

The number of Europeans travelling as foreign terrorist fighters (FTFs) to the conflict areas in Syria and Iraq, the intensive use of the internet and social media in propaganda and recruitment activities, and the terrorist attacks in EU Member States directed or inspired by terrorist organisations, have caused a major increase in the number of cases at Europol concerning “crimes committed or likely to be committed in the course of terrorist activities against life, limb, personal freedom or property” - a development that is not expected to come to a halt soon (Eurobarometer, 2019). Considering the seriousness of the threat and the need, in particular, to stem the flow of foreign terrorist fighters, it is necessary to criminalise outbound travelling for the purpose of terrorism, namely not only the commission of terrorist offences and providing or receiving training but also the participation in the activities of a terrorist group (Directive, 2017). EU Member States may also decide to address terrorist threats arising from travel for the purpose of terrorism to the Member State concerned by criminalising preparatory acts, which may include planning or conspiracy, with a view to committing or contributing to a terrorist offence (Directive, 2017).

8. Student exchange programs and foreign students

International students constitute a group of migrants that does not provoke resistance in receiving societies and are generally viewed positively. States compete to attract the brightest students, create favorable conditions for their arrival and stay (IOM, 2012). Yet despite the importance of this topic, this specific group of migrants (IOM, 2012) was not properly researched from the terrorist threat perspective. It should be noted that extremists are also very active in and around universities, where they can find opportunities for recruitment (Europol, 2017). The British government has identified universities as a key site for recruitment by extremist organizations (Choudhury, 2017).

The numbers of internationally mobile students are increasing (MDP, 2018). There were at least 1.6 million students from abroad who were undertaking tertiary level studies across the EU in 2016 (Eurostat, 2018). In the academic year 2018/2019, there are 80,400 people studying at Latvia's universities of colleges as compared to 81,600 students in the previous academic year. At the same time, the number of mobile students (those who acquired previous education abroad) has continued to growing significantly. There are currently 8,400 mobile students in Latvia, which is 11.7 % more than last year and 60.8 % more than in 2014 when such statistics was compiled for the first time (Balticcourse, 2019). For example, the number of foreign students at Riga Technical University has grown substantially over the past few years, rising to over eight years - there are students from 80 different countries including Uzbekistan, Kazakhstan, Mauritius, Thailand, Bhutan and Vietnam (RTU, 2018).

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2018 saw a noticeable rise in the number of international students who started their studies in Estonia – the increase for international admission was nearly 25 % (Piliste, 2019).

There are around 5000 foreign students (both - from EU and non EU nationals) studying in Estonia (840 in 2005; 901 in 2006; 885 in 2007; 908 in 2008; 1027 in 2009; 1282 in 2010; 1573 in 2011; 1876 in 2012; 2230 in 2013; 2887 in 2014; 3476 in 2015; 3917 in 2016; 4395 in 2017 and 5047 in 2018). Top 10 countries of foreign degree students in Estonia are follows: Finland, Russia, Nigeria, Ukraine, Turkey, India, Bangladesh, Georgia, USA, Latvia (Piliste, 2019).

According report of Education Monitoring and Analysis Centre, between 2013 and 2017, the number of foreign students enrolling in higher education institutions in Lithuania increased by 15 %. In total 10246 foreign students enrolled in higher education institutions in 6 years. (EMAC, 2018). In 2019 Vilnius Gediminas Technical University welcomed new full-time degree seeking international students from 58 countries, including Egypt, Ecuador, the United Arab Emirates and Kazakhstan (Studyin, 2019).

The above data show that students from countries at risk of terrorism are also studying at universities and colleges in the Baltic States: (Iraq, Nigeria, Syria, Pakistan, India, Egypt, Philippines, Turkey, Libya). The number of such students is sufficiently large. For example, in Latvia, during the 2018/2019 academic year 2070 students from India (24.7 % of the total number of mobile students) studied.

According Mol and Ekamper (2016), students from Southern Europe seem to mainly move within their own region, as well as towards Eastern Europe. This pattern might be related to similarities between localities in terms of costs of living, culture and/or climate. Students from the Baltic States also study in different regions of the world. Analyzing the countries with which the Baltic States implement going student exchange programs, it can be concluded that it does not present a real and significant terrorist threat. However, particular attention should be paid to Turkey, which may be considered a country with a significant presence of terrorist groups and is a potential point of contact with extremists. Exchange programs with Turkey are sufficiently intensive. Analysis of the trends in terrorism suggests that long-term residence in these regions could theoretically lead to a radical interpretation of Islam or even to building contacts with terrorist groups there. This, in turn, could adversely affect the security interests of the Baltic upon their return.

9. Employees from other countries

The number of foreign nationals, who reside permanently and have been employed in the country, has increased by 18 percent in Lithuania in five years, from 12.7 thousand (in 2014) to 15 thousand (in 2018). Whereof, about 6.8 thousand were hired in Lithuania both in 2014 and 2018 (GSAC, 2019). In 2018, the total number of foreign nationals employed in Lithuania was about 57 thousand, mostly foreigners on a temporary basis (42 thousand). Another part (15 thousand) consisted of foreigners who permanently reside in Lithuania.

Number of foreigners working in Latvia grows steadily. However, data say people from more exotic countries such as India, the Philippines and China have also received work permits. By 2014 a total 5,502 work permits had been issued to foreign nationals. The figure grew to 6,165 in 2015 and 7,590 in 2016. By January 1, 2017 a total 8,625 permits were active with 3,875 issued to non-EU nationals. The number of issued work permits has grown by 56 proc. within four years (Pelane, 2017). Number of foreign specialists in Estonia continues to increase. For instance, in 2018 there was a total of 2794 temporary residence permits for employment given to non-EU

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nationals, which is an increase big increase compared to 2017 (Work Estonia, 2019): 863 in 2013; 1237 in 2014; 1659 in 2015; 1800 in 2016; 2272 in 2017 and 2749 in 2018.

In theory, foreign workers can also contribute to the risks of religious terrorism. In practice, however, the exercise of this option is complicated by lengthy bureaucratic procedures. In the past ten years, there have been no cases in the Baltic involving Employees from other countries engaging in religious terrorism.

Conclusions

The level of terrorist threats in the Baltics has not changed in recent years and remains relatively low. While the European Union has seen a series of attacks by individuals and groups inspired by jihadism, the Baltic States today is not a target for religiously inspired terrorism. No significant terrorism-related incidents have occurred in Estonia, Latvia and Lithuania in previous years. The level of internal threat from existing religious communities has been low and remains low. There is no reason to believe that these internal risks will increase in the near future.

In turn, there are significant long-term risks associated with external threats. In the Baltic States, the focus should be on terrorist threat offenses, such as attack directed from abroad: legal migration and illegal migration, participation in international missions and operations, traveling to regions where terrorist groups have a stronger presence, student exchange programs and foreign students and employees from other countries.

There are currently no persons, groups or organizations using terrorist methods in the context of religious ideas in the Baltic countries. However, all of these groups are more exposed than the rest of the population to the risk of radicalization, which could be facilitated both by their potential contacts in terrorist-threatened countries and by terrorist propaganda on the Internet. The threat of religiously motivated terrorism, both in the Baltics and around the world, is not linked to religion as such, but to the individual's understanding of the religion, worldview and psychology involved in terrorist activities. No religion can be dangerous in itself unless its adherents call for violence or commit violence, seeking religious support to justify their terrorist activities. A balanced and neutral policy towards all religious denominations should continue in all Baltic countries.

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Anatolijs KRIVIŅŠ, Dr. iur., Asoc. Prof. at the Daugavpils University. Research interests: criminology, terrorism, corruption, criminal justice.

ORCID ID: <https://orcid.org/0000-0003-1764-4091>

Jānis TEIVĀNS-TREINOVSKIS, Dr., jur., Dean at Daugavpils University. Research interests: criminology, terrorism, corruption, criminal justice.

ORCID ID: <https://orcid.org/>

Vladas TUMALAVIČIUS, Ph.D. at The General Jonas Žemaitis Military Academy of Lithuania; researcher at the Institute of Humanities and Social Sciences of Daugavpils University, Latvia. He has the status of Expert of the Latvian Council of Science in the fields of Law and of Economics and Entrepreneurship; Expert of the Foundation for Polish Science under Measure 4.4 of the Smart Growth Operational Programme 2014-2020 and Expert of Polish National Agency for Academic Exchange. Research interests: Legal Regulation of Public Safety and Administration; Issues of National, State and Regional Security and Sustainability.

ORCID ID: <https://orcid.org/0000-0002-0811-0074>

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MANAGEMENT OF WATER SCARCITY IN ARID AREAS: A CASE STUDY (ZIZ WATERSHED)*

**Ismail Elhassnaoui¹, Zineb Moumen², Manuela Tvaronavičienė³, Mohamed Ouarani⁴,
Mohamed Ben-Daoud⁵, Issam Serrari⁶, Ikram Lahmidi⁷, M.A.S. Wahba⁸,
Ahmed Bouziane⁹, Driss Ouazar¹⁰, Moulay Driss Hasnaoui¹¹**

^{1,10,11}Mohammadia School of Engineers, Mohammed V University in Rabat, Morocco

²Laboratory of Functional Ecology and Environment, Faculty of Sciences and Technologies, University of Sidi Mohammed Ben Abdellah, Fès B.P. 2202 – Route d'Imouzzar, Fes, Morocco

³Daugavpils University, Vienibas Str. 13, Daugavpils LV-5401, Latvia

⁴International Water Research Institute (IWRI), Mohammed VI Polytechnic University (UM6P), Ben Guerir 43150, Morocco

⁴Dep. of Soil, Water, and Climate, Univ. of Minnesota, Upper Buford Circle, St. Paul, MN 55108, USA

⁵Moulay Ismail University faculty of sciences, Meknes, Morocco

⁶Ministry of Agriculture and Fisheries, Marrakech, Morocco

⁷Intelligence systems laboratory, Georesource and renewable energy, Faculty of Sciences and Technologies, University of Sidi Mohammed Ben Abdellah, Fès B.P. 2202 – Route d'Imouzzar, Fes, Morocco

⁸International Vice president Honorary of International Commission on Irrigation and Drainage and Prof Emirate, National Water Research Center (NWRC), Egypt

⁹Ministry of Equipment, Transport, Logistics and Water, Rabat, Morocco

E-mails:¹is.elhassnaoui@gmail.com; ²moumenzineb18@gmail.com; ³manuela.tvaronaviciene@vilniustech.lt;

^{4,5}ouara001@umn.edu; ⁶bendaoud.mohamed304@gmail.com; ⁷serrari.issam@gmail.com; ²Ikram.lahmidi@usmba.ac.ma;

¹bouziane.ahmed@gmail.com; ¹ouazar@emi.ac.ma; ⁹hasnaouimd@gmail.com

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Abstract. The 2030 Agenda for Sustainable Development aims to reach 17 Sustainable Development Goals (SDGs). The SDGs 6 deals with water security, which refers mainly to ensure availability and sustainable management of water. The present study aims to enhance reservoir performance under climate change to deal with water scarcity. For this purpose, we proposed a new methodology where precipitation and evaporation data provided through temporal downscaling are leveraged by a real-time management algorithm coupled with the Hydrologic Modeling System (HEC-HMS). The real-time dam management algorithm is based on water balance equation and rule curves. It provides information about (1) dam storage, (2) dam release, (3) dam evaporation, (4) dam diversion, (5) spilled water volume, (6) emergency spilled water volume, (7) dam inflow, (8) irrigation demand, (9) irrigation shortage, (10) dam siltation, (11) dam hydropower production, (12) hydropower energy income. The developed approach has been applied to the Hassan Addakhil multipurpose reservoir in Morocco. The result shows that the dam reliability and resilience have increased from 40% to 70% and from 16% to 66%, respectively, while the vulnerability remained constant. Additionally, this study has pointed out that the installation of a hydropower plant is an opportunity to produce clean electrical energy and generate an income enough to cover different costs related to dam management and maintenance. Therefore, the real-time management tool developed in the framework of this project can significantly enhance reservoir performance.

Keywords: Climate change; SDGs (6); Temporal downscaling; Real-time dam management; Hydropower; Dam performance; Ziz watershed

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1. Introduction

According to the IPCC's Vth Report, 80% of the world's population faces a water security crisis (Jiménez Cisneros et al., 2015). Furthermore, renewable surface water and groundwater resources will significantly decrease in most dry subtropical regions (Kaito et al., 2000). The water security crisis will intensify water stress among agriculture and energy production. For the 2000-2080 future period, crop water demand will increase by 20%, under the A2 scenario (Fischer et al., 2007). Moreover, (Gain, 2016) shows that Africa will experience a very high water security crisis, which needs integrated strategies focusing on water management, enhancing water accessibility, water safety, and quality (Fig.1).

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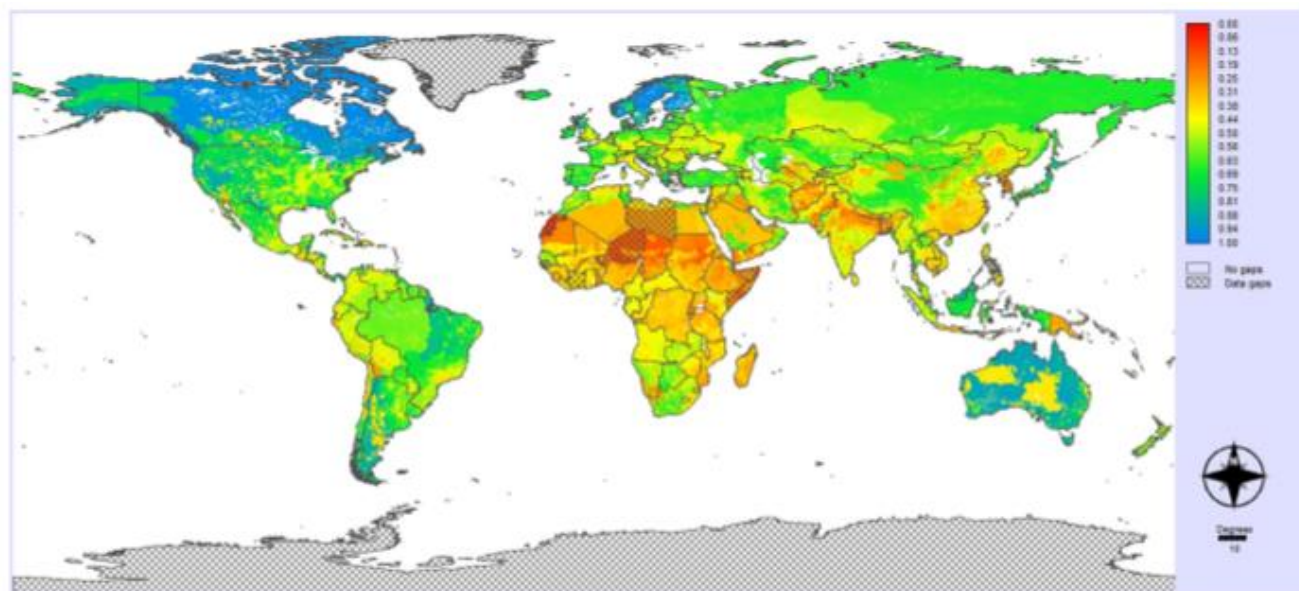


Fig. 1: Global water security index (Gain, 2016)

From 2000 to 2015, UN members have adopted the Millennium Development Goals (MDGs). This program concerns emerging countries. It aims eight goals: poverty, hunger, disease, unmet schooling, gender inequality, and environmental degradation. Indeed, the (MDGs) concludes at the end of 2015, and global awareness about sustainable development brings a set of Sustainable Development Goals. In September 2015, the United Nations members adopted the 17 Sustainable Development Goals (SDGs), which concern all the world. The 6th goal deals with water security in a way to ensure availability and sustainable management of water and sanitation for all (Sachs, 2012).

Morocco is a Mediterranean country located in northwestern Africa, bathed in the North by the Mediterranean Sea and in the West by the Atlantic Ocean. The kingdom covers an area of 710850 km², with a population estimated to 35 M according to the 2014 census. Due to the topographic conditions, the influence of the Atlantic Ocean and the Mediterranean Sea, the climate in Morocco is variable (Fig 2). Based on Emberger's quotient (Condés & García-Robredo, 2012; Mokhtari et al., 2013), the climate in Morocco ranges from Humid bioclimatic stage to Saharan bioclimatic stage (Fig. 2). Indeed, 80% of the country's area experiences precipitation less than 250 mm/year (Morocco, 2014). The availability of freshwater per capita in Morocco is below 1000 m³ per person per year, which makes it one of the African countries suffering from water scarcity, according to (Falkenmark et al., 1989), per capita availability of renewable freshwater resources index. Based on the future projections of regional climate model RACMO2/KNMI, (Philandras et al., 2011) shows that the mean annual precipitation within Morocco will decrease between -40% to -50% during the period 2071–2100. In this context, Morocco is one of the countries highly treated by water security problems (Bank, 2017). To overcome this problem, Morocco has adopted a dam policy since 1960. This policy increased the number of large dams from 16 to 128 by 2009, mobilizing 11.7 billion m³. Furthermore, the kingdom is planning to build three new large dams to reach an additional 1700 million m³ per year by 2030 (Afilal, 2017). Moreover, Morocco has strengthened the legal water frame by adopting Law 10-95 in 1995 and Law 36-15 in 2016, aiming to ensure water security and strengthen decentralized water management. (Afilal, 2017; Avellà-Reus, 2019; Molle, 2017).

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Moving to dam construction to guarantee water security begins in the 19th century (Shah & Kumar, 2008), which leads to the construction of 50.000 large dams in the 20th century (Sparrow et al., 2011). Dams are multiobjective in a way to guarantee agriculture demand, water supply (Zhao et al., 2012), Hydroelectric production, and flood control (Elhassnaoui et al., 2020). However, (Karami & Karami, 2019) and (Okkan & Kirdemir, 2018) show that, under RCP8.5 projections, reservoir inflow will decrease, in the Mediterranean in a way to alter the reservoir's sustainability. Therefore, sustainable management of existing dams become a real challenge for decision-makers (Karami & Karami, 2019). Then we need a better approach to enhance the performance of the existing dams (Tiğrek et al., 2009).

In this sense, linear and dynamic algorithms are required for boosting dam's operation to meet downstream demands (Hejazi & Cai, 2011). Many studies have developed models based on a water balance equation as an alternative to water resource management. (Tinoco et al., 2016) carried out a study over the Macul basin in Ecuador to maintain the sustainable balance between irrigation and river ecology. The results show that meeting irrigation demand supposes that the decision-makers should adopt for deficit irrigation and the modification of spillway dimension (Saha et al., 2017). A reservoir operation function under the HEC-5 model was proposed to analyze a system of reservoirs at a daily time step using the water balance equation. (Silva & Hornberger, 2019) developed a model that can better enhance dam performance by the optimization of irrigation satisfaction and hydropower demand. The model is based on the water balance equation at a monthly time step.

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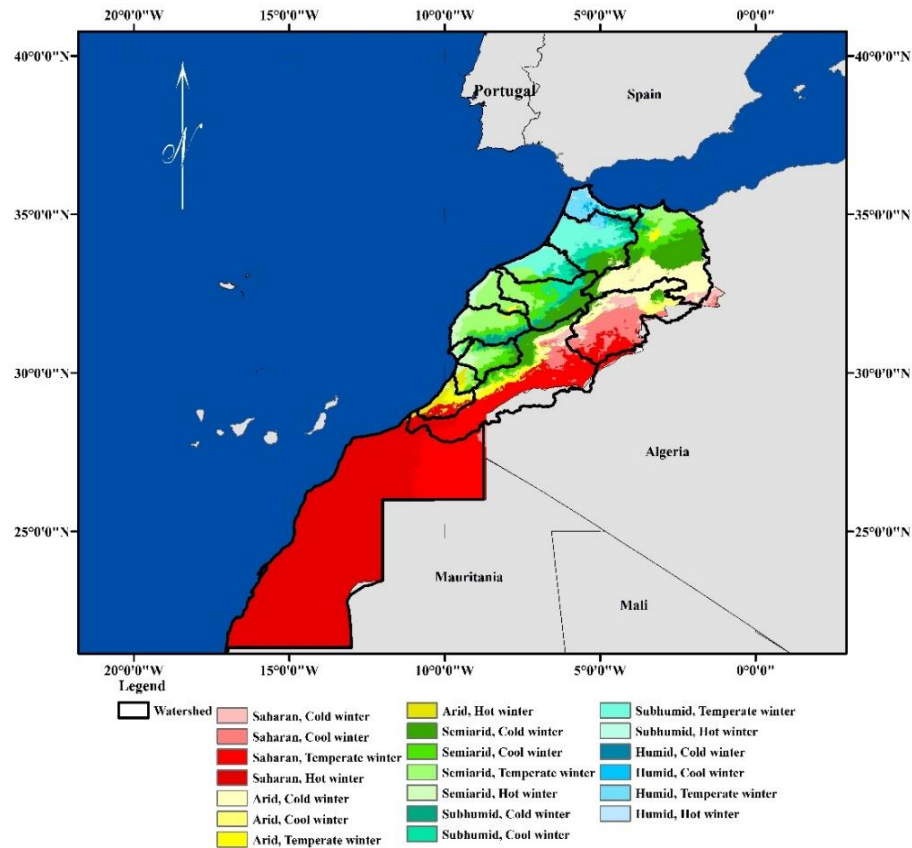


Fig. 2: Bioclimatic stages of Morocco according to Emberger's quotient

The algorithm enhanced the multipurpose reservoir cascade system in Sri Lanka based on the reliability, resilience, and vulnerability indicators. (Jaiswal et al., 2020) propose a model based on a water balance equation coupled with the Soil and Water Assessment Tool (SWAT) model for efficient dam releases. The study was conducted over the Tandula dam in India at a daily time step. (Jingwen Wu et al., 2020) developed a reservoir operation function in the Soil and Water Assessment Tool (SWAT), based on a water balance equation at a daily time step. (Dong et al., 2020) de-veloped a model able to regulate dam storage best. The results show that the model can better re-locate surplus stream flow in the wet season to the dry season and mitigate the extreme events. Furthermore, optimizing models were developed for overcoming extreme events impact and enhancing the dam performance models. (Anand, Gosain and Khosa 2018; Appuhamige and Susila; Guariso, Haynes & Whittington 1981; Milano et al. 2013; Omar, 2014; Wu & Chen 2013).

In this study, we propose a real-time dam management algorithm based on water balance and rule curves as a constraint condition to guarantee an optimal water policy. This model is coupled with the Hydrologic Modeling System (HEC-HMS), and a precipitation temporal downscaling model developed by HEC-HMS has been proposed for hydrological modeling to provide hourly inflows to the dam. The precipitation temporal downscaling model based on a combination of Intensity-duration-frequency curves (IDF) and designed hyetograph of Chicago, was used to provide hourly precipitation. Furthermore, to assess the water balance at an hourly time step, hourly evaporation was estimated by temporal downscaling of monthly evaporation, using polynomial regression. The

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real-time dam management tool was conducted through VB.net. This tool provides information about (i) dam storage, (ii) dam release, (iii) dam evaporation, (iv) dam diversion, (v) spilled water volume, (vi) emergency spilled water volume, (vii) dam inflow, (viii) irrigation demand, (ix) irrigation shortage, (x) dam siltation, (xi) dam hydropower production, (xii) hydropower energy in-come.

2. Study area

The study was carried out in Hassan Addakhil's Dam (Fig.3), which regularizes Ziz watershed out-flow. Indeed, across this watershed outlet, the Hassan Addakhil dam was built in 1971, with a capacity of 347 million m³. Furthermore, this dam ensures irrigation supply and flood control essentially.

The extreme hazards in the Ziz basin caused longer and more intense periods of drought and extremely wet years, as was the case in 2010, when the dam spilled for a few months. The climate change effect makes the management of the Hassan Addakhil dam a sensitive issue (Guir-Ziz-Rheriss, 2010). According to the Representative Concentration Pathway RCP 8.5, inflow to the Hassan Addakhil dam will decrease by -30% in 2050 (Ezzine, 2017).

Figure 4 shows that over the period (1939-2003), the regular dam inflow is very low. However, the reservoir is exposed to some extreme inflow, which may present a flood risk. Indeed, the rectangle of each boxplot represents the interquartile range. Its length and position relative to the lower and upper bounds indicate the consistency and dispersion of the recorded values: the shorter the rectangle, the more homogeneous and less dispersed the values are. In the studied case, for all months, the boxplot's rectangles are close to the minimum value. Besides, the boxplots have a length much less than the maximum of the boxplot. Hence most of the recorded values are relatively small and not widely dispersed. For example, for October, 75% of the dam inflow is less than 20.00 million m³, and 25% of the values are between 160.00 million m³ and 20.00 million m³.

Boosting the performance (Reliability, resilience, and vulnerability) indicators and flood control are the main goals for real-time dam management. Wu et al. (2020) has developed a daily dam operation function under SWAT, but the novelty of this work is to develop hourly dam management, which can provide hourly information about the dam and simulate the forecasted reservoir inflow to assess future irrigation supply.

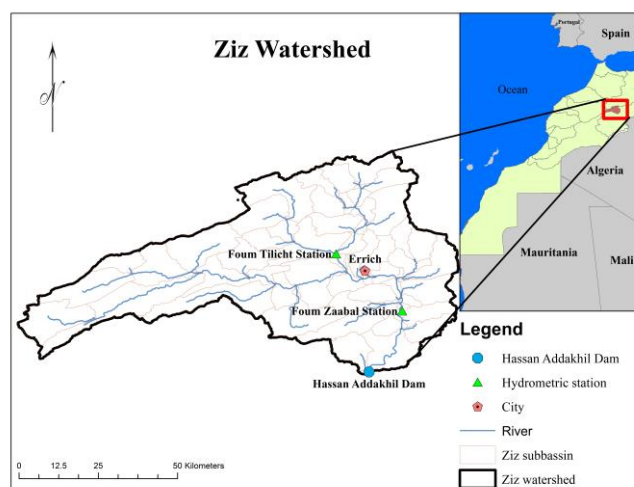


Fig. 3: Upper ZIZ watershed

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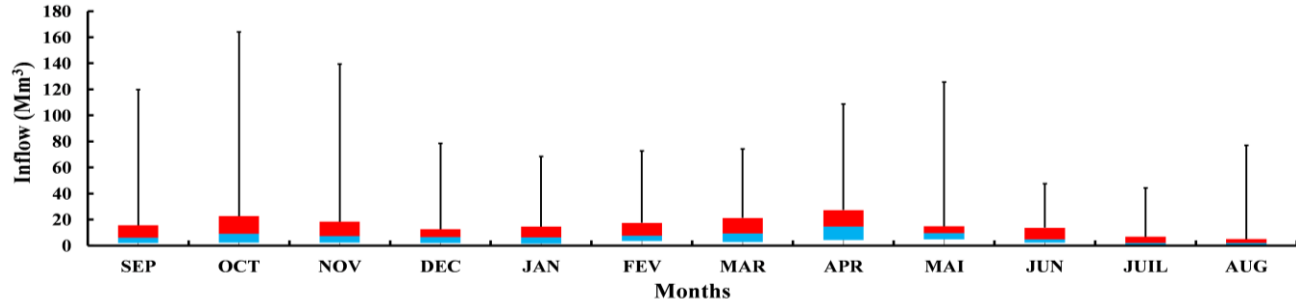


Fig. 4: Hassan Addakhil monthly inflow (Mm³) over the period 1939-2003

3. Material and methods

The operational management program aims to reduce the water release loss and highlight the opportunity to produce hydroelectric energy. The overall objective of this study is to propose a model that can assess real-time water resource management as an alternative to enhance that dam performance. For Hassan Addakhil Dam, the leading indicator that can measure the performance of the proposed model is the satisfaction of the irrigation demand with the minimum of water supply loss. The program was developed under visual basic and contains four modules, (1) loading input data module, (2) Height Area Volume curve interpolation module, (3) data analyzing and treatment module, (4) the data display module. The chart below demonstrates the algorithm's primary structure (Figure.5).

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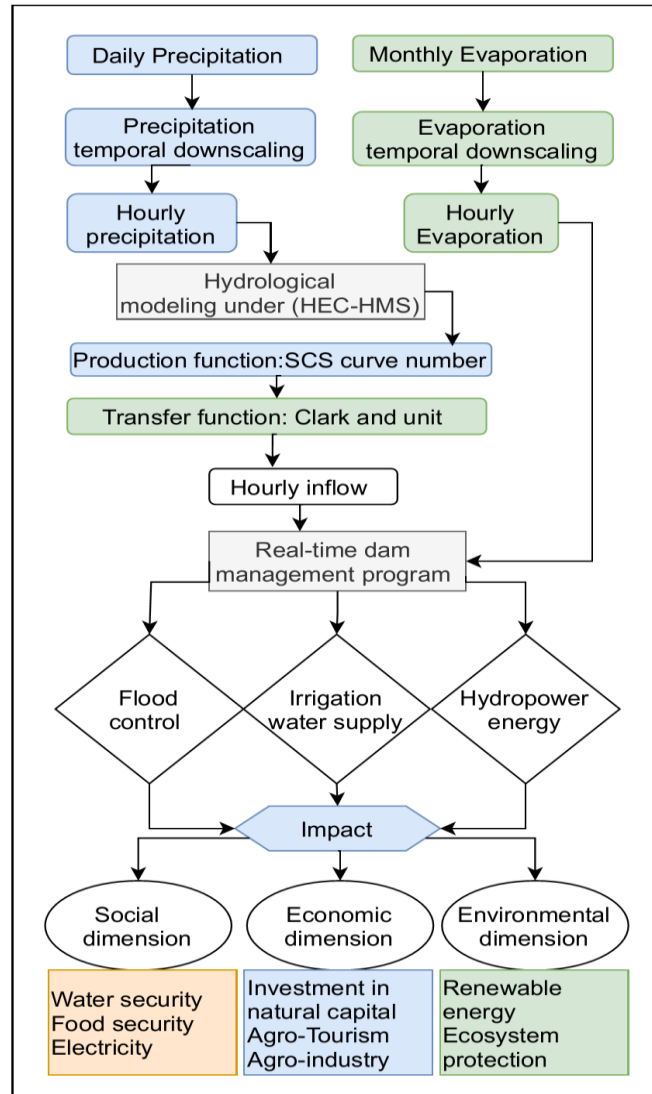


Fig. 5: Schematic diagram of real-time dam management model processing

3.1 Precipitation data and temporal downscaling

The daily maximum rainfall data were provided by the hydraulic basin agency of Guir-Ziz-Rheris over the period 1982-1993 (the most available data) of the rain stations of Zaabel and Foun Tillicht. The key input parameters of this study are the instantaneous precipitation. The precipitation temporal downscaling method used to downscale daily precipitation was conducted using a syn-thetic design storm hydrograph, developed by (Elhassnaoui et al., 2019). The approach consists of the mixture of the Intensity-duration-frequency curves (IDF) and the designed hyetograph of Chi-cago (Elhassnaoui et al., 2019).

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3.2 Dam Data:

Dam release and storage data, Height-Area-Volume curves, and dam design characteristics were provided by the hydraulic basin agency of Guir-Ziz-Rheris over the period 1983-2002

3.3 Evaporation data and temporal downscaling

The monthly evaporation data were provided by the hydraulic basin agency of Guir-Ziz-Rheris over the period 1983-2002. In situ evaporation observations, data, and Height-Area-Volume curves for the Hassan Addakhil dam were conducted to assess the correlation between evaporation as an independent variable and water surface as a predictor variable. This correlation is assessed for every month over the period 1983-1993 using two-degree polynomial regression. After that, hourly evaporation data was provided using the two-degree polynomial function. The downscaling approach was validated using observed data over the period 1983-2002. Nash-Sutcliffe Efficiency (NSE) was used to assess the significance of the downscaling method.

3.4 The evaluation of hourly siltation:

According to the Agency of the hydraulic basin Ziz Ghir Rheriss and Draa, the annual rate of the dam siltation is 1.99 million m³ / year. Thus, we convert the rate of siltation per year to a rate per hour.

3.5 Hydrological modeling

In this study, we used the same hydrological model calibrated and validated by (Elhassnaoui et al., 2019) in the same watershed under HEC-HMS.

3.5.1 GIS data

The digital elevation model (DEM) has been derived from the following features: ASTER Global Digital Elevation Model (ASTER GDEM). The DEM is used to estimate the physical parameters that control water flow, such as slope, the longest flow path.

3.5.2 Land Use and soil data

The Land Use map was extracted from a Global cover map, a European Space Agency project (ESA) (Bicher et al., 2008). The soil map was obtained from the National Institute of Agronomic Research in Morocco (INRA)

3.5.3 Hydrological Model structure:

The SCS curve number method is used as a Production function, and the Clark and unit are used as a transfer function. The temporal downscaled precipitations are introduced to the model to estimate the discharge at the watershed outlet, in a way to assess the hourly dam inflow. The goal of the current step is to estimate the hourly water supplies at HASSAN ADD-AKHIL's dam, employing the rain-flow transfer model, in this case, HEC-HMS (W.Scharffenberg, 2016). The methodology followed consists on conceptualizing the physical characteristics of the basin studied, using the HEC-GEOHMS extension to export them to the HEC-HMS hydrological modeling. In the presented case, Ziz Ghir watershed has a semi-arid climate where the dry season lasts from 6 to 8 months (ABH-Ziz-Guir-Rheriss, 2018), then to estimate the water runoff the soil conservation curve number method (SCS-CN) (USDA, 1986) was chosen. The SCS model described as:

Equation 1: SCS equation

$$R = \frac{P_e^2}{P_e + S}$$

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In which:

$$\begin{aligned} P_e &= P - I_a \\ I_a &= \alpha S \quad (3) \\ S &= \frac{2.540}{CN} - 25.4 \end{aligned}$$

Where:

R: cumulative runoff, P: cumulative rainfall; P_e : effective cumulative rainfall, S: potential maximum retention, I_a : initial abstraction, α : initial abstraction coefficient, CN: curve number.

Once excess precipitation is known, it is transformed into the direct runoff. The HEC-HMS platform has several transfer functions: unit hydrographs of Clark, Snyder and SCS, user-defined hydrographs, Modclark transformation, and kinematic wave. Among these methods, the unitary hydrograph of Clark is frequently used for event modeling. This method is particularly useful for reproducing complex hydrographs, in basins with varied topography and land use (Sabol, 1988) (Chu et al., 2009)

Visual examination of the simulated hydrographs could give a previous idea about the quality of the simulation, but it is required to use the evaluating equation to assess the capacity of the rain-flow model to reproduce flood episodes. Those are described in detail in the paper of (Moriasi et al., 2007), the comment and the widely used coefficient is Nash (Nash & Sutcliffe, 1970), it is expressed as follows

Equation 2: The Nash-Sutcliffe Efficiency

$$EF = 1 - \frac{\sum_{i=1}^n (Q_{obs,i} - Q_{sim,i})^2}{\sum_{i=1}^n (Q_{obs,i} - \overline{Q_{obs}})^2}$$

Where,

$Q_{obs,i}$: Observed discharge, $Q_{sim,i}$: Simulated discharge, $\overline{Q_{obs}}$: Mean of the observed discharge, n : Number of the observed discharge.

3.5.4 Evaluation of the hydrological model performance:

The hourly dam inflows simulated using HEC-HMS was validated with the observed dam inflows over the period 1983-1993. The Nash-Sutcliffe Efficiency indicators were used to assess the accuracy of simulated hourly dam inflows.

3.6 Crop water demand

The irrigation demand in Ziz downstream is estimated by 100 million m³, according to Tafilalet ORMVA. Indeed, the crop water demand is generally 1000 m³ / ha (Hammani et al., 2012). The dam release program depends on the vegetation cycle of the cultivated species. Indeed, the dam release is following this schedule:

- 1st release: October – November
- 2nd release: January
- 3rd release: March – April
- 4th release: July – August

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3.7 Hydropower production:

The Hassan Addakhil dam was designed primarily to ensure irrigation demand and flood control. However, this section aims to highlight the opportunity to produce hy-droelectric energy over this dam, and how the hydropower income can cover the dam maintenance charges. We propose to integrate a hydropower plant to the Hassan Ad-dakhil to enhance the sustainability mission of the dam. In this sense, we designed a hydropower plant. The characteristics of the hydropower station are as follows:

- Discharge of power plant: The maximum discharge.
- Hydraulic charge: The difference between the water level and the hydropower plant level. The head power value is estimated by calculating the water head corresponding to the average useful dam reserve of 1988-2009 years.
- Efficiency: Efficiency of the turbine-generator set which varies between 0.6 and 0.9
- Installed Capacity: The installed capacity is the sum of the rated capacities of all the units in the power plant.

The hydropower production function is as follow:

$$P = \rho . g . \eta . Q . H$$

Where:

P : Hydropower production (kW), ρ : Density of water (kg.m³), g : Acceleration gravity (m.s⁻²), Q : Discharge of the power plant (m³.s⁻¹), H : Effective head (m), η : The hydropower plant efficiency

3.8 Flood control:

The real-time information about the dam inflow can be simulated to provide information about the reservoir outflow. Real-time dam management can assess the outflow discharges and estimating the water volume lost. Hourly dam diversion information can help the decision-maker to avoid flood risk.

3.9 Real-time water management tool:

The real-time water management program was conducted using VB.net. Fig.6 shows the program interface.

Indeed, the interface is composed of four sections: 1) the dam parameter section, 2) the hydropower plant section 3) the data loading section, and finally 4) the dam management processing.

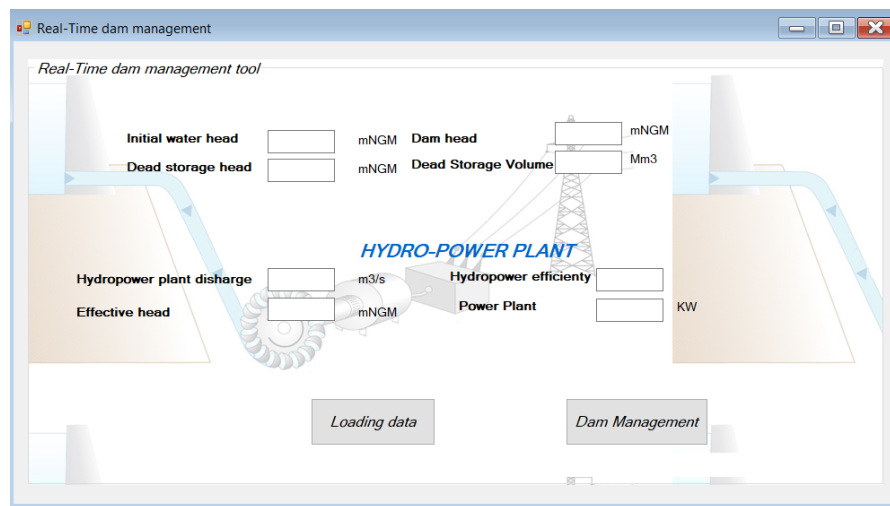


Fig. 6: Program interface of Real-time dam management tool (Source: authors)

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3.9.1 Water balance equation:

The real-time dam management program is based on the water mass balance equation (Eq3). The water balance equation aims to update dam storage at an hourly time step, including dam inflow, dam outflow, evaporation volume, irrigation release, water volume spilled, and water volume evacuated. Fig.7 shows the real-time dam management algorithm operation.

Eq 3: the water mass balance equation

$$S_{i+1} = S_i + (Q_{if(i+1)} + Q_{if(i)}) \times \frac{\Delta T}{2} - (Q_{of(i+1)} + Q_{of(i)}) \times \frac{\Delta T}{2} - V_{evp} - V_{spill} - V_{evac} - F_{Irr}$$

Where S_{i+1} : Reservoir storage at $i + 1$ time, S_i : Reservoir storage at i time, $Q_{if(i+1)}$: dam inflows at $i + 1$ time, $Q_{if(i)}$: dam inflows at i time, ΔT : Hourly step, $Q_{of(i+1)}$: Dam outflow at $i + 1$ time, $Q_{of(i)}$: Dam outflow at $i + 1$ time, V_{evp} : Evaporated volume, V_{spill} : Spilled volume, V_{evac} : Emergency Evacuated volume, F_{Irr} : Irrigation Supply.

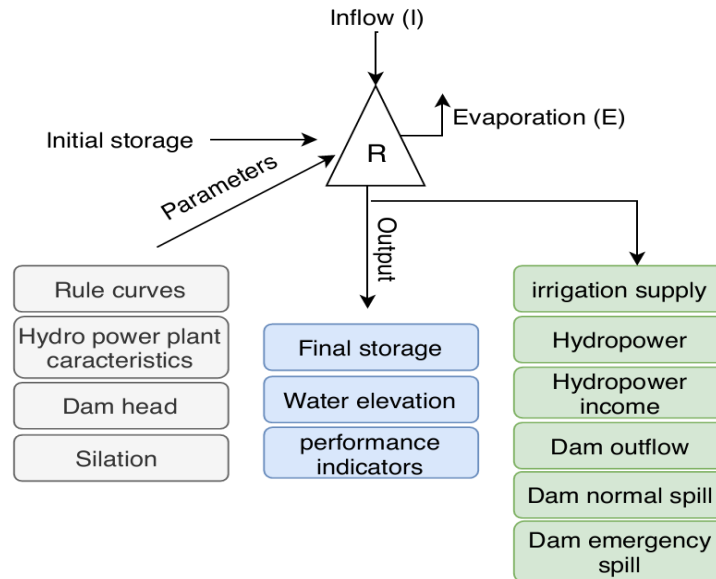


Figure.7: Real-time dam management algorithm operation

3.9.2 Rule curves:

The dam rule curves are used to guarantee the reservoir safety as well as water security. Many studies have developed rule curves for flood control (Chaleeraktragoon & Chinsomboon, 2015) and dam operating (Thongwan et al., 2019). Furthermore, using these curves is a way to guarantee an optimal water policy (De Silva M. & Hornberger, 2019). (Fig.8) shows that the real-time dam management program will release 100% of irrigation demand when the dam capacity is above the storage segmentation 1 (SG1). Else if the dam capacity is between the storage segmentation 1 (SG1) and the storage segmentation 2 (SG2), 70% of the irrigation demand will be released. Else if the dam capacity is between the storage segmentation 2 (SG2) and the dead storage, 50% of irrigation demand will be released.

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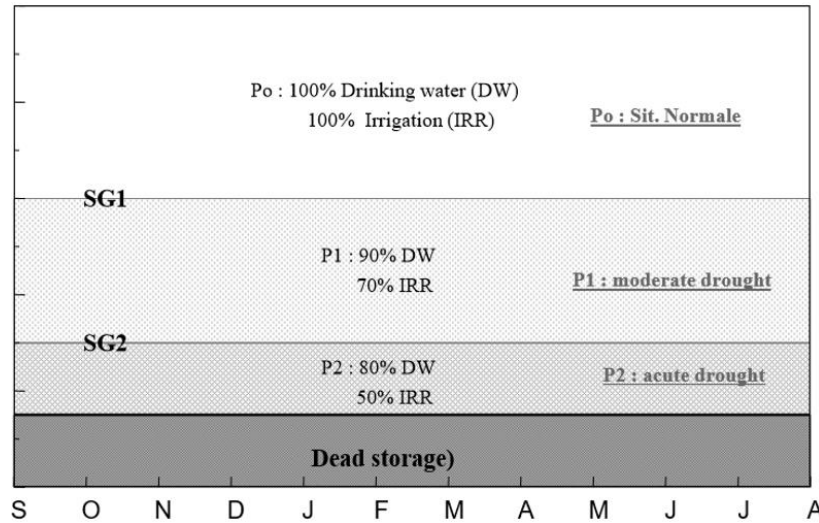


Fig. 8: Rule curve schema based on Moroccan hydrological season (Source: Ministry of Equipment, Transport, Logistic and Water)

3.9.3 Real-time dam management model validation:

The real-time dam management model is validated over 1983-1993 to confirm its ability to reproduce the dam storage. The Nash-Sutcliffe Efficiency indicators were used to assess the accuracy of simulated dam storage compared with observed storage data over this period.

3.9.4 Reservoir Performance Indicator

The dam performance is assessed by three indicators Reliability, resilience, and vulnerability. Indeed, reliability is the success of providing demands. Resilience describes how the dam recover from a failure and vulnerability describes the intensity of failure (Ajami et al., 2008; De Silva M. & Hornberger, 2019; Hashimoto et al., 1982). The volume reliability is the number of successful hydrological year $X(t)$ that the dam meets the downstream demand over a period T

Equation 4: Reliability

$$Reliability = \frac{\sum_{t=1}^T X(t)}{T}$$

The resilience is the dam's potential to recover $Y(t)$ from a failure $T - \sum_{t=1}^T X(t)$ to meet downstream requirement over a period T

Equation 5: Resilience

$$Resilience = \frac{\sum_{t=1}^T Y(t)}{T - \sum_{t=1}^T X(t)}$$

The vulnerability describes the maximum number of successive failures, which highlight the severity of dam failure.

Equation 6: vulnerability

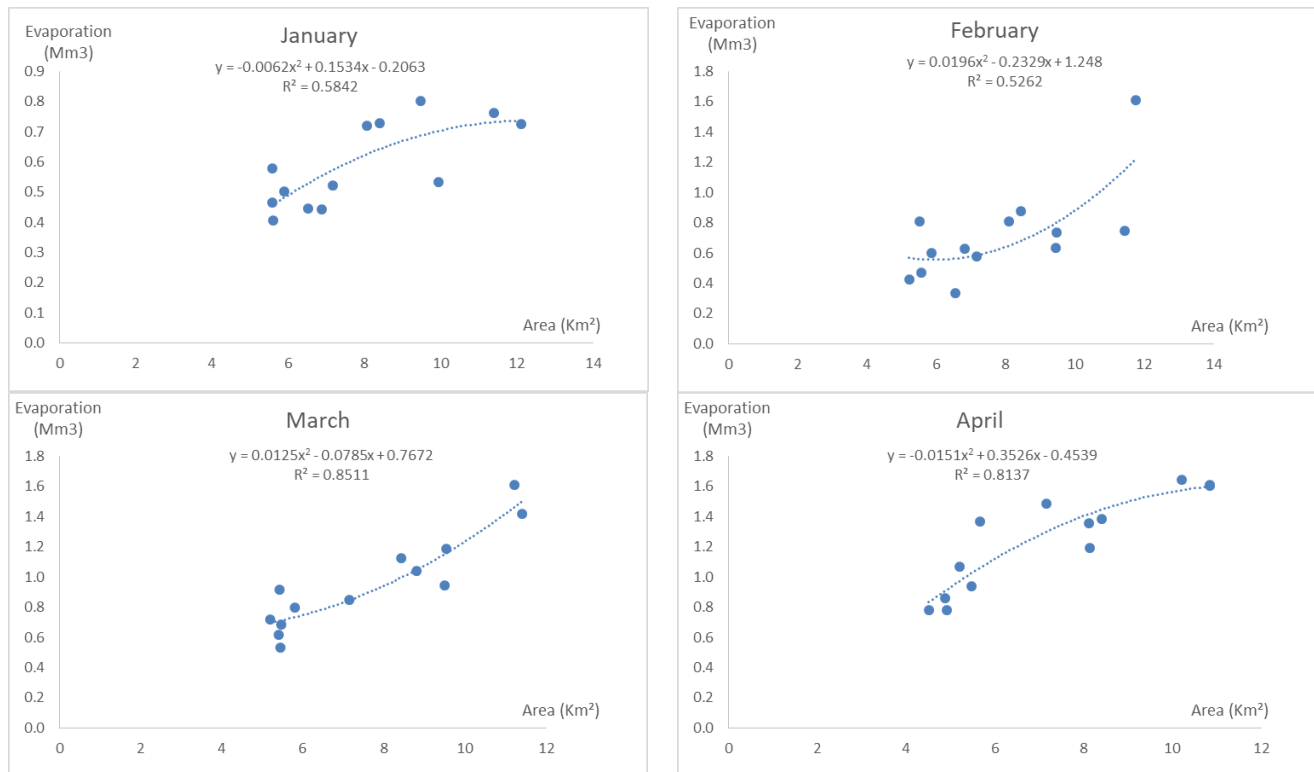
$$Vulnerability = \max(V(t))$$

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4. Result and discussion:

4.1 Temporal Evaporation downscaling:

Many studies have performed multiple regression methods and method of fragment for temporal downscaling of hydro climatic data. (Sachindra & Perera, 2018) performs the desegregating of annual evaporation to monthly evaporation using method of fragment. Monthly disaggregation consists on estimation of the ration of the evaporation value in a given month to the total evaporation value over the year. Other authors' performs the same approach in desegregating corpse temporal hydro climatic data (Rebora et al., 2016; A. T. Silva & Portela, 2012). Furthermore many authors shows that multiple regression lead to a good accuracy in temporal downscaling of hydro climatic data (Contreras et al., 2018; Herath et al., 2016; Hofer et al., 2015; Sharifi et al., 2019). In this study, the temporal downscaling method was processed by evaluation of the accuracy of the dam area with degree two polynomial regressions to predict evaporation from monthly to hourly scale. Fig.9 shows that the R square R^2 ranges from 0.42 to 0.93, with an average of 0.73. The R square metric for all months is significant and proves that the dam area can best fit evaporation in polynomial regression.



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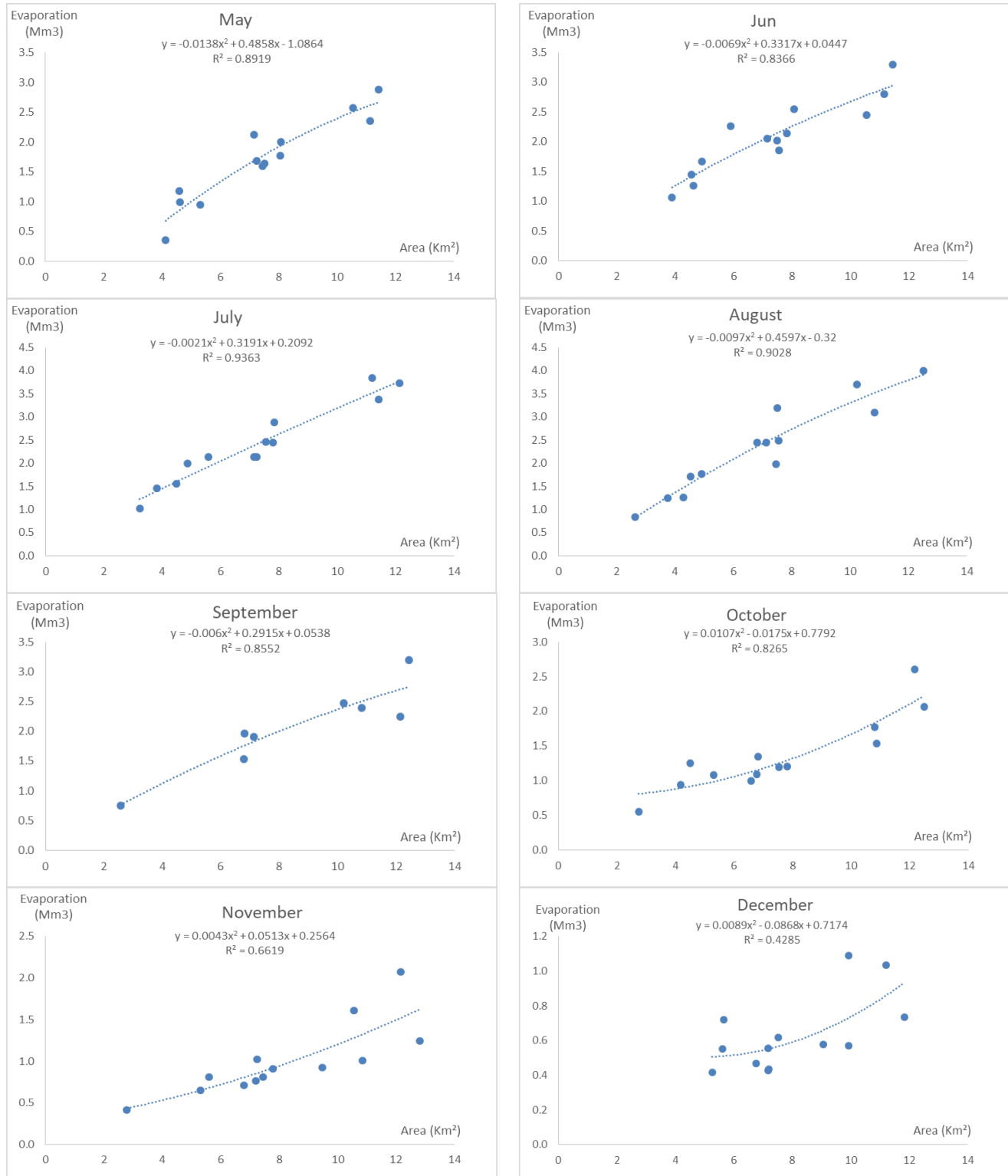


Fig. 9: The trend curve for the reservoir evaporation or month by month over the period 1983 and 2002

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4.2 Validation of temporal evaporation downscaling:

The observed evaporation in the Hassan Addakhil dam, over the period 1982-1993, was considered for the validation of downscaled evaporation using a polynomial trend equation. The Nash-Sutcliffe Efficiency (NSE) for the result of simulated and observed evaporation data is 0.84, which is very significant in terms of the evaporation downscaling model accuracy (Fig.10 and Table 1).

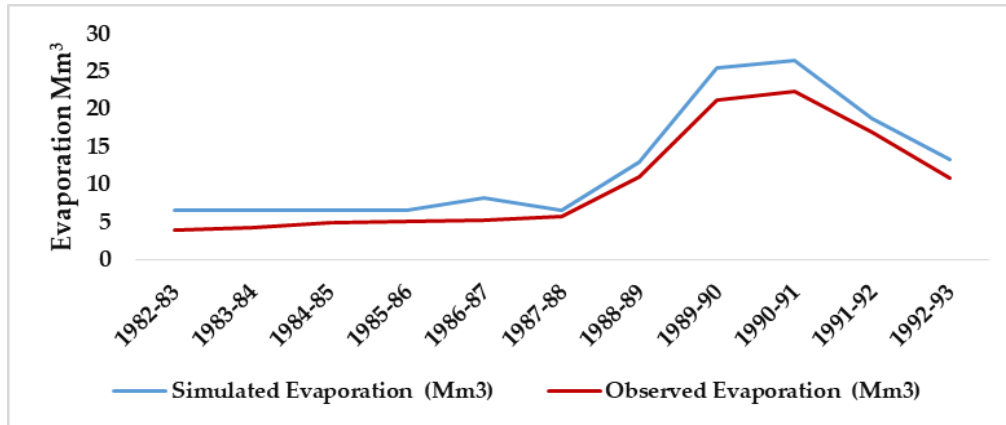


Fig. 10: Comparison between downscaled and observed evaporation

Table 1: Modeling Efficiency for evaporation downscaling over the period (1982-1993)

Period	Watershed	Evaporation	NSE
1982-1993	Upper Ziz	Hourly Evaporation validation	0.84

4.3 Evaluation of the hydrological model performance:

The hourly water supplies at HASSAN ADD-AKHIL's dam was conducted through HEC-HMS software, using SCS-CN method. Many studies have been widely used the SCS-CN method for application in continuous rainfall modeling, in arid, subtropical and tropical regions (Geetha et al., 2008; Gumindoga et al., 2017; Halwatura & Najim, 2013; Hrissanthou & Kaffas, 2014).

The SCS loss model is adapted to account for the initial humidity conditions of watersheds in the event modeling scale. The parameter CN can indeed be linked to different soil moisture indicators, measured in the field (Huang et al., 2007; Brocca et al., 2009; Trambly et al., 2010), derived from models (Merchandise and Viel, 2009) or satellite data (Brocca et al., 2010). Based on the simulated water supply to the dam, the real-time dam management tool was validated in terms of dam inflow (Fig.11). The Nash-Sutcliffe Efficiency (NSE) for the result of temporal inflow provided by the HEC-HMS model and the observed data over the period 1982-1993 is 0.79 (Table 2). The NSE is significant. The same method was carried out by (Jaiswal et al., 2020)

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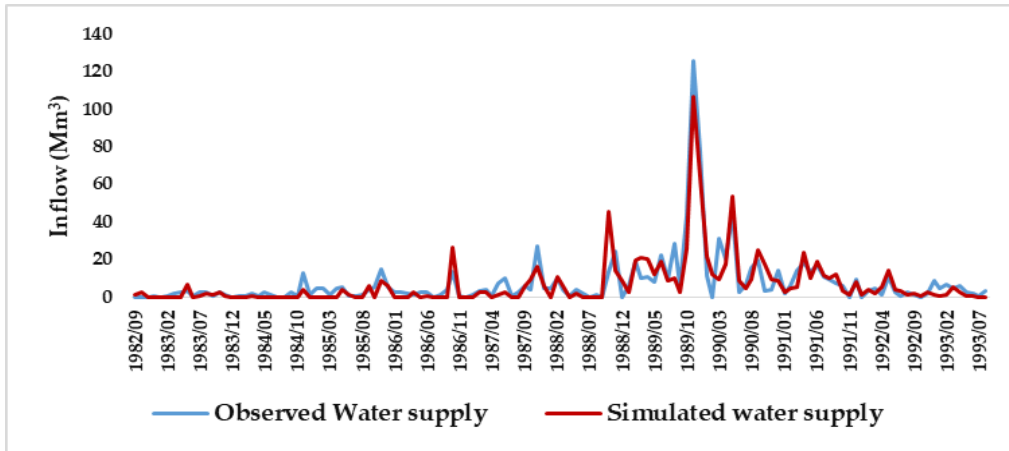


Fig. 11: Comparison between Simulated and observed water supply for HASSAN ADD-AKHIL dam

Table 2: Modeling Efficiency (EF) of dam inflow over the period (1982-1993)

Period	Watershed	Outlet	NSE
1982-1993	Upper Ziz	Hassan Addakhil dam	0.79

4.4 Real-time dam management model validation:

The comparison between observed and the simulated dam's storage over the period 1982-1993, shows that the real-time dam management algorithm can accurately model the dam storage (Fig.12). Indeed, the Nash-Sutcliffe Efficiency (NSE) for the observed and the simulated dam storage over the period 1982-1993 data is 0.96, which is very significant (Table 3). The validation of the dam management model was carried out as well using the Nash-Sutcliffe Efficiency indicator by (Jaiswal et al., 2020; T. Silva & Hornberger, 2019).

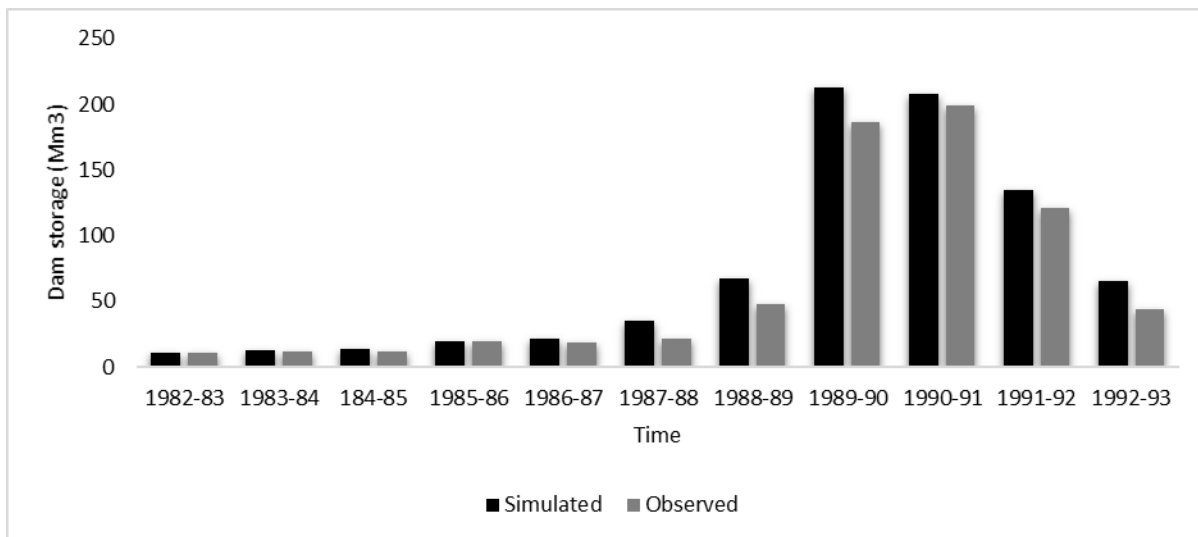


Fig. 12: Comparison between simulated and observed dam storage between the period (1982-1993)

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Table 3: Modeling Efficiency (EF) of dam storage over the period (1982-1993)

Period	Watershed	Dam storage	NSE
1982-1993	Upper Ziz	Hassan Addakhil dam storage simulation	0.96

4.5 Real-time dam management performance:

The real-time dam management tool enhanced dam performance. Comparison based on agricultural demand satisfaction over the drought period ranged from 1983 to 1992 (Fig13) shows that real-time dam management tool has enhanced the dam release by an average of 18.33 million m³, which represents 20% of the agricultural demand in Ziz downstream over a hydrological season. Indeed, over the same period, the lower dam release volume increased from 4.9 million m³ to 13.1 million m³, and the high dam release volume increased from 54.8 million m³ to 89.64 million m³.

On the other hand, it can remedy to water release losses. Over the period 1987-1991, the model provides the agricultural requirement without water release losses, however, over the same has released an average surplus of 32 million m³, which represents 32 % of agricultural demand over a hydrological season. Moreover, in 1992 the model algorithm has succeeded in meeting the agricultural demand. However, classical dam management has failed to satisfy the agricultural requirement for the same year.

Based on the rule curves and the water balance equation performance at an hourly time step, table 4 shows that the dam reliability and resilience have increased respectively, over the period 1982-1992, from 40% to 70% and from 16% to 66%. Besides, vulnerability remained constant during the same period. The same indicators was performed by (Saha et al., 2017; T. Silva & Hornberger, 2019) to assess the dam performance.

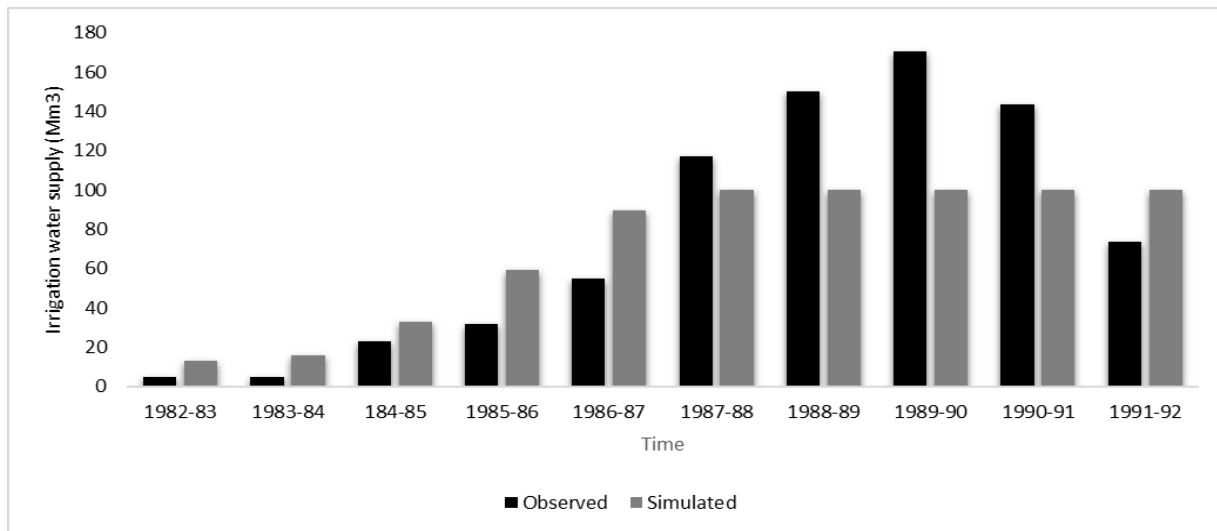


Fig. 13: Comparison between observed and simulated irrigation water supply

Table 4: Dam performance indicators

	Reliability	Resilience	Vulnerability
Classical dam management	40%	16%	5
Real time-dam management	70%	66%	5

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4.6 Hydropower production

The annual electricity consumption is 0.5 tonne of oil equivalent TEO / inhabitant (Taoumi, 2008). Besides, the average annual simulated hydropower production over this period is 57.64 GWH, which is equal to the annual consumption of 9912 inhabitants. In the case of a moderately rainy year, the hydropower production will be 89.4 GWH, which is equal to the annual consumption of 14857 inhabitants (Fig.14).

The average annual income from hydropower supply between 1982 and 1992 is equal to 57.6 Million Dirham. The decision-maker must take into account this vital budget to cover all expenses, including dam maintenance (Fig.15).

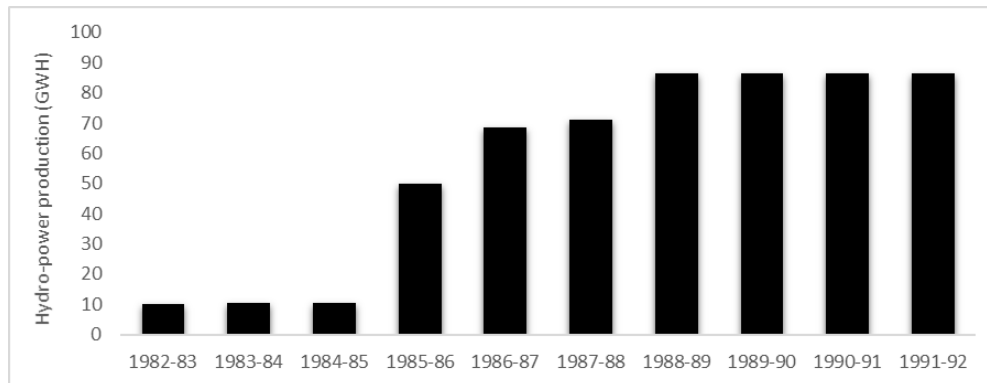


Fig. 14: Hydropower production (GWh) over the period (1982-1992)

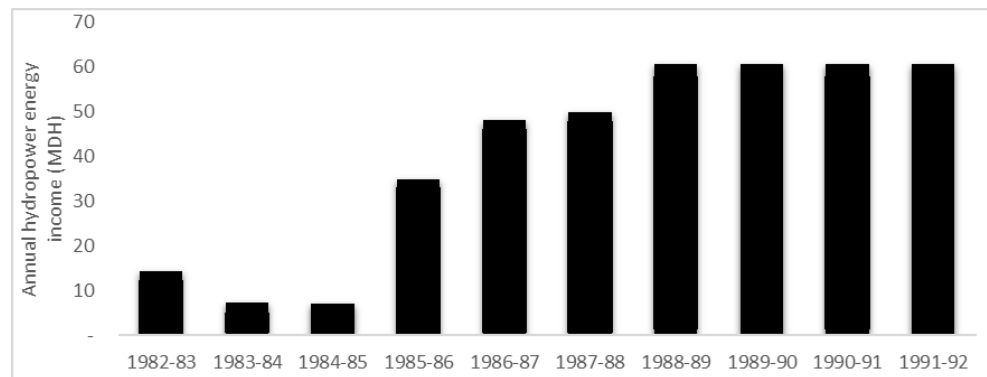


Fig. 15: Annual hydropower energy income (MDH) over the period (1982-1992)

Conclusions

The operational management program aims to improve the Hassan Addakhil dam efficiency by proposing a new adaptive approach for management by valorizing the water cubic meter and by demonstrating that the installation of a hydropower plant is an opportunity to produce clean electrical energy. These results can urge the decision-maker to think about improving dam management strategy, especially in an arid and semi-arid watershed.

The program provides a real-time regulation of the dam, which can help make an optimal schedule and project strategies related to droughts, impact mitigation, water security, energy conservation, and agriculture development, in case the input data projections are provided.

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The results obtained during this reflection may be subject to specific errors inherent mainly in the nature and precision of data used and/or the lack of specific data. Indeed, the meteorological and hydrological time series used have several discontinuities and gaps. On the other hand, the number of rainfall and hydrometric stations used is insufficient for a precise assessment of the hydrological behavior at the catchment scale. Therefore, it is essential to optimize the network of measurements and ensure the quality of the instantaneous and daily data records. In this sense, it should be noted that the suggestions and recommendations given above must be considered when interpreting the results obtained by this study.

The adopted approach goes hand in hand with sustainable development goals. A sustainable environment can be attained by preserving, improving, and valuing the environment and natural resources in the long term, maintaining the principal ecological balances, on the risks, and the environmental impacts. A sustainable society can be maintained if it satisfies human needs and meets a social goal by encouraging the participation of all social groups in health, housing, consumption, education, employment, culture. Finally, a sustainable economy aims to develop growth and economic efficiency through sustainable production and consumption patterns (UN 1987), in other term switching from the linear to the circular economy.

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Ismail ELHASSNAOUI

ORCID ID: <https://orcid.org/0000-0003-1979-566X>

Zineb MOUMEN

ORCID ID: <https://orcid.org/0000-0003-3413-6240>

Manuela Tvaronavičienė

ORCID ID: <https://orcid.org/0000-0002-9667-3730>

Mohamed OUARANI

ORCID ID: <https://orcid.org/0000-0002-1468-0487>

Mohamed BEN-DAOUD

ORCID ID: <https://orcid.org/0000-0002-9487-1215>

Issam SERRARI

ORCID ID: <https://orcid.org/0000-0002-7832-6700>

Ikram LAHMIDI

ORCID ID: <https://orcid.org/0000-0002-6711-9853>

M.A.S. WAHBA

ORCID ID: <https://orcid.org/0000-0003-3451-6155>

Ahmed BOUZIANE

ORCID ID: <https://orcid.org/0000-0003-4311-7439>

Driss OUAZAR

ORCID ID: <https://orcid.org/0000-0002-2472-3532>

Moulay Driss HASNAOUI

ORCID ID: <https://orcid.org/0000-0002-6585-6112>

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COMPARATIVE ANALYSIS OF THE VIEWS AND ATTITUDES OF ELEMENTARY AND SECONDARY SCHOOL PUPILS FROM THE CZECH REPUBLIC AND SLOVAK REPUBLIC ON THE DIVISION OF THE CZECH AND SLOVAK FEDERATIVE REPUBLIC (ČSFR)*

Marcel Lincényi ¹, Matej Mindár ²

^{1,2} Alexander Dubček University of Trenčín, Študentská 1639/2, 911 01 Trenčín, Slovakia

E-mails: ¹ marcel.lincenyi@tnuni.sk; ² matej.mindar@tnuni.sk

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Abstract. This paper addresses current views and attitudes of pupils on the division of the Czech and Slovak Federative Republic (CSFR). The current young generation has not experienced the division of the former common state of Czechs and Slovaks. They thus gain their opinions and knowledge on this issue not only from the school environment, but also from their parents or grandparents. The main research objective was a comparative analysis of the current views and knowledge of selected elementary and secondary school pupils in the Czech Republic and the Slovak Republic on the division of ČSFR into two separate States. Through their research method, the authors identified how selected respondents perceived post-November political processes leading to the constitutional and peaceful division of the Czech and Slovak Federative Republic. One of the positive benefits of their study was the fact that most Slovak and Czech respondents perceived positively the emergence of the independent Slovak and Czech Republics as of 1 January 1993.

Keywords: Czech and Slovak Federative Republic; Slovak Republic; Czech Republic; research, elementary schools; secondary schools; citizenship; education

JEL Classifications: F50, F68, Z11

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1. Introduction

The predecessor of the present independent and democratic Slovak Republic was the Slovak Socialist Republic, constituted by the Constitutional Act No. 143/1968 Coll. on the Czech-Slovak Federation, approved at the 28th National Assembly Session of 28 October 1968. Its solemn signature took place at the 50th anniversary of the adoption of the Declaration of the Slovak Nation (the so-called Martin Declaration) in the premises of the newly reconstructed Bratislava Castle, on 30 October 1968 (Rychlík 2015). This new national order entered into force on 1 January 1969. Czechoslovak Socialist Republic became a federative state composed of two republics of equal status: Czech Socialist Republic and Slovak Socialist Republic (Mindár 2018).

The post-November development in the Czecho-Slovak Republic brought about the restoration of democracy and the establishment of a pluralist political system. Slovak historian, Jozef Žatkuliak, states that this period of transformation of the social system and democracy building represented a significant milestone for the Slovak and Czech public in their mutual co-existence. Expressions of the Slovak and Czech post-November political representatives did not only convey the nation's national identity interests, but also economic ones, promoting the right of the nation to self-determination or national sovereignty, and equality with other States (Žatkuliak 2008). The restoration of democracy brought about marketing, as well as competition from political parties, with an aim to establish the foundations of pluralism and democratic principles of the State (Čársky 2018). "Political marketing is about applying and implementing a tactically thought-out election campaign by candidates or other political parties." (Čársky 2018, p. 120) Marketing communication has a significant impact in addressing the public (Kádeková et al. 2020), reflecting the shift in value orientation of the young generation after 1989 compared to the middle and older generation (Světlík and Bulanda 2019). At present, Slovak politicians are very well aware of the importance of mass-communication surveys, as the media have a significant share of the Internet in the establishment of the political scene, increasing the media, political and public agenda (Lincényi, Čársky 2020). Conversion of the joint Czecho-Slovak federation therefore only logically assumed transformation and drafting of laws. On their basis, a democratic federation was to be built, along with the creation of a genuine equal, equitable and mutually independent union of two national States, in the form of a federation based on their original sovereignty. According to Žatkuliak, the need to establish this condition was also justified by the fact that divergence of the unitary State into two national units in 1969 was only of a formal-institutional nature. Therefore, addressing national issues under democratic conditions proved to be necessary in the process of transformation. (Žatkuliak 2008)

"In a political environment, communication is a fundamental process of informing or influencing citizens by politicians or various institutions." (Čársky 2018, p. 121) The first serious post-November national identity crisis was the so-called Hyphen War. The new Czecho-Slovak federal president, Václav Havel, who supported the czecho-slovakistic federal tendencies, exercised his power of legislative initiative and, in his speech to the members of the Federal Assembly on 23 January 1990, proposed to change the national symbols, the name of the army, and delete the word "socialist" from the name of the State. According to his original idea, the new Czechoslovak emblem was to be composed of the characters of the Czech Republic, Moravia, and Slovakia. It was Slovak heraldists who rose in opposition to this proposal. They refused to give the Moravian she-eagle the same status as the Czech lion and the Slovak double cross. Despite this, Václav Havel initially expected his three proposals to be approved without difficulty by the members of the Federal Assembly. As there was no prior consultation, and members of the federal parliament were not familiar with his proposals in advance, in a response to the President they stated that the republics must first agree on their own state symbols. Later, after consulting the leaders of the Czecho-Slovak Parliament, President Havel proposed a new variant called the Czecho-Slovak Republic. In the meantime, however, a group of Czech and Slovak federal members of parliament presented another alternative called Czechoslovak Federative Republic. The President's idea with the hyphen provoked a

wave of protests in a large part of the Czech public and Czech members of parliament. On the contrary, the Slovak community welcomed this proposal. At that time, president of the Federal Assembly, Alexander Dubček, publicly admitted that the whole Slovak parliamentary representation shared the President's proposal. In an emotive parliamentary debate, some of the Czech members of parliament started to defend vehemently the idea of Czechoslovakism, perceiving the hyphen as an insult to the Czech nation. They considered the name Czechoslovak Federative Republic as acceptable. On the contrary, the Slovak members of parliament saw the hyphen as a symbol of the refusal of Czechoslovakism. In the vote, the President's proposal with a hyphen was rejected by the votes of the Czech members. An alternative proposal, without a hyphen, passed in the House of the People, was not accepted thanks to the application of the principle of non-majority in the Slovak part of the House of Nations. Slovak institutions, including the Slovak National Council which came forward with its own proposal: Federation of Czecho-Slovakia, were also opposed to its adoption. The members of the Slovak National Council wanted to point out to the world that the Czecho-Slovak State was not just Czech State. The proposal of the Slovak Parliament immediately received broad support from the Slovak public. On the contrary, it was clearly rejected in the Czech Republic, since the name of the Czecho-Slovak Republic for the Czechs was reminiscent of the second post-Munich republic. On 29 March, following lengthy negotiations, Federal Assembly adopted the Constitutional Act No 81/1990 Coll. The name Czechoslovak Federative Republic was adopted. In practice, this meant that the Slovak version with the hyphen - Czecho-Slovak Federative Republic - was only an unofficial name. However, the Slovak side was not satisfied with this solution. In Slovakia, protests immediately started against the new name of the State and demonstrators for the first time voiced their preference of the idea of independence. Also, the Czech public became quite radicalised. Throughout various signing events, people called for the Federal Assembly to address more important things than a dispute over a hyphen, clearly rejected by most Czechs. Finally, the OF (Forum of Citizens) Czech members gave way and on 20 April 1990 the Federal Assembly adopted another Constitutional Act No. 101/1990 Coll., adopting the name Czech and Slovak Federative Republic. Czech national socialists refused to support this Act. In the meantime, they brought up the question of potential secession of Slovakia as the better alternative.

The second state-identification crisis was the so-called Process of Trenčianske Teplice. Prior to the first free elections of 1990, the Slovak government of national understanding, headed by Milan Čič, presented at the end of its term of office its own idea of Slovak-Czech relations within one common State. According to Anton Hrnka, this idea was fully in line with the vision of most of the Slovak society in that the new national union should be based on the primary sovereignty of the republics, followed by the derived, limited sovereignty of the federation. Following the first free elections (June 1990), this vision was presented to the Czech side by the new Slovak Prime Minister, Vladimír Mečiar, on 9 August 1990, in the town of Trenčianske Teplice, with the Czech Prime Minister, Petr Pithart, readily accepting his proposal for a new Competencies Act. In this respect, Hrnko further claims that only the subsequent negative reaction of the Czech public and the onset of aggressive klausean (of Václav Klaus) politics turned the initially spectacular project into a tear-off calendar. (Hrnko 2016). The Czechs wanted to preserve Czecho-Slovakia and perceived the federation as a redistribution of competencies. The concept of a functional federation endowed with certain powers such as foreign policy, defence, and currency, was considered as the main criterion. On the contrary, the Slovak side assumed that there were two states which merely delegated their powers to joint federal authorities. That is why the Czech Government and the Czech National Council discussed the situation that had arisen, without even excluding the possibility of the State's disintegration. Prior to the final vote on the Competencies Act, the Czech Government prepared a secret contingency plan for the event of a sudden breakdown of the ČSFR. This plan essentially responded to the Slovak material which assessed Slovakia's position in the tear-off scenario. Final draft of the Competencies Act was approved by the Federal Assembly on 12 December 1990 as Constitutional Act No. 556/1990 Coll. In terms of its content, the Act severely restricted the powers of the federal authorities and removed the exclusive competence of the federation also in the field of foreign policy and defence. In practice, this meant that the creation of autonomous international treaties and the building of own armed forces of the republics was not ruled out. While

the Czech side considered the Competencies Law as the maximum measure, for Slovakia it was only the first step toward the ultimate goal of achieving the Czecho-Slovak joint State units. (Mindár 2018)

The third serious national identity crisis was the so-called Process of Milovy. This entailed a whole series of negotiations which started in spring 1991 and ended with a failed vote taken in the Slovak National Council Presidency in February 1992 on its outcome – The Agreement of Milovy. Anton Hrnko considered the Milovy Agreement as a capitulation of the representatives of the then major political forces, VPN and KDH, against the Czech side's requirements for the project of future conditions within a joint State. He further argues that the Agreement in its essence ensured supremacy and deprived the Slovak side of the last confederacy elements still left over from the Constitutional Act 143/1968 Coll. He opines that the Agreement was also demolishing, above all, the fundamental mechanism of equal to equal - the principle of no-majority. The year 1992 also saw the launch of legislative initiatives of President Václav Havel, together with the final drafting of the text of the Milovy Agreement on the principles of the national order of the joint State. Characteristics of the Milovy Agreement, its importance and content were the subject of discussions and disputes between the then coalition and the opposition in Slovakia, but mainly within the coalition itself. Final works were carried out in the joint commission of experts of the Czech National Council (ČNR) and Slovak National Council (SNR) for about a week in Milovy. The Commission completed its work on 8 February 1992. The Agreement envisioned a joint, two-chamber Parliament, which was to consist of a Chamber of Deputies and a Senate. The last dispute in the commission was the dispute over who was to sign the Agreement. The final proposal was that the Agreement was to be signed by the people of the Czech Republic and the people of the Slovak Republic. It was a fundamental change in the original political line of thought, originally shaped by the Slovak side and, in particular, by KDH. The then Slovak coalition representation thus made a clear political retreat from the original position of drafting a national agreement, through an inter-republic treaty, and finally to the drafting of an agreement between the peoples of both republics. Prior to the negotiations, the Chairman of the SNR, František Mikloško (from KDH political party), stated that it was essential that the principles we uphold be respected. He defended the Slovak position at the time, which they did not intend to compromise. And, referring to the outcome of the negotiation, he said again that this unity; however, was not absolute. He made it clear that not all political parties agreed on the matter. A surprisingly realistic view of the matter was presented by Federal Prime Minister, Marián Čalfa, who already believed that the final shape of the Czechoslovak state would be addressed only by the winners of the forthcoming elections (June 1992). On the other hand, shortly before the vote on the Agreement in the SNR Presidency, František Mikloško voiced his optimism that some political clubs, apart from the opposition, might also be willing to support the proposal, while the then coalition, with small exceptions, would be willing to vote in favour of the proposal. (Laluha 2016) On 11 February 1992 in Milovy, the agreed draft of the Agreement was approved by the ČNR Presidency. (Stein 2000) On 12 February 1992, Presidency of the SNR did not approve the draft, ending with a 10:10 split vote. (Mindár 2018a) Contrary to the statement by František Mikloško, as many as four members from KDH, i.e. the majority (the total number of SNR Presidency members was six), voted against. Vladimír Kmet', František Javorský, Ján Klepáč, and Anton Hykisch, as well as Milan Ftáčnik from SDL (Slovak Democratic Left), and Milan Zemko, an independant member of parliament representing the Civil Democratic Union-VPN. (Laluha 2016) With the Milovy Agreement draft, both republics' national councils exhausted their options to agree on a model acceptable to both negotiating parties. This vote within the SNR Presidency indicated a profound contradiction not only between Slovak politicians, but also in the society as such. Thus, the Milovy Agreement has become the biggest political disagreement between Slovak and Czech politicians since November 1989. The fundamental differences of opinion of the political elites on both sides have shown different perceptions of what a joint state should look like. This fact also predetermined the positions of political players after the elections in June 1992. (Mindár 2018)

As early as the beginning of 1991, according to Anton Hrnko, discussions on a possible declaration of sovereignty of the Slovak Republic were now taking place in the form of direct implementation. In March 1991, SNS submitted its draft Constitution of the Slovak Republic, which no longer considered the existence of a federation.

In March-April 1991, the first proposal for the declaration of sovereignty of the Slovak Republic was submitted for negotiation in the Slovak Parliament. According to Hrnko, the idea was gradually also adopted by HZDS, alongside the with SNS. It also made its way into KDH, SDL, and the Green Party. In his view, its support had grown to such an extent that, at the SNR session in May 1992, it was already supported by most of the Members elected in the first free elections of 1990. (Hrnko 2017).

Negotiations between HZDS and the winning Czech party (ODS) were ultimately geared toward a constitutional and peaceful separation of the Czech and Slovak Republic into two separate States - the Slovak Republic and the Czech Republic. This took place at the Federal Assembly session through the adoption of the Constitutional Act on the dissolution of the ČSFR No. 542/1992 on 25 November 1992. The original intention of HZDS about the entry of the Slovak Republic as a sovereign state into the Union of States with the Czech Republic did not appeal to the Czech ODS whose sole objective was the creation of the so-called functional Federation, or two independent States. According to Pavol Hrivík, the idea of disintegration of the ČSFR was not originally accepted by the world powers, nor by the surrounding States with great enthusiasm. The main reason for their original opinion was, in his view, the difficult and tense situation in Eastern Europe, particularly in the former Yugoslavia. At that time, of no lesser importance were facts linked to minority problems, also present in some EU Member States: the Basques in Spain, the Corsicans in France, Northern Irish and Scots in the United Kingdom, or the Walloons in Belgium. However, the agreement of Slovaks and Czechs on the constitutional, civilized and peaceful division of their common state was finally accepted by the world with great understanding and recognition. Finally, majority of States expressed in advance their willingness to internationally recognise the two successor States once they would be independent. According to Hrivík, the whole period after January 1993 showed that the division of the Czecho-Slovak Federation was the right historical act. He claims that the former federation would never have been able to secure the current above-standard relations between the Slovak and Czech peoples. (Hrivík 2012) In the introductory part of the Preamble to the Constitution of the Slovak Republic, Slovak Republic claims the legacy of St. Cyril and Methodius. It is interesting that throughout the whole existence of the Hungarian kingdom, our ancestors managed to preserve the Cyril-Methodius tradition for future generations. Karol Janas believes it was not common at that time, due to the dominance of the Cult of Mary in Slovakia. Besides, the Cyril-Methodius tradition was perceived as negative by the then Hungarian ecclesiastical as well as secular authorities. They saw it as the promotion of foreign and unknown saints in Hungary. (Janas 2019) Slovak Republic also played an important role in the process of enlargement of the European Union to include the Western Balkans. (Janas 2017) On the other hand, European Union is facing various challenges today. The process of European integration therefore needs to be modernized, particularly by reducing democratic deficit and the impact of unilateral interests and rare "modernistic" tendencies of the European globalizing elites. (Hrivík 2017) Democratic deficit in the EU is a complex phenomenon that has various causes and manifestations. (Hrivík, Mindár 2018) According to Marcel Lincényi's survey conducted in the first quarter of 2017, 1398 respondents, who were representative of the adult population in terms of sex, age, education and regions, showed that more than half of the Slovaks interviewed believe that the future of the common European Union will exceed 10 years. More than a third of the respondents (36%) think that the EU will last beyond 2030, while another quarter of the respondents (24%) see the common EU last until 2030. (Lincényi 2018)

2. Methodology

The paper's main objective was a comparative analysis into the present views and knowledge of pupils from selected elementary and secondary schools in the Czech and Slovak Republics on the issue of division of the Czech and Slovak Federative Republic (ČSFR) into two independent States.

The secondary research objective was to identify similarities and differences in the views and knowledge of selected elementary and secondary school pupils in the Czech Republic and Slovakia on the division of the Czech and Slovak Federative Republic into two independent States.

In the planning and design phases of research, we have identified the following research questions:

RQ1: What was the share of Slovak pro-national and patriotic associations since November 1989 in shaping the public toward the idea of an independent Slovak Republic?

Explanation of RQ1: As to the first research question, we examined the knowledge and views of pupils from selected elementary and secondary schools of the Zlín self-governing region (Czech Republic) and the Trenčín self-governing region (Slovak Republic) on progressive shaping of the independent and democratic Slovak Republic after 1989. We have therefore decided to create three questionnaire items (questions): “Do you think that the pro-national Slovak intelligence shaped the members of individual political parties and movements toward the creation of the independent Slovak Republic?”. “Would you say that the Czech nation did not create equal conditions for coexistence with the Slovak nation throughout the whole existence of the Czechoslovak Republic?”. “Do you agree that it was the new democratic establishment after November 1989 that created preconditions for gradual dissolution of the Czech and Slovak Federative Republic?”

RQ2: To what extent did the then Czech political scene have a stake in the dissolution of the Czech and Slovak Federative Republic?

Explanation of RQ2: As to the second research question, we examined, among the pupils of selected elementary and secondary schools of the Zlín self-Governing Region (Czech Republic) and the Trenčín self-governing Region (Slovak Republic), whether they thought that it was predominantly the Czech lay public who had played the major role in the dissolution of the Czech and Slovak Federative Republic. (ČSFR) Therefore, we decided to ask the following three questionnaire items (questions) as follows: “Do you think that the Czech political and lay public was not able to understand the Slovak requirements leading to the equal treatment of the Slovak nation within the Czech and Slovak Federative Republic?”, “Do you think that Slovakia was an economic obstacle within the Czech and Slovak Federative Republic?”, “Do you think that the division of the Czech and Slovak Federative Republic was promoted mainly by the Czech political public?”

RQ3: Was the creation of the independent Slovak Republic and Czech Republic the culmination of the national-emancipation efforts of both nations?

Explanation of RQ3: In the third research question, we asked the pupils of selected elementary and secondary schools of the Zlín self-governing region (Czech Republic) and the Trenčín self-governing region (Slovak Republic) who did not experience the division of the Czech Republic and Slovakia into two separate States (Slovak Republic and Czech Republic) about their perception of the independent Slovak Republic and Czech Republic today. We have therefore created five questionnaire items (questions): “Do you agree with the view that the division of the Czech and Slovak Federative Republic led to a gradual improvement of the mutual Slovak-Czech and Czech-Slovak relations?”, “Do you agree with the statement that the Slovaks gradually formed themselves into a state-owned nation during the existence of the Czech-Slovak Republic?”, “Do you think, That the creation of an independent Slovak Republic has brought peace to stability in the Central European Area?”, and the only open question: “How do you perceive the division of the Czech and Slovak Federative Republic now, after more than a quarter of a century?”, Can you imagine that the Slovak and Czech Republic were to be united in one single state again in the future?”

We carried out our research in a quantitative manner. We used questionnaire as the main research method to collect data, containing 11 quantitative questionnaire items. Collection of data was carried out in the second quarter of 2020, on a research sample of 850 respondents. (of which 438 were from the Czech Republic and 412 from the Slovak Republic)

As a research sample we selected pupils aged 13 to 20 in selected elementary and secondary schools of the Zlín self-governing Region (Czech Republic) and the Trenčín self-governing Region. (Slovak Republic) 438 responses were received from the Zlín self-governing region, comprising 223 women and 215 men. (Secondary School of Luhacovice, Secondary Vocational School of Valašské Klobuky, Gymnasium of Jan Pivečka in Slavičín, Elementary School of Slavičín – Vlára, Elementary School and Kindergarten of Nedašov, Elementary School of Brumov-Bylnice, Elementary School of Gabry a Málíky Štítná nad Vláří) 412 respondents, of which 296 were women and 116 were men. (Gymnasium of Dubnica nad Váhom, Gymnasium of Púchov, Business Academy of Dr. Milan Hodza in Trenčín, Business Academy in Povazská Bystrica, Elementary School of Nová Dubnica, Elementary School of Veľkomoravská 12 in Trenčín, Elementary School with kindergarten of Václav Mitúch of Horné Srnie, Elementary School of Janko Pala 2, Nemšová, Elementary School with kindergarten of Hugolin Gavlovič in Pruské, Elementary School of Medňanská Ilava) Collection of data took place from February 2020 to June 2020. The questionnaire was drawn up in Slovak and Czech languages and consisted of ten multiple-choice questions of three options (Yes-Agree, No-Disagree, Cannot assess) and one open question in which respondents were free to express their point of view.

Using the method of fixation and data sorting, we have first verified the correct procedure for filling out our questionnaires. We then proceeded to the counting, scaling and selection of data, which we statistically classified into eleven tables. Finally, using the method of interpretation and exploratory analysis, we have evaluated the results of the research carried out.

3. Analysis of results

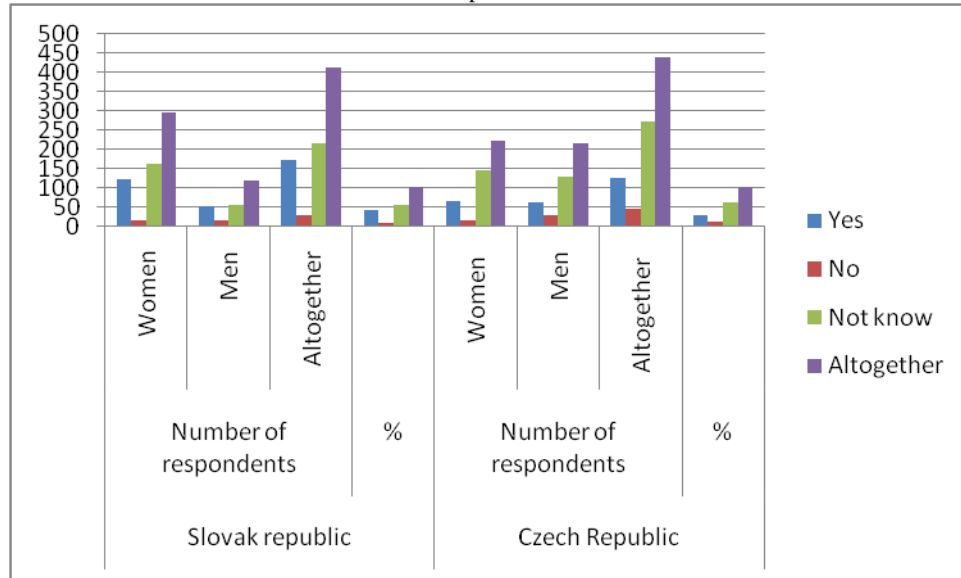
As part of the first question of the questionnaire, we asked whether pupils thought that the pro-national Slovak intelligence helped shape members of individual political parties and movements toward the creation of a separate Slovak Republic. A greater number of positive answers to this question came from the Slovak Republic. In our view, this is because in the Czech Republic and the Slovak Republic exist differences of opinion on the national-emancipation process of the Slovak nation in one common State. The fact that up to 61.9% of pupils answered “Cannot assess” in the Czech Republic makes us assume that the current Czech youth is totally unaware of the real reasons and causes of Slovakia's gradual independence from the dominant Czech nation. Respondents in the Slovak Republic replied in a similar manner. Even though 41.3% think that the creation of the independent and democratic Slovak Republic was initiated by pro-national Slovak intelligence, an absolute majority of 52,4% could not adequately answer our question. In our view, our elementary and secondary schools are not sufficiently attentive to this historical event. See Table 1 and Chart 1 for more information.

Table 1 Do you think that the pro-national Slovak intelligence shaped the members of individual political parties and movements toward the creation of a separate Slovak Republic?

	Slovak Republic				Czech Republic			
	Number of respondents			%	Number of respondents			%
	Women	Men	Altogether		Women	MEN	Altogether	
Yes	121	49	170	41.3	63	61	124	28.3
No	14	12	26	6.3	15	28	43	9.8
Not know	161	55	216	52.4	145	126	271	61.9
Altogether	296	116	412	100	223	215	438	100

Source: Processed based on the results of own research.

Chart 1 Do you think that the pro-national Slovak intelligence shaped the members of individual political parties and movements toward the creation of a separate Slovak Republic?



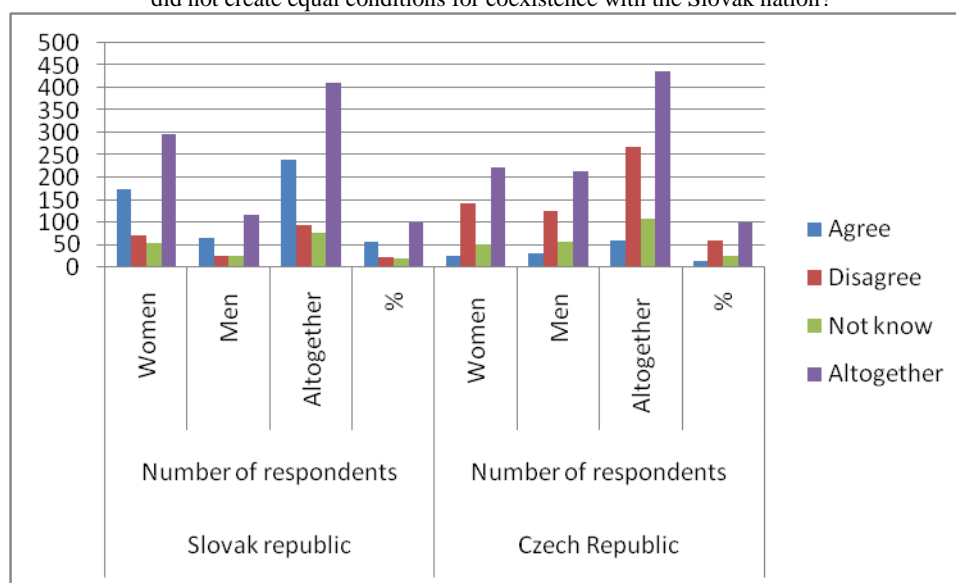
Source: Processed on the basis of the results of own research.

In the second question we asked the respondents whether they agreed that the Czech nation did not create equal conditions for coexistence with the Slovak nation throughout the whole existence of the Czech-Slovak Republic. In Slovakia, 58,0% of respondents agreed to this claim. In contrast, as many as 61,4% of the respondents in the Czech Republic strongly disagreed. On the basis of these results, we can clearly confirm that in view of the different views on the nature of the organization of relations between the Slovak and Czech people after November 1989 in the former Czecho-Slovak Republic, a peaceful and constitutional division of the Czecho-Slovak Federation into two separate States (Slovak Republic, Czech Republic) represented the only possible and correct course. For more information see Table 2 and Chart 2.

Table 2 Do you agree that the Czech nation throughout the whole existence of the Czecho-Slovak Republic did not create equal conditions of coexistence with the Slovak nation?

	Slovak Republic				Czech Republic			
	Number of respondents			%	Number of respondents			%
	Women	Men	Altogether		Women	Men	Altogether	
Agree	173	66	239	58.0	27	32	59	13.5
Disagree	70	25	95	23.1	144	125	269	61.4
Not know	53	25	78	18.9	52	58	110	25.1
Altogether	296	116	412	100	223	215	438	100

Source: Processed based on the results of own research.

Chart 2 Do you agree that the Czech nation throughout the whole existence of the Czecho-Slovak Republic did not create equal conditions for coexistence with the Slovak nation?

Source: Processed on the basis of the results of own research.

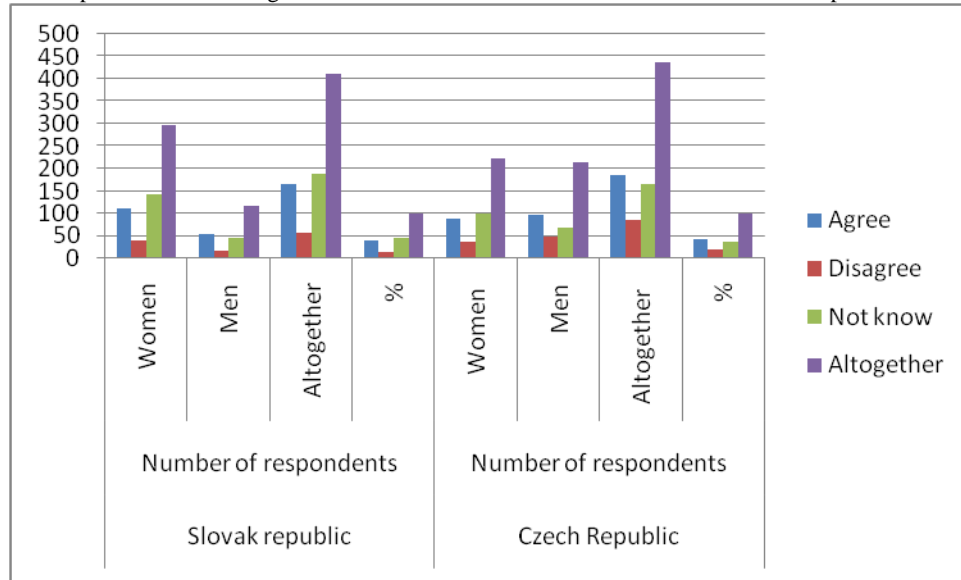
In the third question, we asked the pupils whether they agreed that the new democratic establishment after November 1989 created preconditions for gradual dissolution of the Czech and Slovak Federative Republic. This claim was accepted by a large proportion of Czech as well as Slovak respondents. The gradual withdrawal of the Soviet Union from the Central European arena opened possibilities for a gradual creation of an independent and democratic Slovak Republic. Despite numerous conflicts between the Slovak and Czech nations, they were fortunately not dealt with by military means, as was the case of the former Yugoslavia. Constitutional and peaceful split-up of the Czech and Slovak Federative Republic (ČSFR) into two separate States (Slovak Republic, Czech Republic) at the Prague Federal Assembly has up to date been given as an example for other European and the world nations seeking autonomy. (Scots, Catalans) For more information see Table 3 and Chart 3.

Table 3 Do you agree that a new democratic establishment after November 1989 created preconditions for a gradual dissolution of the Czech and Slovak Federative Republic?

	Slovak Republic				Czech Republic			
	Number of respondents				Number of respondents			
	Women	Men	Altogether		Women	Men	Altogether	
Agree	112	54	166	40.3	88	97	185	42.2
Disagree	40	16	56	13.6	36	50	86	19.7
Not know	144	46	190	46.1	99	68	167	38.1
Altogether	296	116	412	100	223	215	438	100

Source: Processed based on the results of own research.

Chart 3 Do you agree that a new democratic establishment after November 1989 created preconditions for a gradual dissolution of the Czech and Slovak Federative Republic?



Source: Processed on the basis of the results of own research.

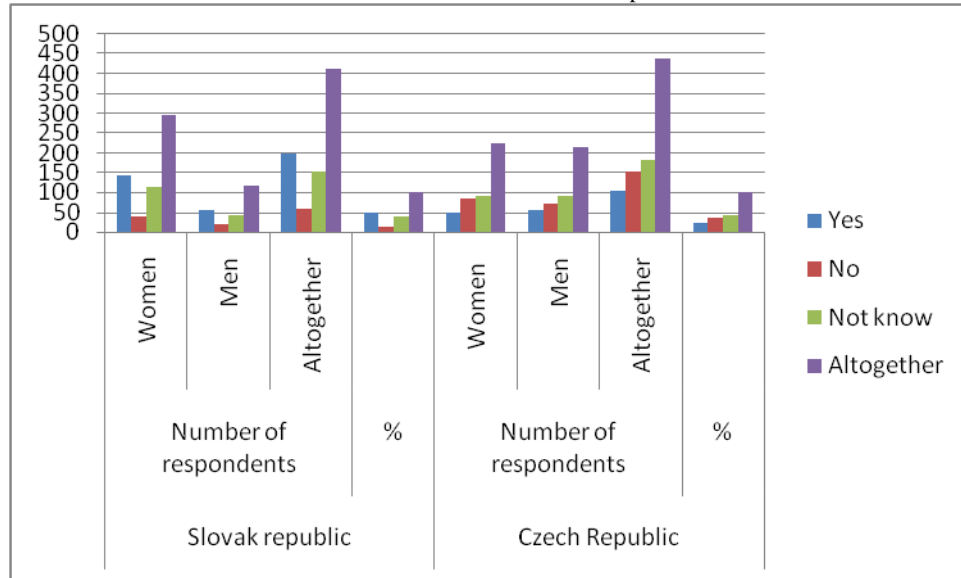
In the fourth question, we asked whether they thought that the Czech political and lay public were not able to sufficiently understand the Slovak requirements leading to the equal treatment of the Slovak nation within the Czech and Slovak Federative Republic. Up to 48,3% of respondents responded positively to this question in the Slovak Republic. On the contrary, in the Czech Republic, 34,9% of the responses to the same question were positive. Here too, different views on our common Czech-Slovak history have been manifested. While most Slovaks considered the Czecho-Slovak Republic as a joint State of the Czech and Slovak nation, most Czechs considered it rather a Czech state extended to the Slovak territory. The fact that up to 23,5% of respondents in the Czech Republic think that the Czech political and lay public were not able to sufficiently understand the Slovak requirements leading to the equal treatment of the Slovak nation within the Czech and Slovak Federative Republic (ČSFR) is due to the fact that our research was limited only to the territory of the Zlín self-governing region, which is part of the historical territory of Moravia. If we were to concentrate our research on all the regions of the Czech Republic, the results would be dramatically different. In our view, approximately 15% of Czech respondents would be in favour of a "Yes" answer. For more information see Table 4 and Chart 4.

Table 4 Do you think that the Czech political and lay public were not sufficiently able to

	Slovak Republic				Czech Republic			
	Number of respondents			%	Number of respondents			%
	Women	Men	Altogether		Women	Men	Altogether	
Yes	144	55	199	48.3	48	55	103	23.5
No	39	20	59	14.3	83	70	153	34.9
Not know	113	41	154	37.4	92	90	182	41.6
Altogether	296	116	412	100	223	215	438	100

Source: Processed based on the results of own research.

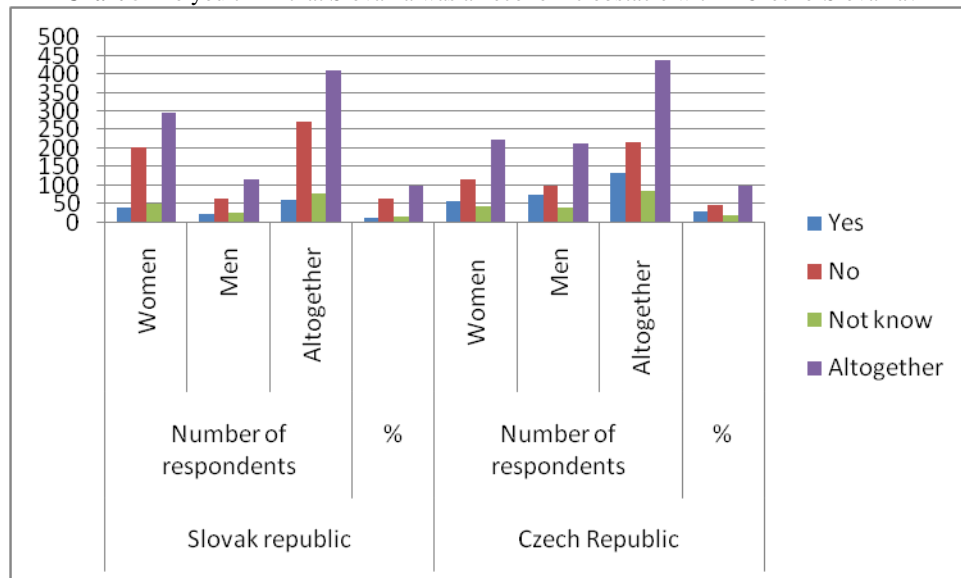
Chart 4 Do you think that the Czech political and lay public were not sufficiently able to understand the Slovak requirements leading to the equal treatment of the Slovak nation within the Czech and Slovak Federative Republic?



Source: Processed on the basis of the results of own research.

In the fifth question, we asked the pupils about their view on Slovakia's being an economic obstacle within Czecho-Slovakia. Most Slovak and Czech respondents responded negatively to this question. In our view, here too, if we were to target our research to all regions of the Czech Republic as well as the Slovak Republic, or if we were to address older age groups, the results would be dramatically different. For more information see Table 5 and Chart 5.

Chart 5 Do you think that Slovakia was an economic obstacle within Czecho-Slovakia?



Source: Processed based on the results of own research.

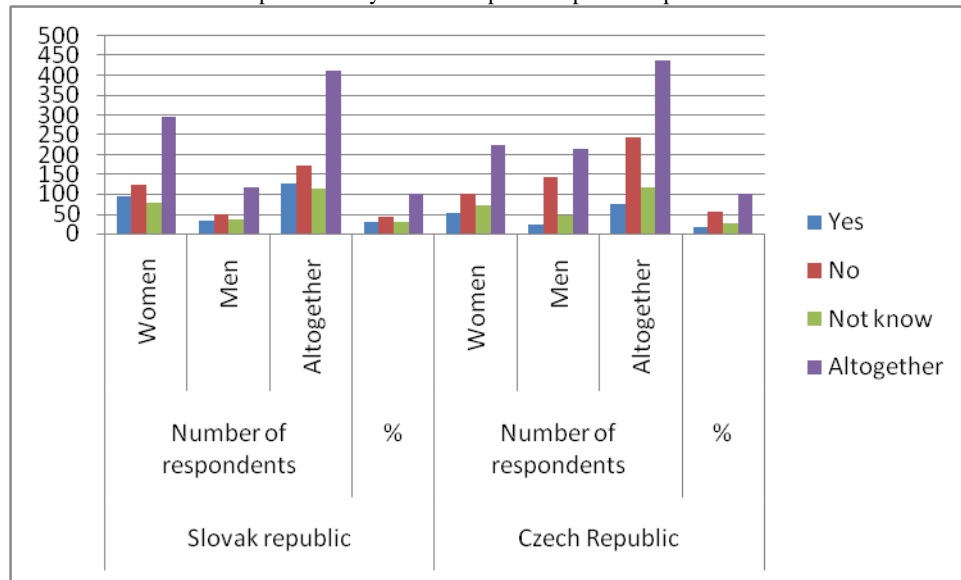
In the sixth question, we asked the pupils whether they thought that the split-up of the Czech and Slovak Federative Republic was mainly promoted by the Czech political public. Respondents in the Slovak Republic and the Czech Republic replied to this question in a dramatically different manner. Just like in previous questions, if we targeted our research to all ages and regions in the Slovak Republic and the Czech Republic, the results would be dramatically different. For more information see Table 6 and Chart 6.

Table 6 Do you think that the split-up of the Czech and Slovak Federative Republic was promoted by the Czech political public in particular?

	Slovak Republic				Czech Republic			
	Number of respondents			%	Number of respondents			%
	Women	Men	Altogether		Women	Men	Altogether	
Yes	94	32	126	30.6	52	24	76	17.4
No	123	49	172	41.8	101	144	245	55.9
Not know	79	35	114	27.6	70	47	117	26.7
Altogether	296	116	412	100	223	215	438	100

Source: Processed based on the results of own research.

Chart 6 Do you think that the split-up of the Czech and Slovak Federative Republic was promoted by the Czech political public in particular?



Source: Processed on the basis of the results of own research.

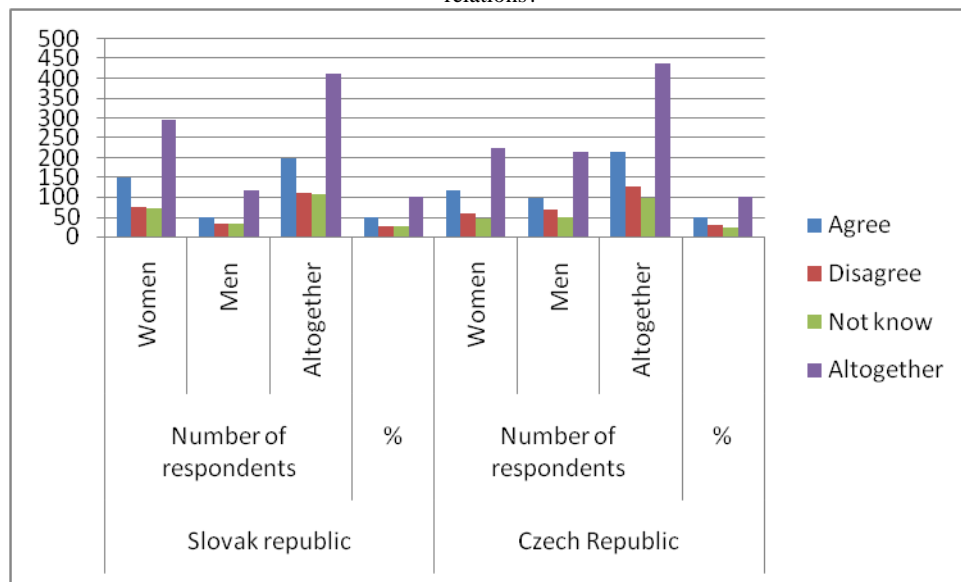
In the seventh question, we asked whether they agreed that the division of the Czech and Slovak Federative Republic led to a gradual improvement in mutual Slovak-Czech and Czech-Slovak relations. Most Slovak and Czech respondents agreed with this claim. This fact only proves that the division of the Czech and Slovak Federative Republic (ČSFR) into two separate States (Slovak Republic, Czech Republic) was the right decision for both nations. For more information see Table 7 and Chart 7.

Table 7 Do you agree with the view that the separation of the Czech and Slovak Federative Republic led to a gradual improvement in mutual Slovak-Czech and Czech-Slovak relations?

	Slovak Republic				Czech Republic			
	Number of respondents			%	Number of respondents			%
	Women	Men	Altogether		Women	Men	Altogether	
Agree	149	48	197	47.8	118	97	215	49.1
Disagree	75	34	109	26.5	58	68	126	28.8
Not know	72	34	106	25.7	47	50	97	22.1
Altogether	296	116	412	100	223	215	438	100

Source: Processed based on the results of own research.

Chart 7 Do you agree with the view that the separation of the Czech and Slovak Federative Republic led to a gradual improvement in mutual Slovak-Czech and Czech-Slovak relations?



Source: Processed based on the results of own research.

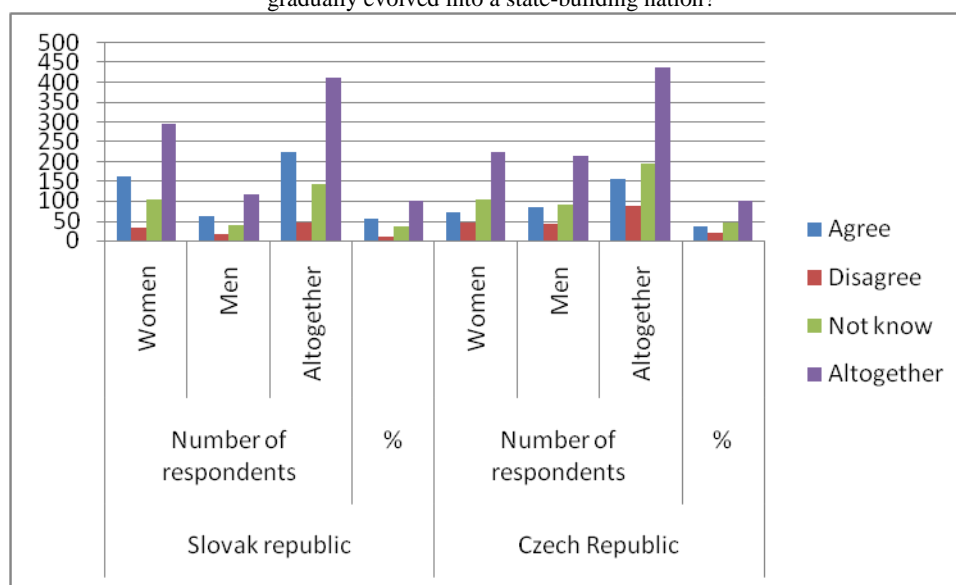
In the eighth question, we asked whether the pupils agreed with the claim that during the existence of the Czecho-Slovak Republic, Slovaks gradually evolved into a State-building nation. More than a half of the respondents in the Slovak Republic responded affirmatively to this question. This fact only shows that most Slovaks saw the former Czecho-Slovak Republic as a joint State of equal and self-determined nations of Czechs and Slovaks. Unfortunately, most Czechs have never seen Slovaks as an equal partner throughout almost the whole existence of the Republic. This also contributed to the fact that many respondents in the Czech Republic were not able to comment on this question. See Table 8 and Chart 8 for more information.

Table 8 Do you agree with the claim that Slovaks, while living in the Czecho-Slovak Republic, gradually evolved into a state-building nation?

	Slovak Republic				Czech Republic			
	Number of respondents			%	Number of respondents			%
	Women	Men	Altogether		Women	Men	Altogether	
Agree	162	62	224	54.4	72	83	155	35.4
Disagree	31	15	46	11.1	46	42	88	20.1
Not know	103	39	142	34.5	105	90	195	44.5
Altogether	296	116	412	100	223	215	438	100

Source: Processed on the basis of the results of own research.

Chart 8 Do you agree with the claim that Slovaks, while living in the Czecho-Slovak Republic, gradually evolved into a state-building nation?



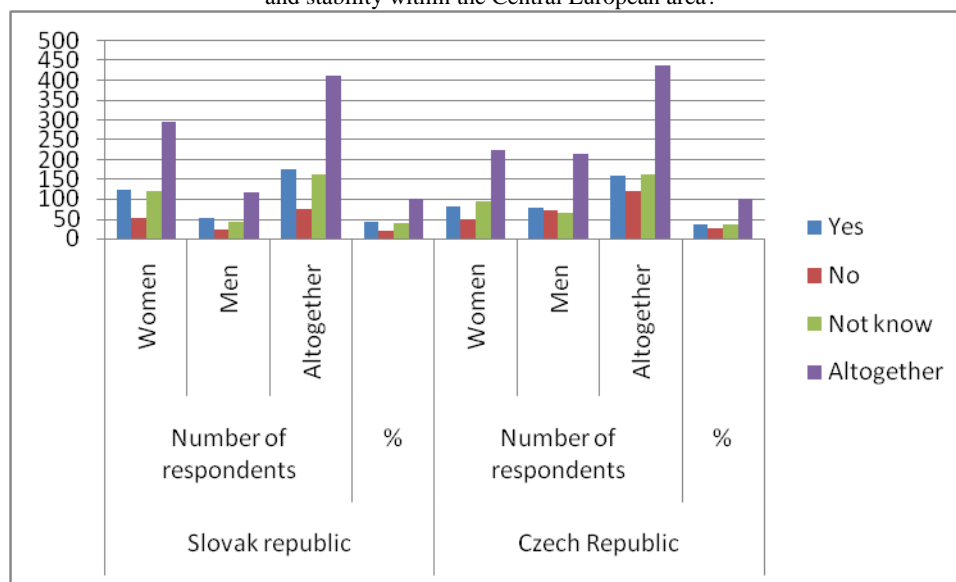
Source: Processed based on the results of own research.

In the ninth question, we asked whether pupils thought that the creation of an independent Slovak Republic brought peace and stability within the Central European area. Most pupils in the Slovak Republic and the Czech Republic replied affirmatively to this question. On the other hand, a large proportion of them in both countries were not able to express themselves. As mentioned above, the split-up of the Czech and Slovak Federative Republic (ČSFR) into two separate States (Slovak Republic, Czech Republic) took place in a constitutional and peaceful manner. See Table 9 and Chart 9 for more information.

Table 9 Do you think that the creation of an independent Slovak Republic has brought peace and stability within the Central European area?

	Slovak Republic				Czech Republic			
	Number of respondents			%	Number of respondents			%
	Women	Men	Altogether		Women	Men	Altogether	
Yes	123	53	176	42.7	80	78	158	36.1
No	52	22	74	18.0	48	71	119	27.2
Not know	121	41	162	39.3	95	66	161	36.7
Altogether	296	116	412	100	223	215	438	100

Source: Processed based on the results of own research.

Chart 9 Do you think that the creation of an independent Slovak Republic has brought peace and stability within the Central European area?

Source: Processed on the basis of the results of own research.

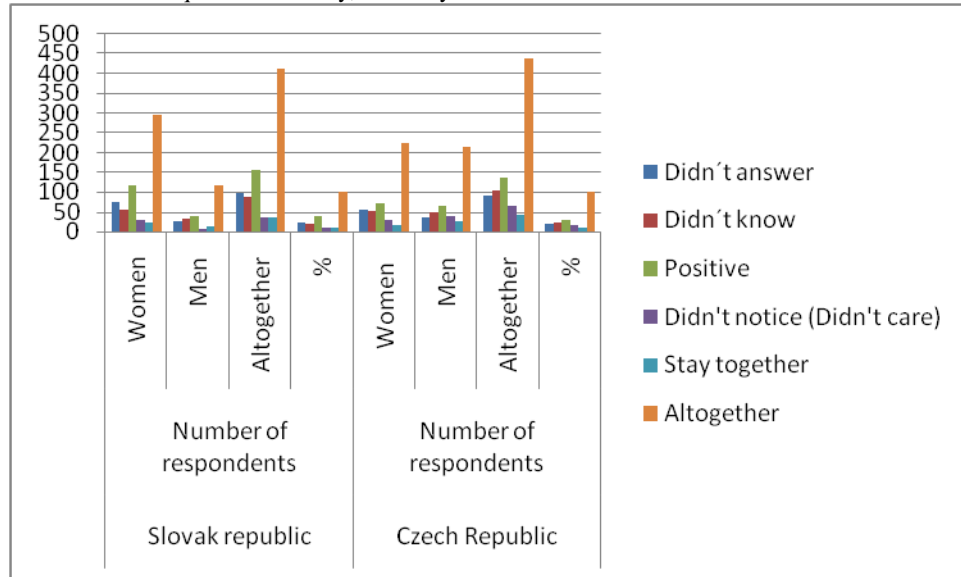
In the tenth question, the only open question in the questionnaire, the selected pupils of elementary and secondary schools of the Zlín self-governing Region (Czech Republic) and the Trenčín self-governing Region (Slovak Republic) had the opportunity to express their opinion on the division of the Czech and Slovak Federative Republic (ČSFR) into two separate States (Slovak Republic, Czech Republic). In both the Slovak Republic and the Czech Republic, most of the respondents expressed their affirmative view on the division of the Czecho-Slovak Federation. On the other hand, large proportion of them did not express themselves at all, or could not assess or have not formed any view on the division of Czecho-Slovakia. In both Republics, negligible part of the respondents were in favour of continuing with one common State. For more information see Table 10 and Chart 10.

Table 10 After more than a quarter of century, how do you see the division of the Czech and Slovak Federative Republic?

	Slovak Republic				Czech Republic			
	Number of respondents				Number of respondents			
	Women	Men	Altogether		Women	Men	Altogether	
Didn't answer	74	25	99	24.0	56	36	92	21.0
Didn't know	56	31	87	21.1	53	50	103	23.5
Affirmative	116	40	156	37.9	70	65	135	30.8
Didn't notice (Didn't care)	28	7	35	8.5	28	38	66	15.1
Stay together	22	13	35	8.5	16	26	42	9.6
Altogether	296	116	412	100	223	215	438	100

Source: Processed based on the results of own research.

Chart 10 After more than a quarter of century, how do you see the division of the Czech and Slovak Federative Republic?



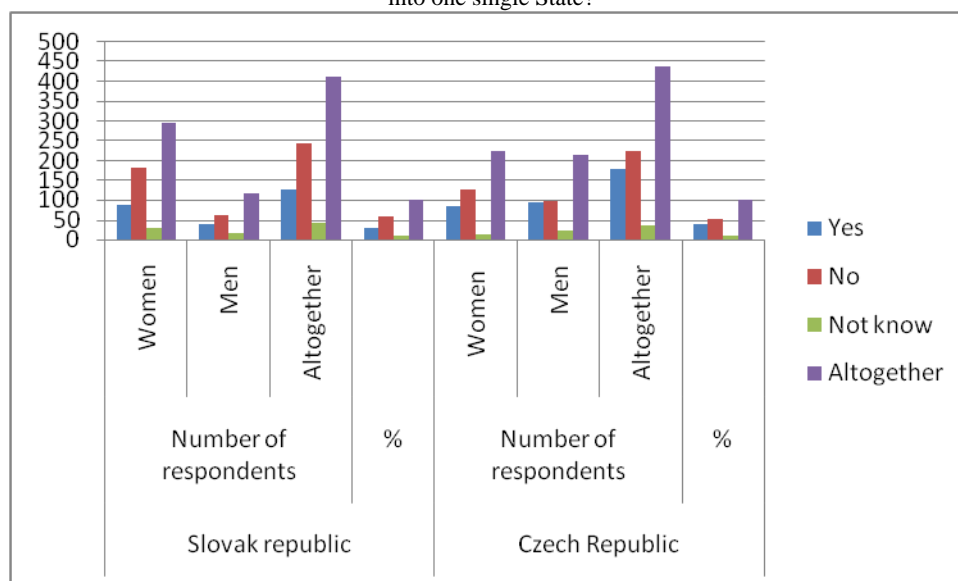
Source: Processed based on the results of own research.

In the eleventh question, we have asked the pupils whether they could imagine the Slovak and Czech Republics united again into one single State in the future? Here, most respondents in both the Slovak Republic and the Czech Republic expressed negative comments. On the other hand, as much as 40,4% of the respondents in the Czech Republic can imagine the restoration of Czecho-Slovakia, because to date many Czechs have seen the former Czecho-Slovak Republic as the so-called Czech state extended over to the Slovak territory. In the Slovak Republic, only 30,3% of the respondents can imagine the Slovak Republic and the Czech Republic united. For more information see Table 11 and Chart 11.

Table 11 Can you imagine the Slovak and the Czech Republics united again into one single State?

	Slovak Republic				Czech Republic			
	Number of respondents			%	Number of respondents			%
	Women	Men	Altogether		Women	Men	Altogether	
Yes	87	38	125	30.3	84	93	177	40.4
No	181	63	244	59.2	125	99	224	51.1
Not know	28	15	43	10.5	14	23	37	8.5
Altogether	296	116	412	100	223	215	438	100

Source: Processed based on the results of own research.

Chart 11 Can you imagine the Slovak and the Czech Republics united again into one single State?

Source: Processed based on the results of own research.

Discussion

Analysing the first research question, we have found that most pupils in the Slovak Republic consider the share of pro-national Slovak intelligence as decisive in shaping the independent and democratic Slovak Republic. Vast majority of them also agreed with our claim that the Czech nation did not create equal conditions of coexistence with the Slovak nation throughout the whole existence of the Czecho-Slovak Republic; however, this view was not accepted by the majority of respondents in the Czech Republic. Approximately the same percentage of respondents in the Slovak Republic and the Czech Republic agreed that the new democratic establishment after November 1989 created preconditions for a gradual dissolution of the Czech and Slovak Federative Republic.

As part of the second research question, we found that in the Slovak Republic up to 48,3% of pupils think that the Czech political and lay public could not sufficiently understand the Slovak requirements promoting equality of the Slovak nation within the Czech and Slovak Federative Republic (ČSFR). In contrast, only 23,5% of respondents

shared this view in the Czech Republic. Most respondents in the Slovak Republic and the Czech Republic do not think that Slovakia was an economic obstacle in Czecho-Slovakia. In the Czech Republic, however, up to 30,8% of respondents thought that Slovakia was indeed an economic obstacle for Czecho-Slovakia. We were also able to find out that up to 30,6% of the respondents in the Slovak Republic thinks that the division of the Czech and Slovak Federative Republic was mainly promoted by the Czech political public. On the contrary, in the Czech Republic, only 17,4% of respondents agreed to this claim. Up to 55,9% of respondents opposed our claim.

As part of the third research question, we found that most students in the Slovak Republic and the Czech Republic agreed with our claim that the division of the Czech and Slovak Federative Republic led to a gradual improvement of mutual Slovak-Czech and Czech-Slovak relations. As to our claim that during the existence of the Czecho-Slovak Republic, Slovaks gradually established themselves as a state-building nation, up to 54,4% of respondents in the Slovak Republic and only 35,4% of them in the Czech Republic agreed. 42,7% of respondents in the Slovak Republic believe that the creation of an independent Slovak Republic brought peace of stability in the Central European Area, while in the Czech Republic only 36,1% of respondents agreed to this statement. Division of the Czech and Slovak Federative Republic (ČSFR) into two separate States (Slovak Republic, Czech Republic) is positively perceived by most respondents in the Slovak Republic, as well as in the Czech Republic. Finally, we found that most of the respondents in the Slovak Republic and the Czech Republic could not imagine Slovak and Czech Republics united again in one single state in the future.

Division of the Czech and Slovak Federative Republic (ČSFR) into two separate States (Slovak Republic, Czech Republic) has improved mutual relations of Slovak and Czech nations, reaching a high quality level. To date, they, as autonomous and sovereign Member States of the European Union, NATO, V4, work together to promote joint interests.

Conclusions

On the basis of the carried out comparative analysis of the views and knowledge of the pupils of selected elementary and secondary schools of the Zlín self-governing region (Czech Republic) and the Trenčín self-governing region (Slovak Republic) on the division of the Czech and Slovak Federative Republic (ČSFR) into two separate States, several positions and conclusions can be drawn:

Research has shown valuable information about the views of those young people who did not live at the time of the division of Czechoslovakia into two separate States. Outcomes of the research carried out clearly shows that in some areas Slovak and Czech pupils hold different views on the common Slovak-Czech and Czech-Slovak history. On the other hand, most of those in the Slovak Republic and the Czech Republic positively assessed the division of the Czech and Slovak Federative Republic into two separate States (Slovak Republic, Czech Republic) positively. Research also suggests that the current young Slovak generation has largely identified itself with the existence of an independent and democratic Slovak Republic.

It would be beneficial for the whole Slovak and Czech public to have a better understanding of this issue in the future. Similar research with a sample of other age categories within the whole of the Slovak Republic and the Czech Republic could be carried out in the future. Experts would thus obtain further information drawn from the views of the whole Slovak and Czech society.

As for civic education and history classes taught in elementary and secondary schools, we recommend more intensive education on the topic of division of the Czech and Slovak Federative Republic and the subsequent creation of an independent and democratic Slovak Republic as of 1 January 1993. We also recommend that teachers take a partisan-free position to this issue and explain their pupils, in an objective manner, all the events which had led to the gradual collapse of the Czecho-Slovak Federation in the post-November period. In this way,

natural and “healthy” patriotic spirit could be formed among young people, leading them to appreciate the Slovak nation and all citizens living in the Slovak Republic.

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Marcel LINCÉNYI, PhD. in Media studies, obtained at Constantine the Philosopher University in Nitra, currently at Department of Political Science as associate professor, Trenčín University of Alexander Dubček in Trenčín (TnUAD), Slovakia.

ORCID ID: <https://orcid.org/0000-0002-9076-026X>

Marcel MINDÁR, Mgr. is currently assistant at the Department of Political Science, Alexander Dubček University of Trenčín

ORCID ID: <https://orcid.org/0000-0003-3822-8660>

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COMPETENCE DEVELOPMENT FOR INDUSTRY 4.0: QUALIFICATION REQUIREMENTS AND SOLUTIONS*

Anna Shevyakova ^{1,2}, Eleonora Munsh ³, Malika Arystan ⁴, Yelena Petrenko ⁵

¹ LLP "Rational solutions" Microdistrict Orbita-1 11/1, Karaganda 100 000, Republic of Kazakhstan

² PI "Academy Bolashaq", st. Erubaeva, 16, Karaganda, Republic of Kazakhstan, 100 000

³ EPAM Kazakhstan, Ermekova str., 58/3, Karaganda, Republic of Kazakhstan, 100 000

⁴ Karaganda Economic University, Akademicheskaya str. 9, Karaganda, Republic of Kazakhstan, 100 000

⁵ Plekhanov Russian University of Economic, Stremyanny lane 36, Moscow, Russia, 117 997

E-mails: ^{1,2} shevyakova.anna@gmail.com; ³ eleonora@list.ru; ⁴ malika_arystan@mail.ru; ⁵ petrenko_yelena@bk.ru

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Abstract. The article reveals the requirements for the entry of the world economy into the fourth industrial revolution and Industry 4.0 to the competence of personnel. Industry 4.0 promises new digital solutions to optimize the entire flow of value creation in production systems. Existing production systems are often based on a philosophy of continuous improvement and lean management. The increasing digitalisation of production processes is placing new demands on employee competence. The article discusses and analyzes the necessary competences for successful integration of Kazakhstan and Russian enterprises into Industry 4.0. The article provides systematization of company specific competences and skills of employees, as well as the author's roadmap of implementation for competence development in Industry 4.0 and on its basis recommendations and solutions for enterprises are formed.

Keywords: Industry 4.0.; Competence; Roadmap; Fourth Industrial Revolution; Digitalization; Companies

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JEL Classifications: D21, I26, J24, O30

1. Introduction

A successful transition to Industry 4.0 in the coming years will determine the competitiveness and future viability of Russian and Kazakh industry, as well as the creation of added value in Russia and Kazakhstan as a new place to locate business. Technological opportunities for linking facilities, data and processes offer both opportunities to

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improve the efficiency of industrial processes and constructive potential for developing new business models. This will revolutionise not only products and production, but also industrial value creation. It is expected that Industry 4.0 will benefit both large companies and small and medium-sized enterprises (SMEs). At the same time, Industry 4.0 is transforming the world of work in a sustainable way. Increasing networking, flexibility and complexity of processes are placing new demands on the skills of companies and their employees. In addition, Industry 4.0 is also changing the structures and forms of organization within companies and the design of workplaces. However, digital change does not follow a deterministic pattern, but can and should be shaped. There are many different development scenarios that depend on the interaction between technology, people and the organization and are determined by decisions at the level of operational, corporate strategy and work policies, as well as the prevailing framework conditions.

Germany launched the national programs of the "organized" digital economy by adopting the "Industry 4.0" concept in 2012. To date, such strategies have been adopted and provided with regulatory documents in almost two dozen countries from the local "Smart Nation" in Singapore (2015) to the global Chinese concept "Internet +" (2015) and the launch of the Russian digital economy program (2016). The European Union introduces a wide array of financial instruments for supporting of innovative activity of enterprises in years 2021-2027 (Wyrwa, 2020). Issues of economic development, which take into account regional peculiarities, peculiarities of formation of economic and political associations related to development of 4.0, have been repeatedly considered in the works of economists and sociologists (Boronenko, Lavrinenko, 2015; Shevyakova, Petrenko, 2019; Ślusarczyk et al., 2020; Tvaronaviciene, Burinskas, 2020).

The main problem of research in the field of digitalization is that it fixes an already established situation and is looking for adaptation to digital technologies. Researchers, providers of training and professional development in the field of E-competencies and digital skills do not take into account that a generation is coming to jobs that already perceive digital reality as part of everyday life. Also, during training, the growing pool of requirements for E-competencies is not always integrated as new content into training materials. The technical and especially the socio-technical aspects, which are the central component of digital processing in the learning process, are often not considered. The focus continues to be on the instrumental level and themes.

A key challenge in skills development for Industry 4.0 is to avoid and/or close the dual digital divide: between large companies and small and medium-sized enterprises on the one hand, and between highly and low-skilled workers on the other. Important levers in this regard are the framework conditions for primary and continuing education and training in schools, colleges and universities, as well as in companies.

The main issue of this study is the justification of the "gap" between the existing digital reality, the requirements of employers arising under the influence of Industry 4.0 and the possibility of a response or specific changes for educational institutions to form the necessary competencies.

The purpose of the study is to systematize company specific competencies and skills of employees based on the analysis of necessary competencies for successful integration of Kazakhstan and Russian enterprises into Industry 4.0, to develop an author's implementation roadmap for competence development in Industry 4.0, and to generate recommendations and solutions for enterprises.

Also, **the objectives of the study** are to predict possible changes under the influence of Industry 4.0 in activities:
- corporate management at enterprises, if necessary, with the creation of their own Industry 4.0 Competence Centers;

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- Universities, as well as public and private educational institutions;
- government agencies;
- Associations, chambers and unions, including public and professional.

Most of the world's companies see Industry 4.0 as an opportunity. At the same time, there are still many questions concerning its implementation. Small and medium-sized enterprises, in particular, are much more cautious about the possibilities of the fourth industrial revolution than large companies and, compared to them, have a greater need to develop - both to implement Industry 4.0 and to improve the skills of their employees (Dzwigol et al. 2020). Central to the development of competencies for companies of all sizes are the topics of data evaluation and analysis, cross-industry know-how and process management, interdisciplinary thinking and action, as well as customer relationship management and leadership competence. Equally important for companies is the strengthening of IT competencies in terms of comprehensive and interdisciplinary skills on a large scale. Nevertheless, large companies and small and medium-sized enterprises also have different priorities when it comes to qualifications for Industry 4.0. For example, large companies pay more attention to data-centric technologies and skills, such as artificial intelligence. SMEs, on the other hand, pay special attention to client-oriented processes and skills, as well as skills related to infrastructure and organization, such as social and communication skills. Successful qualification for Industry 4.0 cannot be obtained solely through "traditional" learning and development formats, such as full-time education in the classical undergraduate and graduate systems.

2. Skills Development for the Industry 4.0

Industry 4.0 describes an economic paradigm shift that brings both opportunities to improve process efficiency and the potential for the development and transformation of value addition and new business models of (industrial) companies. Digital change is increasingly breaking down tight value chains. Flexible value-added networks, platform markets and innovative intellectual services are replacing them. The real-time networking of products, processes and infrastructures heralds a fourth industrial revolution in which supply, production, service and delivery, as well as customer service, are linked to each other over the Internet. Both the increase in process efficiency in line with Industry 4.0 and the development and implementation of new business models during digitization require new or changed management and workforce skills.

The fourth industrial revolution is also leading to sustainable changes in the world of work. The new degree of flexibility and digital networks require innovative qualification solutions that are available depending on the situation and make the behavior of autonomous cyber-physical systems transparent to humans. Currently, there is still a lack of systematic surveys on the competence requirements of Russian and Kazakh companies. In particular, little is known yet about the needs of small and medium enterprises. In addition, there is a lack of suitable qualification proposals that would prepare both experienced employees and newcomers to the profession specifically for Industry 4.0.

The sector of competence development research for Industry 4.0 is based on the fundamental assumption that:

- there is a significant need for competence development for Industry 4.0 at Russian and Kazakh enterprises,
- small and medium enterprises set different priorities in the development of competencies compared to large enterprises,
- Targeted staff development measures are needed as a key to generating digital change.

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The fourth industrial revolution is not only a long-term change in the existing value-added and industrial production models, but also in the world of work, the forms of organisation in enterprises and the competence and qualification requirements of the workforce. However, the prospects for the future development of work, the competence profiles of employees and the impact on employment are assessed differently by different researchers (Abele et al., 2015, 2017; Monostori et al., 2016; Kagermann et al., 2013; Liker, 2004; Bauernhansl et al., 2016). The debate on competence and qualification development requirements for Industry 4.0 is currently in its infancy. A clear forecast of the expected development as well as a clear definition of competencies is proving to be difficult. For example, estimates of possible future scenarios for the development of job requirements and the resulting qualification requirements vary considerably, but all researchers agree that skills and competence development will play a central role in the implementation of Industry 4.0 and that the requirements for employees will increase (Metternich et al., 2017; Tisch et al. 2013; Enke et al. 2015; Meudt et al. 2017). This article cannot provide a comprehensive analysis, but it does attempt to contribute independently to the overall picture and identify the skills needs for Industry 4.0 based on empirical evidence. Based on this, recommendations for action for companies, policies and education providers will be made, and methodological entry points for qualification solutions will be identified. The starting point is that the digital change and implementation of Industry 4.0 does not follow a deterministic model, but rather that there are various technical and organizational alternatives that can be influenced and shaped by specific company and labour policy decisions. As a social and technical system, Industry 4.0 focuses on the interdependent linkages between all elements of the production system. It takes into account the interactions between technology, people and organization, as well as the operating and policy environment, strategic and regulatory specifications, networking and value chain development (see Figure 1).

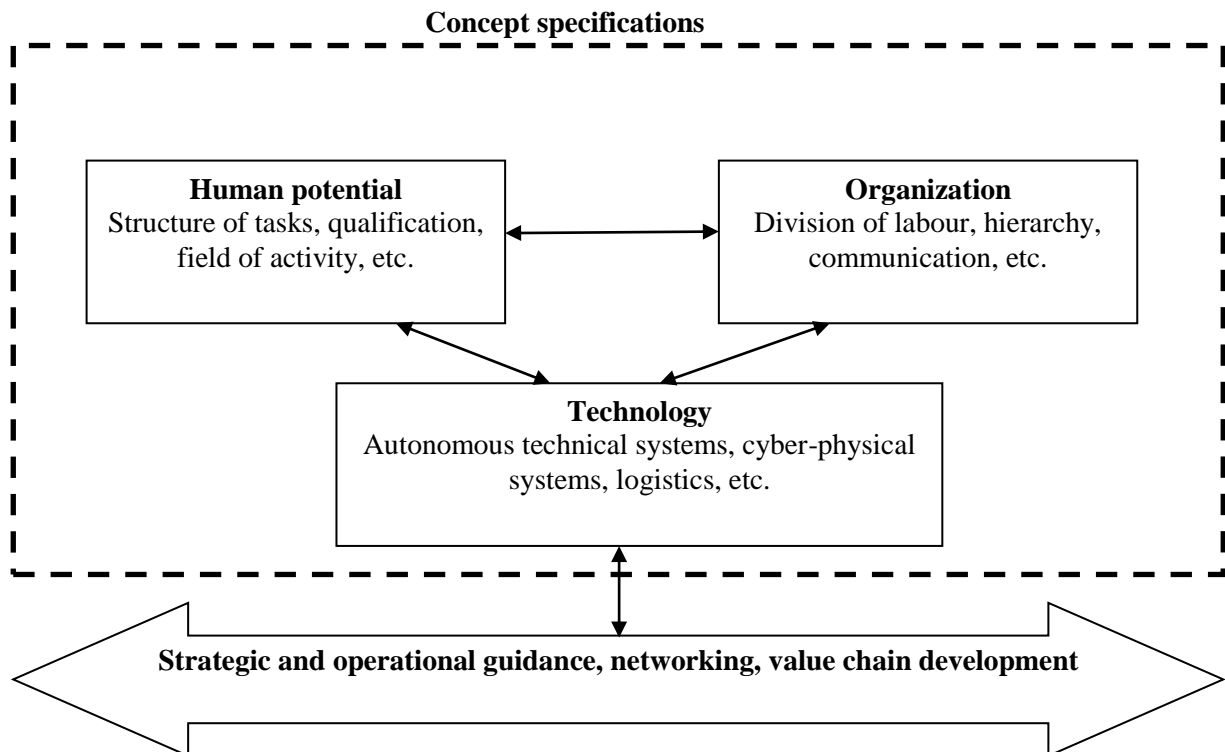


Fig. 1. Industry 4.0 as a socio-economic system

Source: composed by the authors

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The implementation of Industry 4.0 opens up a wide range of development options. While technology-oriented approaches emphasize the far-reaching replacement of human forms of operation by technical equipment and systems, complementary approaches focus on the complementary distribution of tasks and the interaction between man and machine. Since it can be assumed that the diffusion of digital technologies will not occur simultaneously and that there will be significant challenges at the human, operational and organizational levels, complementary design concepts in particular have great technological and economic potential for the implementation of Industry 4.0.

3. Future qualification needs and use of professional development tools

A decisive component for the successful implementation of Industry 4.0 in enterprises and the expansion of opportunities for the future working world is the qualification of employees. This requires, on the one hand, the determination of future requirements for company competences (company specific competences). A company can meet these needs through technology acquisition, external consulting, recruitment, cooperation with external service providers or training of its own staff. On the other hand, expected skills, which are important for the company's own employees as well as their skills, should be specified.

A change in job descriptions places new demands on the skills needed in companies and on the skills of the workforce. The results of the research made it possible to systematize company specific competences and skills of employees (see Table 1):

- 1) Technology and data-centric competencies and skills, which cover special competences in development, application and mastery of digital technologies.
- 2) Process and customer-centric Competences and Skills describe the understanding of relationships in value-added networks, including the organization and coordination of customer relationships.
- 3) Infrastructure and organization oriented competencies and skills relate to the work with the main technical components in the enterprise and soft skills.

Table 1. Systematization of company specific competences and skills of employees

Initiatives focused on	Competencies specific to the company	Employee's Skills
Technology / Databases	Data evaluation and analysis Information Technology Security Cloud architectures Artificial Intelligence User support/service technology	Interdisciplinary thinking and action Mastery of complex content Ability to interact with machines Competence in problem solving and optimization
Processes / customers	Process Management Customer relationship management IT business analysis E-commerce/E-marketing Consulting	Expanding process know-how Participation in innovation processes The ability to coordinate work processes Service orientation Interdisciplinary thinking and action Mastery of complex content Ability to interact with machines Competence in problem solving and optimization
Infrastructure / organization	Processing specific IT systems Administration of network databases IT Architecture Data Protection	Leadership competence Independent solutions Social/communication competence

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The described competencies and skills focus primarily on the opportunities offered by Industry 4.0 to improve process and production efficiency. However, in connection with the development and implementation of innovative business models, new and broad competencies are also needed. This is indicated, for example, by competences in data evaluation and analysis, skills in interdisciplinary thinking or participation in innovative processes, but also include, for example, client experience.

Companies' priorities for targeted development of company specific competences in the future also reflect the identified needs. According to previous studies, less than 25% of companies have special training and professional development programs for Industry 4.0, and naturally large companies are significantly ahead of SMEs. However, interviews with experts from academia and industry suggest that individual modules and building blocks of existing training and development programmes indirectly address selected issues for Industry 4.0.

4. Recommendations for action

The study confirms that there is a significant need for intensive progress in Russian and Kazakh companies with the development of competencies for Industry 4.0. In addition, there is a need to take into account the specific needs and priorities of small and medium-sized companies. It is also important that the targeted qualification of employees becomes the key to shaping digital change.

A decisive goal for the development of competencies for Industry 4.0 at Russian and Kazakh enterprises and the corresponding qualifications of existing employees is to avoid the so-called "digital divide", as digitalization is the fundamental basis for Industry 4.0. However, the successful application of such modern digital technologies cannot be achieved by delegating such topics only to IT specialists, but requires a comprehensive understanding of methods and concepts by users. However, this knowledge and experience is subject to complex and, depending on the target group, previously unknown relationships.

Due to the importance of digitalization, it is important to counteract the possible gap between the large companies that are pioneers in the implementation of Industry 4.0 and the numerous small and medium-sized enterprises that are still in a catch-up position with Industry 4.0. In order to support small and medium sized enterprises in the implementation of the Industry 4.0 standard and in the professional development of their employees, it is necessary first of all to familiarize companies with the potential and problems of Industry 4.0. This applies to both management and staff.

In order to facilitate the development of competencies for Industry 4.0, the following recommendations should be taken into account by the companies:

Developing framework conditions and raising awareness

Although most companies see Industry 4.0 as a breakthrough opportunity, small and medium enterprises have mixed views on this topic. In order to reduce the number of reservations, it is necessary to create an understanding of the causes and a revolutionary idea of Industry 4.0. Dedicated decentralized process management is not an end in itself, but preserves a company's ability to act and respond in future complex and rapidly changing market conditions.

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For companies that are pioneers in Industry 4.0, it may be appropriate to promote themselves as pioneers to achieve competitive and image advantage. For example, implementing software to digitize office and administrative processes can lead to rapid success: increased productivity and data security, better compliance with standards and improved customer satisfaction. Companies should consider the costs incurred in this regard as an investment and evaluate them from a forward-looking perspective.

Further develop business models

A critical analysis of the current business model follows directly from an understanding of the destructive nature of Industry 4.0 for established and traditional ways of doing business. This can be changed due to the introduction of new technologies, for example, digitalization facilitates contact with end users and, if necessary, direct sale of products. One-component production technologies - such as 3D printing - will change the supply landscape and raise customer expectations for greater individuality. If the business model and, thus, technological process at the enterprise changes, it is necessary to be convinced that suppliers and other partners also master new requirements.

Targeted change management

The digitalization and implementation of Industry 4.0 is usually accompanied by changes in organizational structure (e.g. by reducing the hierarchy in favour of greater personal responsibility) and staffing structure (e.g. in terms of workforce development), and sometimes by a completely different understanding of business. For this reason, change management must be integrated as part of the development of competencies in companies - especially among managers. Small and medium enterprises, in particular, often need external support in implementing change management processes, although it should be borne in mind that it is often economically inexpedient for such companies to seek management consultants. In addition, further training should be anchored as an ongoing strategic objective in management and human resources departments.

Digitalization strategy development

The use of new and innovative technologies is an important aspect of Industry 4.0, although concepts for Industry 4.0 can also be implemented on a small scale. The large-scale use of modern technologies - from intelligent mobile devices for the employee through cloud services to offline, driverless transport systems - is usually inevitable. A key benefit (in keeping with the spirit of Industry 4.0) is that it allows the company to remain flexible and adaptive. Digitalization makes data more complete, fast and accurate, providing a transparent overview of the production system and all other areas of the business.

With strategic foresight, opportunities and risks to the company can be identified at an early stage and conclusions drawn to guide corporate strategy. Small and medium-sized enterprises in particular, despite their typically short-term planning horizon, should regularly use this tool to raise awareness of Industry 4.0 and possible strategies for its implementation.

Professional development of employees

For the successful implementation of the Industry 4.0, employees must have the appropriate qualifications. This applies to all areas of qualification in enterprises: training in digitalization of content is just as important for dual training and qualified work as for all forms of further training. The most important qualification topics are data evaluation and analysis, process management and customer relationship management. This qualification must be continuous during the gradual implementation of Industry 4.0.

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For this purpose, it is important to make the qualification a management task. It is recommended that digital formats be used for content delivery. They can demonstrate correlations using real, digitally available process data. Smart terminals connected to the cyber level can provide employees with knowledge.

The development of holistic competence for Industry 4.0 requires the interaction of several actors, which takes place at different stages that can usually be divided into implementation, development, consolidation and sustainable linking. The management level plays an important role in this process. Other actors are universities and public educational institutions, private educational institutions, SME competence centres, non-governmental organizations, associations and trade unions. Their respective tasks are outlined in a road map for possible implementation (see table 2), which is one of the main results of the study. In order for the actors to find their role, an integrated information system is needed.

Further research may, in particular, contribute to the successful implementation of digital proposals in practice.

Table 2. Implementation roadmap for competence development in Industry 4.0

Indicators	Corporate management	Universities/public education institutions	External private educational institutions	Centres of competence Industry 4.0 in enterprises	State assistance	Associations, Chambers and Unions
Requirements . Creating the foundation and framework conditions for successful implementation of the Sector 4.0	Use of new and innovative technologies Digitization strategy development Increased awareness of new business models, platform economy, digital markets and data sets	Strengthening the dual system Strengthening initial and continuing teacher training Integration of all stakeholders Strengthening scientific support Media integration and digitization of content Adapting academic training	Extension of training and professional development of teaching staff Operational-level orientation Media and digital content integration	Institutionalization of strategic foresight Creating awareness of new business models, platform economy, digital markets and large data sets	Creation of additional education system Strengthening the dual system Strengthening initial and continuing training of teaching staff Integration of all stakeholders Strengthening scientific support	Integration of all stakeholders Creating framework conditions and raising awareness
Introduction Make sense and draw attention to the scale and business relevance of the Industry 4.0	Acquisition of information and composition of the project team Operational-level orientation Integration of all stakeholders Institutionalization of the strategic foresight approach Targeted change management	Survey of Educational Achievement and Competence Implementation of innovative teaching-learning solutions	Education and Competence Survey Initiation of a neutral internet platform for educational offers in Industry 4.0 Mediation of digital transformation requirements Implementation	Creating framework conditions and raising awareness of competence development for the Industry 4.0 Exchanges between enterprises 4.0 Raising awareness by informing about the content and benefits of the	Information campaign Initiation of a neutral brokerage platform for educational offers in the industry 4.0 Incentives through programs and support activities (e.g.	Information campaign Networking and assistance in obtaining information Creation of seminars and special event formats for enterprise managers

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Indicators	Corporate management	Universities/public education institutions	External private educational institutions	Centres of competence Industry 4.0 in enterprises	State assistance	Associations, Chambers and Unions
			of innovative teaching-learning solutions	Industry 4.0 Establishment of demonstration centres, seminars and special formats of events for business leaders	digital implementation or individual transfer projects) Creation of flexible framework conditions for the industry 4.0	
<u>Development</u> Initialize the theme across the company and create a common understanding of the task	Start event with a message of entrepreneurial vision New business model development	Measures to train trainers on the content and requirements of the Industry 4.0	Raising awareness and adapting managers through basic workshops Message about digital transformation requirements	Exchanges between companies Funded consulting workshops to address industry issues	Incentives through programmes and support measures (e.g. advisory measures or awareness campaigns) Support for pilot projects and openness to pilot approaches	Actively contribute to the development and conceptualization of the integration of people into the Industry 4.0
<u>Consolidation</u> Intensive training of specialists and freedom of decision making for project managers	Message about digital conversion requirements Staff development	Seminars and staff training Message about digital conversion requirements	Providing special training programs for individual companies Message about digital transformation requirements	Inter-business exchange Funded consulting workshops to address industry issues	Incentives through programmes and support measures (e.g. for targeted professional development and learning measures).	Creating opportunities to present best practices through networks and sharing experiences
<u>Sustainability</u> Inform about the current status of the project and explain new technological developments	Organization of events within the company Ensuring the transfer of knowledge and skills throughout life Staff development	Ensuring the transfer of knowledge and skills throughout life Adapting academic training	Ensuring the transfer of knowledge and competence throughout life	Regular information on current innovations and technological opportunities	Strengthening framework conditions for lifelong learning	Creating opportunities to present best practices through networks and sharing experiences

Source: composed by the authors

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5. Conclusion

The areas of data evaluation and analysis, process management and increasing process know-how, as well as interdisciplinary thinking and action, are regarded by enterprises as central elements of staff qualification for Industry 4.0. Information technology competences - above all as extensive knowledge - are also regarded as being of great importance for the fourth industrial revolution. When setting priorities for the future, differences will become apparent: while large companies pay particular attention to technology and data-oriented topics, small and medium-sized enterprises pay particular attention to customer-oriented processes as well as areas of competence related to infrastructure and organization.

The content of Industry 4.0 and digitalization should be integrated into company training and further education, existing offers should be systematically linked to each other and existing programmes should be purposefully developed. In this context, it is essential to strengthen all necessary competences and skills: those that are relevant for the implementation of Industry 4.0 at the production and technological level or in the design of customer relationships, as well as those in management and workforce that are relevant for the development of new business models and for understanding the economics of the Internet and platforms. In addition to traditional competency development tools, participatory learning platforms should also use digital educational offerings as well as learning cases, simulations or learning games (keyword: gamification).

In general, Kazakh companies have significant development potential for further implementation of digital technologies. This is especially true for small and medium-sized enterprises. Both in terms of implementation and intention to develop companies in digital format.

Against this background, it is obvious that it is necessary to raise awareness of digital changes in small and medium-sized businesses and to convey to them not only the benefits of Industry 4.0, but also clear strategies for its implementation. Specific (successful) implementation examples provide important impulses for the introduction of Industry 4.0 to SMEs, on the one hand (to be able to assess digitization opportunities for their business) and, on the other hand, to reduce concerns about high investment costs and uncertainty about depreciation of investments.

In order to facilitate and successfully develop competencies for the Industry, the study has developed the following recommendations for enterprises to act on:

1. Develop and implement strategies for Industry 4.0: Company decision makers must develop an understanding of the disruptive changes caused by Industry 4.0. It is important that companies derive from this understanding the strategies and measures for developing employee competencies and introducing new products, efficient processes, and innovative business models. The leadership competence of management is particularly relevant here (see in particular the implementation roadmap in Table 2).
2. Strengthen qualification and change management: Initial and continuing vocational training in enterprises should be adapted to Industry 4.0 and qualifications should be a priority. New digital methods offer effective entry points for this. In addition, it is important to adapt the work organisation and process as well as the framework conditions. Change management must be taken into account from the outset.

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Anna SHEVYAKOVA, Doctor of Economics, Senior Researcher, LLP "Rational solutions". Her research interests are related to macroeconomics, economic diversification, regional specialization, budget financing and state support for entrepreneurship development, innovation and development of "smart" territories.

ORCID ID: orcid.org/0000-0002-2644-6292

Eleonora MUNSH, Master of Engineering and Technology, Training and Development Department, EPAM Kazakhstan. Her research interests are related to Kazakhstan's economic sectors, pre-employment, non-governmental organizations, information technologies and support, computer networks, psychology and sociology.

ORCID ID: orcid.org/0000-0003-2395-6403

Malika ARYSTAN, PhD, Associate Professor, Department of economic and management, Karaganda Economic University. Research interests are related to micro- and macroeconomics, international and regional economic development, state economic policy, factors of economic growth.

ORCID ID: orcid.org/0000-0003-4921-6577

Yelena PETRENKO, Doctor of economics, professor, Plekhanov Russian University of Economic. She is an expert of the European Bank for Reconstruction and Development in Kazakhstan. Her research interests are related to strategic management, human resources management, sustainability of companies, entrepreneurship, marketing.

ORCID ID: orcid.org/0000-0001-6892-2392

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CORPORATE GOVERNANCE MECHANISMS AND FINANCIAL REPORTING QUALITY OF LISTED COMMERCIAL BANKS IN NIGERIA

Sunday Oseiweh Ogbeide ¹, Henry Usunobun Ogiugo ², Isaac Olufemi Adesuyi ³

*¹Department of Accounting and Finance, Faculty of Humanities, Social & Management Sciences
Elizade University, Ilara-Mokin, P.M.B. 002, Ondo State, Nigeria*

*²Department of Accounting and Finance, Faculty of Management Sciences
AJAYI Crowther University, Ibadan, Oyo State, Nigeria*

*³Department of Business Administration, Faculty of Humanities, Social & Management Sciences
Elizade University, Ilara-Mokin, P.M.B. 002, Ondo State, Nigeria*

E-mails: ¹sunnyogbeide2017@gmail.com ²ogiugohenry@yahoo.com; ³Isaac.adesuyi@elizadeuniversity.edu.ng

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Abstract. This study examined corporate governance mechanisms and financial reporting quality of listed commercial banks in Nigeria. The population of the study consists of all listed commercial banks on the stock exchange as at 31st December 2018. A sample of nine (9) listed commercial banks were selected and data were collected over the period 2008 to 2018. Descriptive statistics and panel Least Square regression were used for the data analysis. The findings reveal that board size and audit committee were negative and exerted significant impact on financial reporting quality of listed commercial banks while board independence is significant and exerts a positive influence on financial reporting quality of listed commercial banks in Nigeria. Female directorship does not have a significant relationship with financial reporting quality of listed commercial banks in Nigeria. The study therefore recommends that steps should be taken by regulators to stipulate stiffer penalty on firms engaging in earnings smoothing capable of undermining corporate governance ethics and framework for banks in Nigeria as this will serve as deterrent to others and further entrench sanity.

Keywords: Board Size; Board Independence; Female Directorship; Audit Committee Size; financial Reporting Quality

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JEL Classifications: M41, M42

1. Introduction

In the competitive banking environment, effective corporate governance indicator has been identified as a potent force in the profitability of banks operating in Nigeria (James and Ibezim, 2015). The very essence of corporate governance is to monitor the ills of the directors and other management staff with a view to ensuring prudent management of scarce resources as well as financial reporting quality. Al-khonain and Al-deem (2020) opine that giant multinational firms such as Enron, WorldCom, and Tyco witnessed bankruptcies in the early 2000s due to ineffective corporate governance mechanisms and poor financial reporting. Financial reporting is a means through which an enterprise conveys information about its financial performance and condition to external users.

In Nigeria, the heightened interest in corporate governance of banks was premised on the collapse of several financial and non-financial institutions which includes the bank PHB, Spring bank Plc, Oceanic bank Plc, Intercontinental bank Plc, African petroleum Plc, Levers brother and Cadbury Plc. An investigation into the cause revealed significant, deep-rooted problems in the account preparation and also the intentional misconduct of managers which led to the concurrent sack of eight (8) bank chiefs by the governor of central bank of Nigeria and the call for an investigation of the efficacy of the monitoring and controlling of managerial and financial behavior of managers (Ndukwe & Onwuchekwa, 2014, Paulinus, Oluchukwu & Somtochukwu, 2018).

Shareholders are linked to the directors via the financial reporting system. The quality of financial reports relates to the extent to which relevant information about the firm's earnings is communicated to stakeholders. In order to enhance the integrity of financial reporting, companies are required to put in place, a designed structure in the form of sound corporate governance to ensure the true and fair presentation of a company's financial position. Hence, Paulinus et al. 2018 stress that financial reporting is perceived no longer as a low priority book keeping exercise, but a central function for directing a company under good corporate governance principles.

Corporate governance and financial reporting are highly interwoven. Financial reporting is considered as a crucial part of corporate governance mechanisms (Melis, 2004; Melisa and Carta, 2010; Chanatup, Aujirapongpan and Ritkaew, 2020; Tjahjadi, Harymawan, and Warsidi, 2020; Wati, Ramdany and Momon, 2020; Kulustayeva, Jondelbayeva, Nurmagambetova, Dossayeva and Bikteubayeva, 2020). Corporate governance is a major driver of quality financial reporting in firms in the light of macroeconomic challenges (Okpamen & Ogbeide, 2020). Joseph and Ahmed (2017) emphasized that good corporate governance influences the likelihood of financial reporting in firms. Conventionally, stakeholders expect corporate transparency and quality information for decision making, which is facilitated by corporate governance practices by molding the corporate reporting process in a positive direction (Cooray, Gunarathne & Senaratne, 2020).

Corporate governance indicators assist to ensure that financial reports are in compliance with International Financial Reporting Standards (IFRS). Board size, audit committee size, board independence and female board members are common indicators of corporate governance in the assessment of quality of reports (Zalata, Tauringana & Tingbani, 2017). These indicators of corporate governance play a vital role in influencing the quality of financial reporting. The studies on the link between board size and financial reporting quality are mixed. For example, the researches conducted by Akshita and Sharma (2015); Christensen, Christensen, Kent and Stewart (2010) state that a small board size induces a better performance and financial reporting quality in firms. Adams and Mehran (2012) argue that some organizations need larger boards for effective monitoring. Beasley (1996) reports that a small board size has positive relationship with the likelihood of financial statement fraud while Carcello and Nagy (2004) and Farber (2005) found negative relationship between financial reporting quality and a large board size.

Audit committees are an essential element of corporate governance (Green, 1994). The audit committee is arguably the most important of the board sub-committees (Mallin, 2007). The audit committee act independently from the executive, to ensure that the interests of shareholders are properly protected in relation to financial reporting and internal control. It is the role of the audit committee to review the scope and outcome of the audit, and to try to ensure that the objectivity of auditors is maintained. This may involve a review of the audit fee, and fees paid for any non-audit work, and the general independence of auditors. The audit committee bridges the gap between the internal and external auditors and the board, helping to ensure that the board is fully aware of all relevant issues related to the audit. The committee is to be structured to ensure reliable and high financial report as it oversees the financial reporting process (Onuorah & Imene, 2016). In Nigeria, the audit committee was stipulated by the Companies and Allied Matters Decree 1990, now known as the Companies and Allied Matters

Act (CAMA) as amended for companies to maintain. The findings of Abbott, Parker and Peters (2004) depict that audit committee size has no considerable influence on quality of financial reporting. But, Yermack (1996) posits that a fewer audit committee improves firms' worth, agreeing with Jensen (1993) assertion that a small sized audit committee member enhances the efficiency with which the audit committee engages in oversight and control function.

Board independence means the number of independent non-executive directors on the board in relation to the total number of directors (Uwuigbe, 2011). It implies more outside directors. The assumption is that boards with a significant number of outside directors will be more independent and will make better decisions than boards dominated by insiders because of their fiduciary duty to its shareholders and their independence from management (Fama & Jensen, 1983). An important factor that may affect the quality and accuracy of financial reports is the composition of its board members. A more independent board is likely to produce an unbiased financial statement. Peasnell, Pope & Young (2000) and Davidson, Godwin and Kent (2005) confirmed a strong link between board independence and financial reporting. Joseph & Ahmed (2017) also affirm that board independence has a significant positive effect on the timeliness and quality of financial reports. Other studies have however provided a contrasting opinion. According to Uwalomwa, Eluyela, Uwuigbe, Obarakpo and Falola (2018), board independence has a non-significant negative relationship with the quality of financial reports. Also, Oba (2004) earlier opined that board independence has a significantly negative effect on the quality of financial reports. The results of Ajayi and Zahiruddin (2015) who investigated the relationship between female board member and market performance showed that there is a negative significant relationship. The gender of the firms' directors has been suggested to affect corporate policies and outcomes given that women are generally more cautious.

There are growing stream of researches in the way and manner in which male and female board members bring their characteristics to reflect on their choices of leadership style and decision making process on the board (Smith, Smith & Varner, 2006; Renee and Daniel, 2009; Duc and Thuy, 2013). Women tend to have better communal characteristics, like being kind, helpful and sensitive while men are more dominant in nature (Eagly & Johannesen-Schmidt, 2001). The communal characteristics of women are associated with better communications among board members and also better board participation like attending board meetings (Adams & Ferreira, 2009). A wide range of studies like Oyenike, Olayinka and Emeni (2016) affirm that female directors are risk-averse and usually support less risky policies and financial decisions compared to male directors and that female directors are stricter monitors. Adams and Ferreira (2009) opined that female board members are connected with improved profitability, stronger board monitoring and good governance credentials as a result improving the quality of financial reporting. The appointment of female directors is likely to enhance board independence and improve the shareholders' wealth (Zalata, Taurigana and Tingbani, 2017). Similarly, the appointment of female directors facilitates more informed decisions, enhances the decision-making process and improves communication among board members (Bear, Rahman & Post, 2010). In addition, the appointment of female directors enhances the depth and breadth of discussion and deliberations, particularly those related to challenging issues. Sun, Liu and Lau (2011) documented no relationship between female board members and financial reporting quality.

2. Literature Review

2.1 Empirical Review

Adegbemi, Donald, and Ismail (2010) examined the impact of corporate governance on banks performance in Nigeria. Their research was conducted by analyzing six selected banks and using pooled data and data extracted from stock exchange fact book and CBN's annual statistical bulletins and found out that corporate governance during the period they reviewed (2005-2009) was appalling and has a negative effect on the performance of the banking sector. Bebehuk and Cohaen (2004) find out that firms that have strong corporate governance

mechanisms put in place perform better and that board size has a positive relationship with financial performance. Their studies showed that large board size enhance firm performance since there is a likelihood of more experts on the board to make better decisions.

The outcome of the study by Moses (2016) depicted that audit committee size has no significant impact on the quality of financial reporting in quoted Nigerian banks. Kantudu and Samaila (2015) used multiple regression analysis to investigate board characteristics, independent audit committee and financial reporting quality of oil marketing firms in Nigeria. The study revealed that financial reporting quality is influenced by power separation, independent directors and an independent audit committee. The finding of Anderson, Mansi and Reeb (2004) show that financial reporting is negatively related to audit committee size. Abbott, Parker and Peters (2004) found that companies with an audit committee which was independent and active, were less likely to have financial reporting misstatements. Their study investigated the relationship between audit committee effectiveness and financial reporting misstatements using the Blue Robin committee recommendations as benchmarks. Levitt (1998) pointed out that the qualified, independent and tough minded audit committees represent the most reliable guardians of the public interest. The findings of Abbot, Parker and Peters (2004) indicate that audit committee size has no considerable influence on the quality of financial reporting. The work of Lin, Li and Yang (2006) however indicated a negative association between audit committee size and financial reporting quality. Reeb (2004) posits that a larger sized audit committee spends a considerable and reasonable period to check the financial reporting process and internal control mechanism which will constitute a significant factor for the effective performance of the company. Later studies including that of Carcello and Neal (2004), Lehn, Patro, and Zhao (2009) and Netter and Yang (2008) find no association between audit committee size and financial reporting quality. Based on the inconsistencies in these results by other researchers, this study will fill the gap.

Klai and Omari (2011) examined corporate governance and financial reporting quality of Tunisian firms. Multiple regression model was used and the results revealed that lack of board independence and a high level of ownership affects Tunisian firms. Kyereboad-coleman (2007) examined board independence and the size of audit committee. The findings from the study showed that larger audit committee and independent board improves firm value. The study of Cornett, Mc Nutt and Tehranian (2009) revealed that board independence is negatively related to financial reporting quality. Khan and Kotishwar (2011) found that independent non-executive directors are able to monitor and control the chairman/ chief executive. They serve as a link to the external environment and help to maintain an ethical climate. The findings of Bushman and Vafeas (2005) concluded that the quality of information contained in the financial reports increases when there is an increase in the percentage of outside independent directors. Davidson et al (2005), Klien (2002) recorded positive relationship between board independence and financial reporting quality while Kao and Chen (2004) documented a negative relationship between board independence and financial reporting quality when they examined firms in Taiwan and Hong Kong. No significant relationship was found by Shin (2004) between the quality of financial reporting and board independence in Canadian firms which is similar to the findings of Abdullah and Mohammed (2004) for Malaysian firms. Petra (2007) opined that managers cannot be controlled by independent directors because these directors are not competent enough and do not have any effect in ensuring the quality of financial reporting. In addition, Ho and Wong (2001) found no relationship between the proportion of non-executive directors and information disclosure.

Carter, Simkins and Simpson (2003) study shows that female directors are likely to display more independent thinking than male directors which is crucial for effective board oversight. Daily, Certo and Dalton, (2000) observe that compared to all-male boards, women bring different viewpoints to the boardroom and facilitate more informed decisions that increase the level of transparency at the board level. The results of Mario and Garofalo (2016) suggest that while banks with female executive's experience significantly higher financial performance under low competition, they tend to underperform when there is increased competition. Their findings also show that the presence of female leaders improves the capital stability of banks subject to greater competition. Other

studies, like Adams & Ferreira (2007), show a negative association between the ratio of female directors on the board and operational firm performance. Adegbe, Folajimi and Fofah (2015) adopted survey research design with the use of structured questionnaire to obtain the opinion of regulators and operators regarding ethics, corporate governance and financial reporting in the Nigerian banking industry (global role of international financial reporting). It was discovered that non-compliance with relevant ethical codes and poor corporate governance affected the preparation of quality and faithful financial reports. The study stated that poor ethical and corporate governance are still some of the major challenges Nigerian banks are facing. The study of Onuorah and Imene (2016) evaluated corporate governance measure indicators on the firm quality of financial reporting in Nigeria on some selected companies including brewery, banking, oil and gas, and beverage companies. The results from the economic analysis conducted revealed that the correlation among corporate governance indicators of board size, board independence, audit committee size, quality of external audit and board experience on the financial reporting quality was 93.47%. It further showed that quality of external audit, board experience and board size had a positive impact on the financial reporting quality whilst board independence and audit committee size negatively affect financial reporting quality. Tanko and Kolawole (2008), Jackling and Johl (2009) and Francis, Hasan and Wu (2012) found positive and significant association between board independence and financial reporting quality in conformity with the agency and resource dependency theories.

3. Methodology

The study uses descriptive and ex post facto research designs. The population of the study consists of the ten (10) commercial banks listed on the Nigeria Stock exchange as at 31st December 2018 (The Nigerian Stock Exchange website and Fact Book, 2018). This study employs the judgmental sampling technique to select a sample size of nine (9) listed commercial banks in the period under reference. The justification for the use of this technique is premised on the fact that the selected banks are in the best position to provide information required. The data used for this study were secondary data derived from the annual reports of nine (9) individual commercial banks which was obtained from the Nigerian Stock Exchange (NSE), making up the sample size for the period 11 years from 2008-2018. The annual report from which the data will be extracted is possibly the most important document of a firm, especially as regards its financial status.

3.1 Method of Data Analysis

To analyze the data on corporate governance variables such as board size, audit committee size, board independence and female board member. Panel unit root test using the ADF - Fisher Chi-square method was used to determine the stationarity of the variables. If p-value > ADF - Fisher critical value of 0.05, accept null hypothesis, i.e. unit root exists, mean data is non stationary (Joseph & Ahmed, 2017). Also, if p-value < ADF - Fisher Chi-square critical value 0.05, reject null hypothesis, i.e. unit root does not exist. That is, the mean data is stationary. The correlation matrix shows the association between the variables. The correlation analysis shows only the degree of association between variables and does not permit the researcher to make causal inferences regarding the relationship between variables (Marczyk et al., 2005). Panel least square was used to ascertain the impact of the independent variables on financial reporting quality of the sampled commercial banks.

3.2 Model Specification

The model used by Adebisi (2017) was modified and adapted. The following general empirical research model was developed in the form of multiple regression equation:

$$FRQ = f(BDSZ, ADCSZ, BDIND, FBDM) \text{ it} \dots\dots\dots (1)$$

$$Y_{it} = \beta_0 + \sum \beta_K X_{it} + E_{it} \dots\dots\dots (2)$$

Where: Y_{it} = the dependent variables for time period t. β_0 = is the intercept. β_K = represents the coefficients of the X_{it} variables. X_{it} = represents the explanatory variables. E_{it} = is the error term. As relating to corporate governance mechanisms and financial reporting quality, the model data is therefore stated as follows:

$$FRQ_{it} = \beta_0 + \beta_1(BDSZ_{it}) + \beta_2(ADCSZ_{it}) + \beta_3(BDIND_{it}) + \beta_4(FBDM_{it}) + \varepsilon_{it} \text{-----} (3)$$

3.3 Variable Description

FRQ= Financial Reporting Quality; BDSZ = Board Size,; ADCSZ= Audit Committee Size ; BDIND = Board Independence; FBDM = Female Board Member (see Table 1)

Table 1: Measurement of Variables

S/N	Variables	Types of Variables	Measurement of Variables	Source
1.	Financial Reporting Quality	Dependent	Accrual method Total accrual = net income – cash flow from operating activities	Bako (2013)
2.	Board Size	Independent	Total number of members on the board	Chen (2014)
3.	Audit Committee Size	Independent	The proportion of members serving on the audit committee	Ming and Lee (2014)
4.	Board Independence	Independent	$\frac{\text{Number of non – executive directors}}{\text{Total board size}}$	Fama and Jensen (1983)
5.	Female Board Member	Independent	Blau (1977) index method	Bear, Rahman and Post (2010)

Source: Researcher's Compilation, 2020

4.0 Empirical Analysis

Table 2: Correlation Matrix

	FRQ	BDSZ	ADCSZ	BDIND	FBDM
FRQ	1.00				
BDSZ	-0.06	1.00			
ADCSZ	-0.02	0.03	1.00		
BDIND	-0.16	-0.16	-0.12	1.00	
FBDM	-0.06	-0.10	-0.23	-0.08	1.00

Source: Eview 8.0 Output, 2020

Table 2 shows the correlations coefficient between the dependent variable financial reporting quality (FRQ) and the independent variables. As seen above, it is noted that the financial reporting quality has a weak and negative relationship with board size (BDSZ) ($r = -0.06$), audit committee size (ADCSZ) ($r = -0.02$), board independence (BDIND) ($r = -0.16$), and female board member (FBDM) ($r = -0.06$). The correlations imply that the independent variables are not strong enough to positively influence financial reporting quality. Board size (BDSZ) is negatively correlated with board independence (BDIND) ($r = -0.16$), and female board member (FBDM) ($r = -0.01$). While board size is positive with audit committee size (ADCSZ) ($r = 0.03$). Audit committee size (ADCSZ) is negatively associated with board independence and female board member ($r = -0.12$, $r = -0.23$). Board independence (BDIND) and female board member (FBDM) are negatively correlated ($r = -0.08$). The results suggest the absence of multicollinearity among the variables in the model. Since correlation does not necessarily mean that there is a causal relationship (Woolridge, 2000), there is need to conduct regression analysis in order to estimate causal relationship. Therefore, Panel least square regression is conducted (Table 3).

Table 3. Panel Least Square Regression

Dependent Variable: FRQ
 Method: Panel Least Squares
 Date: 08/15/19 Time: 19:43
 Sample (adjusted): 2011 2018
 Periods included: 8
 Cross-sections included: 9
 Total panel (balanced) observations: 72
 White cross-section standard errors & covariance (d.f. corrected)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	16275130	35611106	0.457024	0.6491
D(BDSZ)	-4358363.	3137089.	-1.389017	0.0440
D(ADCSZ)	-48736561	24457841	-1.992676	0.0304
D(BDIND)	-2.45E+08	1.26E+08	-1.946497	0.0318
FBDM	-41254931	1.03E+08	-0.398976	0.6912
R-squared	0.685446	Mean dependent var		4648358.
Adjusted R-squared	0.630846	S.D. dependent var		1.32E+08
S.E. of regression	1.30E+08	Akaike info criterion		40.27706
Sum squared resid	1.14E+18	Schwarz criterion		40.43516
Log likelihood	-1444.974	Hannan-Quinn criter.		40.34000
F-statistic	11.564940	Durbin-Watson stat		2.000399
Prob(F-statistic)	0.000809			

Source: Eview 8.0 Output, 2020

R-Square is the ratio of changes in the dependent variable i.e. financial reporting quality (FRQ) which can be predicted from the independent variables, board size (BDSZ), audit committee size (ADCSZ), board independence (BDIND), and female board member (FBDM) of the nine selected banks. This value indicates that 0.6854 i.e. 68.54% of the changes in financial reporting quality (FRQ) scores can be predicted from board size (BDSZ), audit committee size (ADCSZ), board independence (BDIND), and female board member (FBDM). Also the adjusted R-square endeavours to give a more reliable value to estimate, hence the adjusted R^2 value of 0.630846 i.e. 63.08% shows the actual changes in the financial reporting quality (FRQ), which is due to the change in independent variables; board size (BDSZ), audit committee size (ADCSZ), board independence (BDIND), and female board member (FBDM). Also the F-statistic (11.564940) is significant at 5% level since the probability of its value (0.000809) is lesser than the 0.05 level of significance. This simply implies that the test is statistically significant and the model can be used for further speculation. Furthermore, the Durbin-Watson statistics of 2.000399 shows there is an absence of serial correlation or autocorrelation problem of regression in the model. These approximately conform to the benchmark of 2.0 for the absence of autocorrelation problem of regression. It suggests that the result is good for policy prescription.

4.1 Discussion of Findings

The study assessed corporate governance mechanisms and financial reporting quality of listed commercial banks in Nigeria. Based on the first hypotheses, it is seen that board size does have a significant relationship with the financial reporting quality of listed commercial banks in Nigeria. This finding is consistent with the view of Ajayi and Zahiruddin (2016) where they investigated the relationship between corporate governance mechanisms and listed firm performance using dynamic panel data through a period 2005 to 2015. Their findings showed that board size have a negative and is significant on the accounting performance of firms. Similarly, the results corroborate the view of Uwuigbe (2011) on corporate governance and financial performance of banks in Nigeria using panel data regression analysis to analyze the relationship that exists between corporate governance and the financial performance of banks. The finding shows board size had significant negative effect on the financial performance of listed banks. However, the results of the first does not support the view of findings of Bebehuk and Cohaen (2004) where they showed that large board size enhance firm performance since there is a likelihood of more experts on the board to make better decisions.

It was observed that audit committee size does have a significant relationship with financial reporting quality of listed commercial banks in Nigeria. This finding is in line with the view of Onuorah and Imene (2016) where they evaluated corporate governance measure indicators on the firm quality of financial reporting in Nigeria on some selected companies including brewery, banking, oil and gas, and beverage companies. Their results revealed that board independence and audit committee size negatively affect financial reporting quality. However, the results disagreed with the view of Kyereboard-coleman (2007) who examined board independence and the size of audit committee. The findings from the study showed that larger audit committee and independent board improves firm value. Board independence does have a significant relationship with financial reporting quality of listed commercial banks in Nigeria. This result is in tandem with the view of Kantudu and Samaila (2015) who used multiple regression analysis to investigate board characteristics, independent audit committee and financial reporting quality of oil marketing firms in Nigeria. The study revealed that financial reporting quality is influenced by power separation, independent directors and an independent audit committee. Also the results support the findings of Klai and Omari (2011) they examined corporate governance and financial reporting quality of Tunisian firms. Their results revealed that lack of board independence and a high level of ownership affects Tunisian firms. Female directorship does not have a significant relationship with financial reporting quality of listed commercial banks in Nigeria. This result does not support the view of Carter, Simkins and Simpson (2003). They showed in their findings that female directors are likely to display more independent thinking than male directors which is crucial for effective board oversight. The results also disagreed with the view of Adams and Ferreira (2009) which they opined that female board members are connected with improved profitability, stronger board monitoring and good governance credentials as a result improving the quality of financial reporting. Furthermore, the result is in contrast with the view that the appointment of female director is likely to enhance board independence and improve the shareholders' wealth (Zalata, Taurigana & Tingbani, 2017).

5. Conclusion and Recommendations

The survival and stability of any financial sector depends on the quality of its governance. In spite several reforms put to strengthen this sector, banks were still prone to failure. The loss associated with this failure is enormous on their reputation and industrial growth. Strong governance framework that enhances compliance and sanction non-

compliance to corporate governance codes becomes imperative. Hence, the rationale of the study was to examine the impact of corporate governance mechanisms and financial reporting quality of listed banks in Nigeria, with particular reference to nine (9) selected banks quoted in Nigeria Stock exchange, which are Access bank, Fidelity bank, GT bank, sterling bank, Union bank, UBA, Unity bank, WEMA bank, and Zenith bank. Based on the Panel regression results the study, the study showed that board size does have a significant but negative relationship with the financial reporting quality of listed commercial banks in Nigeria., also that audit committee size does have a significant but negative relationship with financial reporting quality of listed commercial banks in Nigeria. On the other hand, board independence does have a significant and positive relationship with financial reporting quality of listed commercial banks in Nigeria. However, that female directorship failed to have a significant relationship with financial reporting quality of listed commercial banks in Nigeria. This study concludes that corporate governance mechanisms have an impact on financial reporting quality of listed commercial banks in Nigeria. Conclusively, corporate governance has significant effect on the quality of financial reporting in the listed commercial banks in Nigeria.

Based on the findings of this research, we therefore present the following recommendations which will be useful, especially to stakeholders. Efforts to improve corporate governance should focus on the size of boards, by maintaining an optimum size, since it has a negative relationship with the quality of financial reporting. The number of members in the audit committee should also be kept at an optimum. This is because a committee with too many members will lead to a decrease in the quality of financial reporting in listed commercial banks in Nigeria. Since the relationship between board independence and quality of financial reporting is positive, in order to have proper monitoring by independent directors, bank regulatory bodies should require additional disclosure of financial or personal ties between directors (or the organizations they work for) and the company or its CEO. By so doing, they will be more completely independent. Although female directorship was found not to have a significant effect with financial reporting quality of listed banks in Nigeria, it is recommended that banks stick to disclosing the number of females on the board, and try to have more female directors for the purpose of inclusivity.

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Sunday Oseiweh OGBEIDE is a Senior Active Researcher in, and Lecturer of Finance in the Department of Accounting and Finance, Faculty of Humanities, Social & Management Sciences, Elizade University, P.M. B. 002, Ilara-mokin, Ondo State, Nigeria. He holds the Bachelor of Science (B.Sc) degree in Accounting, Master of Science (M.Sc. Finance) degree and Doctor of Philosophy (Ph.D. Finance) degree from the prestigious University of Benin, Edo State, Nigeria. There are over 12000 reads of his articles by researchers all over the world. His area of specialization include Standard Finance and Behavioural Finance.

ORCID ID: <https://orcid.org/0000-0002-2818-7757>

Henry Usunobun OGIUGO is a Senior Lecturer of Finance in the Department of Accounting and Finance, Faculty of Management Sciences, AJAYI Crowther University, Oyo State, Nigeria. He holds the Bachelor of Science (B.Sc) degree in Banking and Finance, Master of Science (M.Sc. Finance) degree and Doctor of Philosophy (Ph.D. Finance) degree from the University of Benin, Edo State, Nigeria. His area of specialization include Capital Market and Portfolio Optimization.

ORCID ID: <https://orcid.org/0000-0001-5395-9897>

Isaac Olufemi ADESUYI is a Lecturer in the Department of Business Administration, Faculty of Humanities, Social & Management Sciences, Elizade University, Ilara-mokin; Ondo State, Nigeria. He holds the National Diploma in Mechanical Engineering, and Higher National Diploma (HND) in Mechanical Engineering from Yaba College of Technology (YCT), Lagos State; Post graduate Diploma (PGD) in Business Administration, Executive Master in Business Administration (MBA) from the University of Calabar; Master of Science (M.Sc) in Business Management from University of Calabar, Nigeria and Doctor of Philosophy (Ph.D. Business Management) from Ebonyi State University, Nigeria. His area of specialization include Business Management and Operation Research. ORCID ID:

<https://orcid.org/0000-0003-3166-6385>

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