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# Economic and Social Development

75<sup>th</sup> International Scientific Conference on Economic and Social Development Development

## Book of Proceedings

Editors:

Babak Taheri, Aleksandar Damjanovic, Milija Bogavac



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## **Economic and Social Development**

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## TOURISM COMPETITIVENESS VS TOURISM PERFORMANCE – THE CASE OF CROATIAN COASTAL DESTINATIONS

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### ABSTRACT

*The paper aims to contribute to the ongoing debate on the relationship of the concepts of competitiveness and performance in tourism. Methodologically founded in contemporary views and models of tourism competitiveness and criticism of the previous concepts and measurement models, research is based on the comparative analysis of the performance and competitiveness of Croatian coastal destinations in 2007 – 2019 period. Measurement of competitiveness is based on the World Economic Forum’s Travel and Tourism Competitiveness Index (TTCI) reports for Croatia in 2007 – 2019 period. For the purposes of destination performance measurement, tourist destination performance measurement model is further developed taking in consideration principles and dimensions of sustainable tourism development. Although positive correlation between competitiveness and performance trends among the sample destinations in the observed period has been found, results outline complex relationship between competitiveness and performance in tourism, especially from the point of management perspective where competitiveness is largely created and managed on regional or national level, while performance is to a much higher degree a result of destination level policies. Another important finding on the observed sample and time period is that positive trends in both competitiveness and performance have been driven by non-economic indicators. Theoretical contribution of the paper is in further distinction between competitiveness and performance concepts in tourism, while practical contributions are in the development of the supply-oriented model and key indicators for destination performance measurement that may be used in destination management, and in evaluating tourism development processes on coast in 2007 – 2019 period.*

**Keywords:** *tourism competitiveness, destination performance, indicators*

### 1. INTRODUCTION

The application of the general concept of competitiveness to tourism started during 21<sup>st</sup> century with scholars suggesting various models, the most notable being Ritchie and Crouch (2003), Dwyer and Kim (2003), Heath (2003), and Gooroochurn and Sugiyarto (2005). Despite the fact that its authors emphasized that the whole notion of tourism competitiveness is primarily theoretical concept (Ritchie and Crouch, 2003), rather than a measurement tool, it has subsequently been applied in Travel and tourism competitiveness index (TTCI) as introduced and measured by the World Economic Forum (WEF, 2007 – 2019).

Despite becoming one of the common measures of success of one country's travel and tourism sector, such an understanding of the competitiveness in general is in contradiction with the term itself, where most of definitions emphasize that competitiveness is the "ability" to compete, rather than success in doing so. Since its Inception, TPCI has gone through several major methodological changes, the most notable being in 2015, while it has been facing increased criticism in terms of various methodological aspects (Wu et al., 2012; Li et al., 2013; Croes and Kubickova, 2013; Hafiz Hanafiah et al., 2016; Mendola and Volo, 2017). Apart from the criticism of various methodological aspects, there are further considerations in understanding tourism competitiveness and/or developing measurement tools in tourism (Hanafiah et al., 2016; Hanafiah & Zulfikly, 2019; Bogunović, 2021) such as orientation to supply or demand side perspective in defining destination success, definition of the level of destination for which any model can be applied (country, region, or micro destination) and related problem of determinants of tourism competitiveness that influence tourism competitiveness in certain geographic unit (for instance, large portions of legislation that affect pillars of TPCI are usually the same for regions, and at least similar for all destinations within the same country). To provide more insight into this issue, this paper aims to make a parallel analysis of the performance of Croatian coastal destinations in 2011 and 2019 using a destination performance measurement model (Bogunović, 2021) and TPCI performance for Croatia in 2007 and 2019 period in order to provide additional insight into relationship of competitiveness and performance in tourism, measured on national (competitiveness) and destination (performance) level.

## **2. LITERATURE REVIEW**

### **2.1. Tourism competitiveness**

Although highly represented in scientific literature, the understanding and concept of tourism competitiveness are still fraught with inconsistencies over its definition, measurement, and its legitimacy as a topic of research (Liu et al, 2021). Early definitions of tourism competitiveness (Ritchie and Crouch, 2003 p.2) took the holistic stance encompassing destination's ability to increase number of arrivals, tourist spending, profitability, enhancing tourists' experience, well-being of local population and sustainability of development. In one of the later definitions, Croes et al (2020) emphasize tourism competitiveness as the country's ability to optimize its attractiveness for tourists, thus taking more of a demand side approach to understanding competitiveness. As notion and understanding of tourism competitiveness changed, so did models and variables suggested for its measurement, starting with the simple ones (Murphy et al. 2000) to the ones that even extend over TPCI in terms of complexity and number of variables (Salinas Fernández et al., 2020). Historical review of the evolution of tourism competitiveness models is shown in Table 1.

*Table following on the next page*

Authors	Description and determinants
Murphy et al. (2000)	Natural environment, information communications technologies infrastructure, service quality, value, accessibility, tourism investment, skill and labour and public budget
Ritchie and Crouch (2003)	Conceptual model that identifies 36 attributes of destination competitiveness and classifies them into 5 factors (sets) of competitiveness
Dwyer and Kim (2003)	Elaboration of models established by Ritchie and Crouch according to specific indicators and identification of new factors (demand and situational conditions) – 150 indicators organised in pillars resources, destination management, situational conditions, demand conditions, and social-economic prospects
Heath (2003)	A model for strategic and sustainable development, and destination competitiveness at the macro level, which emphasizes the importance of strategic planning for destination competitiveness and uses an analogy with house building
Gooroochurn and Sugiyarto (2005)	WTTC competitiveness monitor model that includes 8 quantitatively measurable variables: price, socio-economic impacts, human resources, infrastructure, environment, technology, openness and social development
Crouch (2007)	Core resources and attractors, destination management, qualifying and amplifying determinants, destination policy, planning and development, supporting factors and resources
Gomezelj and Mihalič (2008)	Inherited and created resources, supporting factors, destination management, situational conditions and demand conditions
Cracolici and Nijkamp (2009)	Natural and cultural resources, amount and quality of accommodations and restaurants, accessibility to transportation systems, activities available at destination, tourist safety, and resident behaviour
TTCI (World Economic Forum, 2018)	Policy rules and regulations, environmental sustainability, safety and security, health and hygiene, prioritization of tourism, openness, air transport, ground transport, tourism service infrastructure, price competitiveness, information and communication technology readiness, natural and cultural resources, business travel, human resources and labor market
Salinas Fernández et al. (2020)	Business environment, safety and security, health and hygiene, human resources and labor market, ICT readiness, prioritization of travel/tourism, international openness, price competitiveness, environmental sustainability, air transport infrastructure, ground port infrastructure, tourist service infrastructure, natural resources, cultural resources, business travel

*Table 1: Historical overview of competitiveness models in tourism  
(Source: Taken and adapted from Liu et al. (2021))*

## 2.2. Tourism performance

The concept of performance in tourism has shown to be difficult to define and subsequently calculated (Barros, 2005), where what lacks is a clear distinction between the terms of competitiveness and destination performance. Over the years term “destination competitiveness” has emerged as the attempt to create a more applicative concept of comprehensive tourism competitiveness models, where measurement focus of such attempts has developed and shifted from market share to sustainability oriented (Mendola and Volo, 2017). While Croes and Kubickova (2013) argued that precise and exact definition of tourism competitiveness does not exist, researchers have generally suggested that any tourism competitiveness model should incorporate performance (Mazanec et al, 2007; Li et al., 2013; Hafiz Hanafiah et al., 2016), thus demonstrating destination’s ability to compete. While comprehensive models and composite indicators have been used to assess and calculate tourism competitiveness (including the familiar term of destination competitiveness), understanding

and measurement of tourism performance had a more substantial variation in terms of general understanding of the phenomena of performance, and the complexity of the model. In that sense tourist satisfaction (Cracolici and Nijkamp, 2009), competitiveness (Barros et al., 2005; Dwyer and Kim, 2003), tourist arrivals and tourism satellite accounts (Hanafiah and Zulfikly, 2019) have been used to explicate tourism performance. On top of these attempts, Yilmaz and Bittici (2006) offered value chain performance measurement framework to understand different sectors of tourism, while number of performance measurement models in tourism that are present in scientific literature have solely concentrated either on hotel sector, tourism enterprises, environmental performance in the lodging industry, sustainable tourism indicators of tourism development policies and destination brand quality, where data envelopment analysis, Bayesian approach or mean variance space have been the most frequently used quantitative models (Luo, 2018). Analysed destination performance and destination competitiveness models are summarised in table 2.

Authors	Description
Barros et al (2005)	Tourism competitiveness based model
Mazanec et al. (2007)	A model in which market share based on international arrivals, tourism growth and market share weighted by the distance of the emitting market were used as measures
Cracolici and Nijkamp (2009)	Tourist satisfaction based model
Croes and Kubickova (2013)	Destination ranking system using dynamic performance measured by tourism revenue growth rates, added value and quality of living standard
Hannafiah et al. (2016)	A model based on the competitiveness model and variables of visitor satisfaction, sector productivity and quality of life of residents
Hannafiah and Zulfikly (2019)	Combination of indicators of basic resources, complementary conditions, destination management, environmental management and price / globalization

*Table 2: Historical overview of comprehensive tourism performance and destination competitiveness measurement models*

### 3. METHODOLOGY

Research methodology includes:

- Analysis of secondary data on the competitiveness of tourism in Croatia in the period between 2007 and 2019 based on the TTCI reports in the same period as issued by the World Economic Forum;
- Application of destination performance measurement model suggested in earlier research (Bogunović, 2021) in order to calculate performance for the sample of 30 tourist destinations in Croatia and analysis of results;
- Comparison of the World Tourism Competitiveness Index for Croatia and the success of tourist destinations.

#### 3.1. Methodological foundations of Travel and tourism competitiveness index (TTCI)

Travel and tourism competitiveness index (TTCI) was established in 2007 by the World Economic Forum (World Economic Forum, 2007-2019). Index has been calculated on the country level for each year in the period from 2007 to 2009, and biannually since 2011. The index has seen continuous methodological improvements since its inception in terms of the general methodology, increase in the number of indicators and the sample (number of countries included in the survey). The key methodological change so far was introduced in 2015 when the number of sub-indices was increased from 3 to 4.

Until 2015, the indicators were organized by sub-indices:

- Regulatory Framework
- Business environment;
- Human, natural and cultural resources;

Since 2015, indicators are organised according to the following sub-indices:

- Enabling environment;
- Tourism policy and enabling conditions;
- Infrastructure);
- Natural and Cultural Resources.

Each of the sub-indices is further organised into pillars, where the latest version of TTCI includes 14 pillars in total, which are again calculated on the basis of total of 90 indicators. The TTCI indicators are computed by using the primary (perception-based assessment) and secondary data, while they assess tourism competitiveness on the macro (national) level of a destination. The change in methodology in 2015 makes the time series analyses of the index, sub-indices and pillars for an individual country somewhat demanding. In addition, it is necessary to consider the aspect of applying such a model to micro destinations within a country. Depending on the legal framework of an individual state and its structure (primarily the level of regionalization), indicators are largely determined at the state level and don't change within the regions and destinations. In the case of the Republic of Croatia and its destinations, this is particularly the case given the relatively high degree of centralization. Despite its relatively wide application, the index has been the subject of significant criticism, most notably regarding adaptation to advanced economies, unclear method of weighting indicators and validity and reliability of applied statistical methods (Wu et al., 2012; Hanafiah, et al., 2016; Mendola and Volo, 2017).

### **3.2. Destination performance measurement model**

Destination performance measurement model (Bogunović, 2021) follows the general recommendations of the World Tourism Organization (UNWTO, 2004) on possible indicators of performance of tourist destinations. The same recommendations include the principle of sustainable tourism development, and classify possible indicators into categories of economic, social and environmental performance. The synthesis of a model as a composite index that aggregates multiple indicators necessarily involves the following steps Nardo et al., 2005; Cherchye et al., 2008; Hudrlikova, 2013):

- Selection of data / indicators;
- Replacement of missing data;
- Multivariate analysis;
- Standardization of indicators
- Aggregation method /synthesis into a model.

Based on the tourism (destination) competitiveness and destination performance models given in the literature review, performance indicators were selected and sorted into the areas that follow UNWTO (2004) recommendations of performance and sustainability criteria as shown in Table 3. In contrast to the aggregation/synthesis method of the TTCI, in which the final index is obtained by the sum of weighted and normalised indicators, suggested destination performance measurement model uses the  $n^{\text{th}}$  root of the product of  $n$  indicators in line with the methodology of aggregation used in Human Development Index (Deb, 2015), or the index of tourist loyalty (Cossio-Silva et al., 2019).

So that:

$$DP = \sqrt[3]{E'PxS'PxO'P}, EP = \sqrt[3]{E'1xE'2xE'3}, SP = \sqrt[3]{S'1xS'2}, OP = \sqrt[3]{O'1xO'2xO'3}$$

Where:

DP - destination performance index

EP - overall economic performance of the destination

SP - overall social performance of the destination

OP - total environmental performance of the destination

E'1, E'2... O'3 - standardized values of basic indicators shown in Table 3.

Type	Label	Indicator	Calculation
Economic	E1	Tourism revenues per inhabitant	Annual tourist income in the destination / population
	E2	Occupancy of accommodation	Annual bed occupancy in the destination
	E3	Employment	Share of employees in the total labor contingent (1 - unemployment rate)
Social	S1	Seasonality	Share of the most intensive quarter in the year (overnight stays) - (1 / (share of the leading quarter in overnight stays) / 0.25)
	S2	Population change rate	% population change in destination between two censuses
Environmental	O1	Destination area per bed in accommodation	Destination area / number of beds in accommodation
	O2	Share of households connected to sewage system	Number of connections to the sewage system / number of all buildings
	O3	Share of recycled in total waste	The share of waste entering the recycling process in relation to total waste generated in destination

Table 3: Performance indicators included in destination performance measurement model

Coastal destinations with more than one million overnight stays in 2011 were selected in a destination sample, with island and peninsula destinations aggregated into one destination, and two continental destinations - Varaždin and Zagreb included in the sample.

### 3.3. Research hypotheses

The research is focused on the relationship between tourist competitiveness and the performance of tourist destinations, where the following hypotheses reflect research focus:

- *H0 Trend in performance of selected tourist destinations follow the trend of tourism competitiveness of Croatia according to TTCI in 2011 – 2019 period.*
- *H1 Trend in overall performance of selected tourist destinations in 2011 – 2019 period is dominantly the result of trends in economic performance of destinations.*

## 4. RESULTS

### 4.1. Analysis of trends in TTCI for Croatia in 2011 – 2019 period

According to the publications of the World Economic Forum (*World Economic Forum*, 2007-2019), Croatia has continuously been a part of TTCI research sample since the research inception. The results of the index for Croatia by years and trends in relation to previous editions are shown in Table 4.

	rank	trend	score	trend
2007	38	-	4.66	-
2008	34	↑	4.59	↓
2009.	34	-	4.54	↓
2011.	34	-	4.61	↑
2013	35	↓	4.59	↓
new methodological framework of calculation				
2015	33	↑	4.3	↓
2017	32	↑	4.4	↑
2019.	27	↑	4.5	↑

*Table 4: Trends in the World Tourism and Travel Competitiveness Index for Croatia from 2007 to 2019*

*(Source: World Economic Forum 2007 – 2019)*

Table 4 shows the generally growing trend of Croatia's according to TTCI rank since 2007, which is certainly a positive trend, especially considering the growing number of countries that have entered the research over time. According to the ranking, Croatia stagnated or grew compared to previous reports, except in 2013, when it dropped one place compared to the previous report. The trend in score is less clear, but also less meritorious given the frequent changes in methodology that included the addition of indicators and changes in the methods of their weighting, which affected the result for all countries making score time series comparisons less meaningful. Trends in TTCI ranking and score subindices for Croatia as shown in table 5.

	regulatory framework		business environment and infrastructure		human, natural and cultural resources			
	rank	evaluation	rank	evaluation	rank	evaluation		
2007	58	4.37	40	4.06	11	5.55		
2008	39	5.02	38	4.32	32	4.43		
2009.	43	5.02	37	4.32	43	4.28		
2011.	42	5.02	36	4.58	43	4.23		
2013	42	4.99	39	4.43	42	4.37		
	enabling environment		tourism policy and enabling conditions		infrastructure		natural and cultural resources	
	rank	evaluation	rank	evaluation	rank	evaluation	rank	evaluation
2015	52	5.08	39	4.33	38	4.54	30	3.23
2017	48	5.20	40	4.50	36	4.40	21	3.60
2019.	62	5.10	22	4.80	31	4.70	23	3.60

*Table 5: Trend in subindices of the World Competitiveness Index of Tourism and Travel for Croatia from 2007 to 2019*

*(Source: World Economic Forum 2007 – 2019)*

Until 2013, there is a slight upward trend in ranking and score for the regulatory framework and business environment and infrastructure subindices, while the sub-index of human, natural and cultural resources follow the opposite trend. The period after the significant methodological changes is characterized by a stagnant score and a decline in ranking of the enabling environment sub-index, as well as the growth of other sub-indices in terms of score and ranking. Looking at the main pillars of competitiveness of Croatian tourism according to the index, the main barriers are still in the elements of general competitiveness that affect tourism and enter the sub-index of the enabling environment. Thus, according to the report for 2019, Croatia is 123rd in the world according to the pillar of the business environment, and 103rd in the world according to the pillar of human resources and the labour market, with both pillars having a declining tendency. According to the pillar of price competitiveness, which belongs to the sub-index of tourism policy and enabling conditions, Croatia is 93rd in the world, but the pillar is in a growing trend.

#### 4.2. Trend in performance of coastal destinations

Table 6 shows the results of destination performance index, and its subindices for 2011 and 2019 (destinations shown according to the descending value of the index for 2019). According to the proposed model (index) of measuring the success of tourist destinations, the most successful Croatian destinations (index value greater than 5) in 2019 are Poreč, Rovinj, Zagreb, Dubrovnik, Krk and Opatija.

	2011				2019			
	economical	social	environmental	total	economical	social	environmental	total
Poreč	10.0	3.1	1.9	3.9	8.8	4.7	6.7	6.8
Rovinj	7.9	2.5	1.8	3.3	8.5	5.0	5.2	6.2
Zagreb	1.2	8.9	7.9	4.4	5.3	7.9	5.8	6.1
Dubrovnik	8.3	4.7	1.7	4.0	7.6	5.4	3.6	5.3
Krk	3.7	2.6	1.6	2.5	5.6	5.7	4.5	5.1
Opatija	8.8	4.7	3.3	5.2	6.2	4.9	4.1	5.0
Rab	3.5	1.2	1.1	1.7	5.4	4.6	3.7	4.5
Varaždin	1.1	7.3	7.0	3.9	2.2	7.0	6.3	4.4
Cres	5.6	1.8	1.8	2.6	5.9	4.3	3.4	4.4
Umag	6.3	3.5	1.3	3.1	6.3	5.5	2.5	4.3
Pula	2.7	2.5	1.5	2.2	4.3	4.9	4.0	4.3
Lošinj	5.6	2.2	1.1	2.4	7.3	4.4	2.5	4.3
Crikvenica	2.6	1.8	1.1	1.7	4.9	4.7	3.4	4.2
Zadar	2.5	3.9	2.1	2.7	4.1	5.5	2.9	3.9
Labin	4.0	3.4	1.0	2.4	6.0	4.4	2.3	3.8
Pag	2.4	1.1	1.7	1.6	4.9	4.4	2.6	3.8
Brac	5.4	2.3	2.4	3.1	4.7	5.1	2.1	3.5
Vrsar	2.5	0.7	0.9	1.2	5.0	1.9	3.4	3.4
Šibenik	2.6	1.9	3.8	2.7	3.7	3.7	3.0	3.4
Split	1.3	3.5	2.7	2.3	3.7	4.5	2.4	3.3
Hvar	3.6	1.5	1.3	1.9	4.5	4.7	2.0	3.3
Podgora	6.2	1.3	1.4	2.3	4.3	3.3	1.8	2.9
Peljesac	2.7	1.6	1.6	1.9	2.9	4.3	2.1	2.9
Korcula	2.3	1.8	1.6	1.9	2.8	4.4	2.1	2.8
Medulin	2.0	2.4	0.3	1.1	4.2	5.6	1.0	2.6
Rijeka	1.7	4.1	2.5	2.6	1.9	4.3	2.6	2.6
Makarska	3.8	2.1	0.8	1.9	3.4	4.9	1.3	2.6
Biograd na moru	4.3	2.1	0.7	1.9	2.7	5.4	1.5	2.5
Vodice	2.9	1.3	1.7	1.9	2.5	3.9	1.7	2.4
Murter	0.7	1.0	0.7	0.8	1.0	4.2	1.0	1.4
<b>average</b>	3.9	2.8	2.0	2.5	4.7	4.8	3.0	3.9

Table 6: Performance of selected destinations for 2011 and 2019



### 4.3. Hypothesis testing

*H0 Trend in performance of selected tourist destinations follows the trend of tourism competitiveness of Croatia according to TTCI in 2011 – 2019 period.* Given the fact that TTCI rank for Croatia improved for seven positions between 2011 and 2019, and that in the same period the average performance index of sample Croatian destinations measured by constant methodology increased by 55%, hypothesis, H0 is accepted. *H1 Trend in overall performance of selected tourist destinations in 2011 – 2019 period is dominantly a result of trends in economic performance of destinations.* Total increase in the average performance index of destinations from the sample in the period between 2011 and 2019 is primarily driven by the increase in social sub-index (73.8%), then the environmental sub-index (51.3%) and by far the least by economic sub-index (18.6%). Therefore, hypothesis H1 is rejected.

## 5. DISCUSSION

According to the World Economic Forum (2007-2019) travel and tourism competitiveness of Croatia has been significantly above the general competitiveness, where Croatia is in 2019 placed as 63<sup>rd</sup> according to general, and as 27<sup>th</sup> according to travel and tourism competitiveness in the world. It is worth noting that relevant elements of general competitiveness that are evaluated in travel and tourism competitiveness are exactly the worst pillars of travel and tourism competitiveness. Unlike trends in TTCI for Croatia, which has been on an upward trend since the beginning of the measurement, the general competitiveness index started in 56<sup>th</sup> place in 2007, and fell to 81<sup>st</sup> place by 2013, however improving since. The reasons for such trends could be traced in Croatia's high dependence on tourism and the real estate business, decline of which was the main generator of the previous crisis that effectively ended in Croatia only in 2013. Inefficiency of large public sector together with ineffective public policy attempts to mitigate crisis have significantly contributed to domestic and international assessment of general competitiveness, which is frequently accented in various reports of international institutions. The proposed performance model (index) of tourism destinations is formulated in a way that includes indicators relevant for tourism development context of Croatia. Tourism destination performance grew in the observed period, but despite one of the periods of the largest increase in physical volumes of travels and tourists in history (worldwide, but especially on Mediterranean and in Croatia), performance was least driven by economic effects of tourism. The growth of social effects is dominated by a significant decrease in seasonality in most destinations, and to a lesser extent by demographic trends. Croatia as a whole is in a negative demographic trend (based on census data from 2001 and 2011, i.e. estimates for 2019 where data exist). In this sense, it can be concluded that the selected destinations actually include all of the most desirable places to live in the Republic of Croatia (including the City of Zagreb). Croatia still lags behind the European average in terms of the sewerage system development and, in particular, solid waste treatment (out of 7 coastal counties, only two have completed projects of the County Center for Waste Management, and one of these two is still without a operating permit). Nevertheless, significant progress was made in this segment between 2011 and 2019. However, the environmental sub-index is among others determined by the indicator of available space per tourist bed, which is continuously reduced in all observed destinations by further intensive and uncontrolled growth of private accommodation (with marginal growth of economic effects on the other side, as this research has shown). The results of the research largely confirm relationship between competitiveness and performance, when measured by two different methodologies. In the case of Croatian coastal destinations, both assessments show that both Croatian competitiveness and destination performance are largely problematic in economic sphere, where destinations failed in turning significant visitor numbers into economic gains, while Croatia on the state level didn't use the opportunity to restructure problematic business environment during stable global economic conditions in 2013-2019 period.

On the other hand, Croatian accession into EU, subsequent acceptance of more strict environmental rules accompanied with availability of related EU funds have influenced significant improvements in environmental components of both destination performance and Croatian TTCI rank, where changes in environmental TTCI effectuated earlier in time compared to destination performance. In that sense, conclusion can be drawn that competitiveness is antecedent of performance, while the concepts although related, should be measured by different methodologies as being essentially different. In that sense performance should be understood as the goal and competitiveness as the mean, where there is no guarantee that acquiring a mean will necessarily lead to the goal.

## 6. CONCLUSION

The research is aimed at distinguishing the concepts of competitiveness and performance of tourist destinations on the example of Croatia and its leading destinations. Methodologically, it relies on the analysis of trends in TTCI for Croatia between 2007 and 2019, and destination performance measurement model on the sample of Croatian coastal destinations. The results show not only similar trends of the two assessments over time, but also the similar movement of their subindices where environmental competitiveness and performance on a more positive trend than economic, where trends in competitiveness slightly precede performance. The limitations of the research are in a relatively small sample of destinations set in a single country (Croatia), as well as in relatively homogeneous tourism product structure of destinations (except Zagreb and Varaždin, all other destinations are sun and beach product dominated). All of the above factors may have a potential effect on the results of future research. Recommendations for future research relate to further methodological evaluation and elaboration of tourism destination performance model and its application on tourism destinations in other countries. It is especially important to test the model in destinations with a different structure of tourism products. An additional area of further research stems from the need for better understanding, ie delimitation of the elements of competitiveness of tourist destinations that are determined from the national level, in relation to those that are the result of regional and local governance.

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## THE IMPACT OF THE PANDEMIC ON THE E-COMMERCE OF SMALL AND MEDIUM ENTERPRISES

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### ABSTRACT

*The paper analyzes the impact of the COVID-19 virus pandemic on the operations of micro, small and medium-sized companies with a special emphasis on adapting the operations of these companies to new conditions. The sudden boom of e-business caused by restricting the movement of the population, reducing contacts between people, and changing people's habits was pointed out. The need for digitalization of business operations of companies and the need to measure the achieved degree of digitalization to achieve a competitive advantage and comparison with similar companies from the environment and the world are pointed out. The paper analyzes the effects of the pandemic based on the results of a survey conducted by USAID and the results of the Republic Statistical Office of Serbia. Also, the business of small and medium-sized companies in the conditions of the pandemic of the COVID-19 virus with a similar SARS epidemic from 2003 was compared. The conclusions emphasize that e-commerce is developing rapidly and will be dominant in the future and that small and medium-sized companies must be rapidly digitized, and for employees to acquire the necessary knowledge and skills.*

**Keywords:** *pandemic, small and medium companies, electronic business, internet*

### 1. INTRODUCTION

Starting in 2019, the world is forced to face a new reality. The previous two years will certainly be remembered as years of crucial changes and getting used to a new kind of normalcy. It is necessary to point out how the pandemic has affected many spheres of life, starting from the daily activities of the individual, through business flows, growth, and development of the economy, to economic profit globally. Considering the so-called "Lockdown" and the possibility that everything stops at once, the world became online 24/7. Thanks to that, and based on many pieces of research, e-commerce has experienced huge success and progress, even in environments for which it was an absolute unknown until recently. The struggle for survival in the market is certainly one of the key challenges, especially when it comes to micro, small and medium enterprises. The smaller the company, the higher the risk of survival. (Bogavac, 2019) For the sake of survival in the market, many organizations are moving to e-commerce which is becoming the basis of their business. It is important to note that this is inevitable, because during the pandemic, many sectors went through difficulties, but, at the same time, e-commerce made huge progress during 2020-2021. years. It should be noted that according to a survey conducted by SAP (Systeme, Anwendugen und Produkte in der Datenverarbeitung) before the COVID-19 pandemic, 46% of decision-makers believed that digitalization provided the same opportunities for SMEs and large companies, and 37%

believed that SMEs due to its flexibility in advantage over large companies (Lobel, 2017). Digitization of business processes brings many innovations in corporate governance, ie. provides employees with more comprehensive support in their work, but at the same time enables much clearer control of their work. Some authors even question whether workers are turning into tools that will depend on the platforms that "employ" them. Degryse's work (2016, pp. 30-32) cites as examples the intelligent Bosch Rexroth factory, the technicians who maintain the Kone elevators, and Amazon's order fulfillment algorithms. Given that that paper provides detailed explanations of the applied procedures, it will not be discussed again here, but only basic information will be given, noting that in all cases it is a combination, cooperation of computer technologies and people, workers:

- At Bosch Rexroth, assembly takes place on a Just-in-Time system, products are transferred and sorted using artificial intelligence, and the worker is informed of what he needs to do.
- In the case of technicians who maintain elevators, maintenance workers carry their computers that allow them access to technical and other data that can be used in their work, but which also "spy" on them, ie. enable management to monitor their activities both during work and during transportation from one workplace to another.
- On the example of Amazon's algorithms for order fulfillment, Irani (2015) states that they create work scenarios and orders that direct the work of workers in warehouses and dictate the speed of their work so that the worker can either fulfill them or leave. Although Irani cites this as a new problem in the work of workers that threatens their existence, it is practically no different from the long-known work on the conveyor belt. Only, here the dynamics is conducted by software, and in the case of old conveyor belts, the speed of the belt was determined by the engineer in charge.

With this in mind, it becomes clear that SMEs need to be digitized rapidly if they are to survive in the marketplace. This was also shown by the events during the COVID-19 pandemic.

## **2. E-COMMERCE AS AN INTEGRAL PART OF THE BUSINESS OF MICRO, SMALL AND MEDIUM ENTERPRISES**

The road to success is unexplored. Long term success requires leadership with vision, a clearly defined mission, a built system of values, specifically defined goals and an established strategy according to the interest groups, as well as efficient resource management of material and human resources (Čekerevac, et al., 2010), but companies that have included e-commerce in their business have improved their position many times over, while those that have resisted this type of change have lagged behind. The pandemic sent a warning sign to large, giant companies, but to an even greater extent to SMEs. Until recently, e-commerce in our area could be classified as an innovation. However, what has been shown recently is the fact that e-commerce is a necessity of the modern way of life and that a company without a website has a much weaker starting position. Adapting micro, SMEs to e-commerce is not only aimed at achieving short-term success but also represents a long-term strategy, an area that needs to be constantly monitored, developed, and improved. Micro, small, and medium enterprises need to have a certain degree of creativity and willingness to experiment because that is what will enable them to stand out in the market and (perhaps) achieve rapid growth. E-commerce is an integral part of the economy, so the focus of companies should not only be on increasing profits and achieving personal interest, but they should also focus on the possibility of connecting with their target group at a higher level than before. Due to the decline in economic activity during the pandemic, digital platforms are evolving much faster than before. As we have been isolated from the real world in the past, digitalization has taken off more than ever. Volkan Bozkir, President of the UN General Assembly, (Bozkir, 2021) underlined that the trend of e-commerce will continue to grow, even after the end of the pandemic, calling for it important that companies

are ready to support and accept the new way of working, digital platforms, in order to significantly reduce the economic downturn, which is inevitable on the one hand, but less noticeable than it would otherwise be. Bozkir pointed out that e-commerce offers huge potential through the goals of sustainable development, although it means making efforts to take full advantage of this tool, which is developing very quickly. (UNCTAD, 2021) Such companies are following the digital transformation, which in the long run will have a great impact on previous business, social activities, as well as on the profits of organizations. Companies that are in development and/or in transition can make significant gains and benefits in this way, while others who are unwilling to accept new conditions and ways of doing business, may be far behind competitors, and certainly, there will be more and more competitors on the already saturated market.

### **3. THE IMPACT OF THE PANDEMIC ON ELECTRONIC COMMERCE**

To better clarify e-commerce as an important factor in the business of many companies, we will refer to the conducted research which states that the Latin American network market doubled sales in the second quarter of 2020 compared to the same period last year. The same is the case with one African e-commerce platform, where a 50% jump in transactions was recorded during the first six months, while the network share of retail in China increased from 19.4% to 24.6%. (UNCTAD, 2021) This is a clear indication that the trend of adopting e-commerce, both for businesses and for consumers themselves, will continue after the pandemic and that it will be on the rise in the future as well. However, what is a problem for companies to introduce e-commerce as the primary activity of their activities are some obstacles such as the habit of the population to continue to opt for cash payments, lack of trust, insufficient knowledge in terms of digital skills, and the like. It is important to emphasize that companies that use the full potential of e-commerce can achieve a much better position in the world of the digital economy, while those companies that are not ready for such an endeavor, risk falling even further. SMEs that have decided to include e-commerce in their business, have gained a deeper and more stable foothold using the advantages of e-commerce, enhanced the importance of their business during the pandemic, and their role could become more dominant in the future. What is crucial for a country's growth and development of its economy, is a review of the fact that priorities must be set in terms of digital readiness, which includes e-commerce through which many local businesses would take the role of manufacturers in the digital economy. SMEs need to improve their digital and commercial platform, facilitate electronic payments and frame everything with the legal regulations that are necessary when it comes to online transactions that will guarantee security and protection. From this, we conclude that to understand the value of e-digital commerce, digital e-entrepreneurship must be the main focus of the company. This means faster digitization for SMEs and greater commitment to digital entrepreneurship. SMEs need to apply everything that will improve e-commerce in organizations is cooperation, communication, as well as raising awareness about the possibilities and risks of e-commerce, especially in times of pandemics. When it comes to companies in Serbia, USAID's Economic Development Cooperation Project presented the findings of a nine-year "1000 companies" survey. In fact, 95% of micro and small enterprises, 3% of medium, and 2% of large companies participated in the survey. The aim of the survey was to show the state of the economy in the business environment, income and profit of the company, the number of employees, and opportunities for access to adequate sources of financing. Based on the conducted research, it can be concluded that the strong impact of the crisis caused by the coronavirus pandemic on the Serbian economy can be seen. It is said that half of the businessmen who were part of this sample, recorded a decline in income and net profit in the last year. On the other hand, companies in Serbia have shown resistance to the crisis, given that three-quarters of respondents have not changed the number of employees, while there are those who have increased the

number of workers, and it is about 12% of entrepreneurs (USAID, 2020). The pandemic has had a strong impact on a much better understanding of e-commerce and its importance to the business itself. Some companies saw in all this a chance to reach their target group, i.e., their consumers, electronically. Great success is recorded on the basis that companies finally have an insight into the importance of owning an online store, where some of them have taken the position that this type of sale is often more important than the classic, conventional way of marketing products and services offered. The problem lies in the inadequate choice for financing the business, i.e., the lack of financing opportunities. Serbian companies have a good foundation in terms of potential and talent, but the support of the bodies of the Government of the Republic of Serbia is also necessary, to provide an incentive for the possibility of great progress. Businesses need to constantly grow and advance in the field of digital literacy, to master everyday tasks and jobs more easily, so it is important to have a systematic and strategic approach in the introduction of digital platforms. Insufficient knowledge in the field of financial management can be a problem for small and medium enterprises, which has the effect of significantly slowing down their progress. E-commerce in Serbia doubled during the coronavirus pandemic and based on the results presented by the Serbian Chamber of Commerce, it turned out that the highest profits were recorded by companies engaged in the production and sale of food, small appliances, computers and computer equipment, clothing, and footwear. What prompted consumers to choose e-commerce instead of the traditional way of commerce is the fact that at one time they were in some way forced by the measures in force, as well as the fact that consumers spent much more time in their homes than usual, which implies the use of the Internet more than usual. For many of them, the limiting factor was the changed working hours of stores, as well as the recommendation to avoid crowds. It is very easy to see that the coronavirus has undoubtedly influenced the habits of consumers that have been established so far. Many have found themselves in the role of e-commerce users for the first time but there is also a group that only confirmed this pattern of behavior. If we go back a little less than two decades, we will see that a similar situation happened in 2003, when the SARS epidemic reigned. Even then, e-commerce was a success, although it was much smaller than it is now, due to the lower level of IT development and digitalization in general. Businesses should keep in mind that e-commerce in some way shapes the market and that a pandemic is an indicator of its reach. However, what are the real reach of e-commerce, we will see when all the needs and habits of users return to regular flows. 20-30% of the global transition to digital technology caused by Covid-19 is expected to be permanent, according to research conducted by Mastercard Recovery Insights: Trade E-evolution (PC Press, 2021) This result will most likely be valid for companies that belong to our region, because according to statistical data, Serbia does not lag behind EU countries in digitalization (Bogavac, 2019). Many SMEs introduced e-business at the time of the pandemic, due to special restrictive measures, based on which it can be concluded that the pandemic caused by the COVID-19 was a key initiative factor when it comes to developing e-commerce in our area. Companies that know the principles of online commerce provide a greater range of opportunities when it comes to market optimization. The labor market shows greater demand in distribution and management of e-commerce systems.

#### **4. ADAPTATION OF SMES TO THE NEW WAY OF BUSINESS**

When it comes to the way of shopping, the habits of consumers that have been established and built so far have changed significantly and contributed a lot in terms of consequences for the local economy, where retail is primarily meant. Business models, known to small and medium enterprises, have been directly influenced by the development of e-commerce. It can be noticed that the pressure on the market was growing and thus has influenced increasing the competitiveness of this sector.

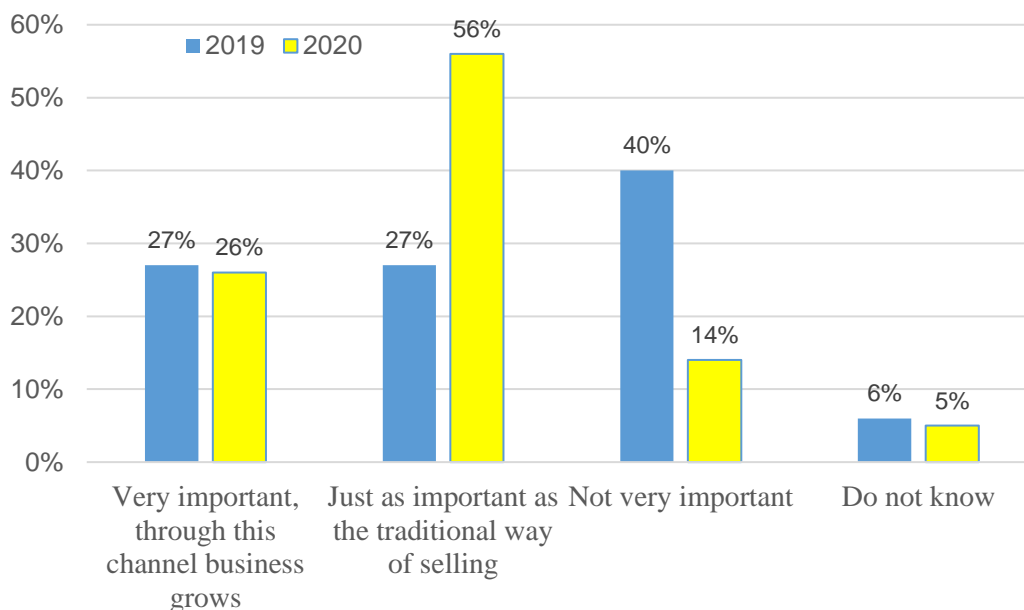


It led to the fact that those companies that did not manage and do not adapt in a short period of time can be eliminated. This is of particular importance at a time of pandemic that is still in effect, and when new standards are set, and some new set of values must be followed for businesses to survive. If the above-mentioned elimination were to occur, it would mean job losses for micro and small businesses. But, also, changes can be good, if we look at them in the sense that it is necessary for old models to disappear, to create newer and more advanced ones, which will contribute more to the business. When it comes to economic relations, it used to mean that the producer was the one who was at the top of the hierarchical ladder, then the trader, and today the power of electronic platforms has taken over that dominant role. One should certainly be aware of the negative sides that traditional commerce has faced when introducing e-commerce. Conventional trade is facing lower incomes that directly affect employment, i.e., a reduction in the number of employees, so there may be a closure of retail outlets. However, it should always be noted the possibility of switching these types of companies to the online business model and thus compensating for the losses caused by the above-mentioned problem. The advantage of e-commerce is that it provides a range of opportunities to anyone who is willing to adapt to this form. SMEs should strive to create the conditions to market their products and services to customers online, as they will profit much more by relying on this way of doing business, regardless of whether they have previously adhered only to traditional trade frameworks, or their own business initially developed online. Start-ups that are developing, small entrepreneurs, and others who are reluctant to open stores or do not have this type of bargaining power to market their products through trade channels can access the market and their target group online faster and more cheaply and thus bring their products and services. If we look at our market, it can be said that e-commerce has the potential and opportunity to achieve good results in the future. When we talk about this type of business, small and medium enterprises must strive for the quality of service to be of the highest level, for customers to gain trust and opt for this principle of purchase.

## **5. RESEARCH RESULTS**

Based on data from the Ministry of Trade, Tourism, and Telecommunications, we conclude that in the past three years, the value of transactions in the field of electronic commerce has increased by as much as 300%, while only in the pandemic and state of emergency most small and medium enterprises increased their e-commerce from 50 to 300%. After the end of the state of emergency, most traders recorded an increase of about 100% compared to the same period last year. If they own e-shops, small and medium enterprises will achieve a 30% higher income statement, is the conclusion of the participants in the online panel on e-commerce trends in Serbia. Small and medium enterprises have the task of following the trends in the field of e-commerce, which will contribute to the strengthening of their own products and services, as well as the obligation to acquaint regular and new customers who become users of digital platforms with their security and quality. Based on research conducted for the USAID Economic Development Cooperation Project, it was confirmed that the growth rate of companies that have a web shop and understand the benefits of e-commerce is significantly higher than the average growth of companies in Serbia, just behind the growth of exporting companies that also have the option to shop online. The positive side is reflected in the good results. The absolute majority, 82% of respondents (see Figure 1), rated the web-shop business model at least as important as the traditional sales model.

*Figure following on the next page*



*Figure 1: The importance of e-commerce for business improvement*  
 (Source: Survey of those who have a web shop, 1,000 companies, (USAID, 2020))

Despite different problems, such as, for example, lack of information, both on the businessmen and on the consumers' side, the result shows that 85% of customers were satisfied, and businessmen had good experiences. (n.d., 2020.) We can conclude that e-commerce is an important phenomenon that will grow, both globally and in Serbia. The digital economy is a necessary path, both before and during the pandemic, but it can be noticed that the conditions of social distancing have further accelerated it and made it even more urgent. What companies saw as tasks that were part of a long-term plan have now topped the list of business priorities and are its key. Turning to digital solutions, especially e-commerce solutions is largely important for recovery, survival, and better coping with the consequences of the pandemic. To enjoy the trust of consumers, small and medium enterprises need to be registered and, even better, branded, because that will sometimes be an important factor, on the basis of which consumers will decide on their products or services. This provides consumers with the assurance that what they are doing is safe and within the legal framework. Since the transition to digital business is a necessity nowadays, it should be borne in mind that it is important to meet the needs of already existing consumers, as well as entire new generations that can be classified as digitally advanced consumers. The gray zone must also be taken into account, ie the risk that leads to the inflow of money going where it does not belong should be avoided. That is the reason why we need to work on cooperation between the public and private sector, to provide education in this area. SMEs need to work on the digital transformation as a process, on teams, partners in terms of digital platforms, as well as on the payment and logistics segment. Many companies, caused by the pandemic during the crisis, survived precisely because they implemented e-business in their workflows. Thanks to that, many of them made profits higher than usual. Small companies should gradually build their presence on digital platforms, avoiding immediately getting involved in complicated processes. To strengthen the entire segment of small and medium enterprises, interest associations in the field of e-commerce should be encouraged. The further development of the online economy requires from the participants who are part of the electronic market an organized appearance within their professional associations, all to influence the legislative regulations and influence the solution of a whole range of specific issues of electronic business. The key to introducing e-commerce for SMEs is to help finance this business concept.

It is necessary to look at the education of staff, i.e., employees in the company, to expand their horizons aims to achieve greater competitiveness in the market if they include this type of business. Therefore, it is necessary to gain new knowledge about the way of introducing this concept, as well as assistance in the form of consulting in the implementation of innovative solutions in the field of e-commerce, and advisory assistance in the procurement of IT equipment. It is necessary to subsidize and lend to small and medium enterprises to enable them to introduce e-commerce. Financial assistance should be closely linked to the introduction of the concept of e-business, i.e., e-commerce. A specially created index, IDSME (Bogavac, 2019), which is explained in more detail in (Bogavac & Čekerevac, 2019) and (Bogavac, et al., 2020), can serve as a measure of the readiness of SMEs to take advantage of business digitalization. Within the IDSME index, there is a Digital Integration dimension that focuses on the extent to which SMEs are willing to use digital technologies in their business whether they are used on the Internet, or are part of an intranet, or are even used on individual computers. Therefore, the dimension is divided into two sub-dimensions (Bogavac & Čekerevac, 2019):

- Use of digital technologies, and
- E-commerce

The sub-dimension "Use of digital technologies" consists of eight indicators that indicate whether the SME has its own website, social media accounts, keeps its records electronically, and uses business models B2B and B2G, cloud computing, decision-making tools support, and automation. The e-commerce sub-dimension includes online sales; e-commerce extent; and cross-border online sales. When we discuss digitalization through the IDSME index, we need to have in mind that e-commerce through a website is an important element of SME digitization, but not all SMEs are necessarily oriented towards online commerce. It is possible that some highly digitalized SMEs do not trade at all in the classical sense of the word and that they offer and realize their services (and/or products) in another way. Therefore, with the IDSME index, the sub-dimension E-commerce is weighted with a value of 0.3, and the sub-dimension Use of digital technologies with a value of 0.7 (Bogavac, 2019). In her research, the author Bogavac (2019) determined that there is a connection between the integration of digital technologies in SMEs and the connection of SMEs to the Internet according to the parameters included in the dimensions "Integration of digital technologies" and "Internet connection" IDSME index. Connectivity is at the level of weak connectivity. According to the reports of the Republic Bureau of Statistics, the largest part of the Serbian economy, amounting to 99.45%, consists of micro, small and medium enterprises (FoNet, 2021). They create 50% of value-added, 65.7% of employment, and participate with 46% in total exports. Although they increasingly contribute to total exports, only every tenth company participates in it. Nevertheless, small and medium enterprises are a branch of the leading forces of economic development. They are an incentive for private initiative and entrepreneurial skills, are flexible, adaptable to market changes, generate employment, contribute to diversity in terms of economic activity, exports, and trade, and thus represent a basic factor in the development of a competitive economy. (USAID, 2020) According to the data of the National Bank of Serbia, in 2020 it was noted that the number of transactions paid by card over the Internet doubled compared to 2019. Online payments are growing faster than payments at physical points of sale, although online purchases account for only 1% of all card payments in Serbia, which will certainly change soon, as the results of many studies show. (europa.rs, 2021)

## 6. CONCLUSIONS

Based on the analysis of data and information used in the preparation of this paper, it can be concluded that it is necessary to encourage digitalization, the introduction of information and communication technologies, digital literacy, and everything that makes up an e-business.

E-business emphasizes the functions that are realized with the help of modern technologies, which enable the sending of a large amount of information in a short period of time over long distances, providing companies with the opportunity to perform their daily tasks more efficiently. E-commerce is part of a global e-business strategy and seeks to generate revenue online to improve relationships with customers and partners to increase efficiency. E-commerce also creates employment opportunities, especially in small and medium enterprises. It stimulates economic growth, investment in innovation, the introduction of new technologies and knowledge, which contributes to the emergence of new entities in the market. Performing activities with the application of information technologies improves the competitiveness of the economy. Today, the Republic of Serbia is in the initial phase when it comes to setting conditions and institutions for the development of electronic commerce. Existing trends unequivocally show that the time of e-commerce and internet commerce is yet to come. What was unthinkable until recently, is the fact that in a very short period, the Internet has become the main channel that provides information, enables communication, buying, and selling. The COVID-19 pandemic had a direct impact on the expansion of e-commerce in Serbia. It is to expect that most of the changes will survive even after the pandemic pass. Small and medium enterprises have the task of educating and educating in the field of e-business, i.e., e-commerce to lay a solid foundation that will further improve business, enable competitive advantage and survival in the market, and ultimately help achieve the goal, i.e., profit.

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# CONCENTRATION TRENDS OF THE BANKING SECTOR IN THE REPUBLIC OF CROATIA

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## ABSTRACT

*The study of the concentration of an industry, including banking industry, is one of the essential elements in assessing the degree of competitiveness and determining the market power of participants in it. In the Republic of Croatia, the last concentration analysis of the banking sector included data from 2005, and therefore there is a need for a new assessment of concentration trends in this sector. The aim of this paper is to analyse trends in the number of banks and the concentration of the banking sector of the Republic of Croatia in the period from 2005 to 2018. The source of data are the official data of the Croatian National Bank published in the Bank Bulletins. The degree of concentration of the banking sector is determined on the basis of Concentration Ratios (C2, C3, C4 and C8), on the basis of the Hirschman-Herfindahl index (HHI), the Lorenz curve and the Gini coefficient of concentration. All these concentration measures are calculated using three variables: total assets, total deposits and total capital of banks. In the research, descriptive statistics methods were used. The results of the analysis show that in the observed period there is an increase in concentration in the banking sector of the Republic of Croatia. The growth of concentration is accompanied by the trend of net exit rates of banks, and the banking sector of the Republic of Croatia can be assessed as concentrated with a pronounced oligopolistic structure.*

**Keywords:** banking industry, concentration, Republic of Croatia, oligopoly

## 1. INTRODUCTION

Concentration study of an industry is one of the essential elements in assessing the degree of competitiveness and determining the market power of participants in the observed industry. When studying the concentration of the banking industry, it is necessary to keep in mind the various implications it may have, and they have often been the subject of various studies. Ljubaj (2005) in the paper *Concentration Indices of the Banking Sector in Croatia* emphasizes the importance and different views of the theoretical implications of the bank concentration on the competition between banks, on the development and stability of the financial system, on the concentration of other industries, on the efficiency and profitability of banks, and on economic growth. More than 15 years have passed since the last research of the concentration of the banking industry in the Republic of Croatia, in which in the future an increase of the concentration in the Croatian banking sector was expected (Ljubaj, 2005). From the above, there is a need to conduct a research on the most significant concentration indices of the Croatian banking sector on recent data.

## 2. LITERATURE REVIEW

Concentration studies of the banking sector are widely represented in the scientific sphere. In determining the market structure, one of the main elements is the assessment of the concentration of the observed sector. Banking concentration research is conducted around the world. Table 1 provides an overview of selected research with an emphasis on the conducted research on the concentration of the banking sector in the Republic of Croatia. The proposed Table 1 highlighted that the basic measures for assessing the concentration are the Concentration Ratio (CR<sub>k</sub>) and the Herfindahl-Hirschman index (HHI).

In addition to the above, other measures were used in the research: Lorenz curve and Gini coefficient (Pejić-Bach & Gogala, 1998; Tipurić, Kolaković & Dumičić, 2002; Tipurić, Kolaković & Dumičić, 2003), Entropy Index (Tipurić & Kolaković, 1998; Pejić-Bach & Gogala, 1998; Tipurić, Kolaković & Dumičić, 2002; Tipurić, Kolaković & Dumičić, 2003; Ljubaj, 2005; Lis Gutierrez, Macias Rojas, Gaitan, Moros & Vitoria Silva, 2017), Hall-Tidemanov and Rosenbluthov index (Ljubaj, 2005; Lis Gutierrez, Macias Rojas, Gaitan, Moros & Vitoria Silva, 2017) and others. An overview of previously used measures is the basis for their selection in the subject research. Research aimed at analyzing the concentration of the banking sector in the Republic of Croatia indicates uniform results regarding the assessment of concentration - the banking sector of the Republic of Croatia is concentrated with a pronounced oligopolistic structure. In the Republic of Croatia, the last research on the concentration of the banking sector included data as of 2005. Given that more than 15 years have passed since the last research, there is a need to repeat the same.

*Table following on the next page*

Authors	Country	Period	CR <sub>k</sub>	HHI	Other indices	Assessment of the banking concentration
Tipurić & Kolaković (1998)	Croatia	1993.–1996.	4, 8, 12	√	Entropy Index	Concentrated - unstable oligopolistic structure
Pejić-Bach, & Gogala (1998)		1992.–1996.	different	√	Lorenz curve, Gini coefficient	Concentrated - oligopolistic structure
Tipurić, Kolaković & Dumičić (2002)		1993.–2000.	4, 8, 20	√	Entropy Index, Lorenz curve, Gini coefficient	Concentrated - unstable oligopolistic structure
Tipurić, Kolaković & Dumičić (2003)		1993.–2002.	4, 8, 20	√	Entropy Index, Lorenz curve, Gini coefficient	Concentrated
Ljubaj (2005)		1999.–2005.	2, 6	√	Extensive industrial concentration index, Hall-Tideman and Rosenbluth index, Hannah-Kay index, U Index, Hause index, Entropy Index	Concentrated
Gajurel & Pradhan (2012)	Nepal	2001.–2009.	3, 5	√		Reduction of concentration, monopolistic competition
Bikker & Haaf (2002)	23 countries	Depending on the country 1988.–1998. 1989.–1998. 1990.–1998. 1991.–1998. 1992.–1998.	3, 5, 10	√		Monopolistic competition, competition is weaker in local and stronger in international markets
Kasman, & Kasman (2015)	Turkey	2002.–2012.	5	√		Concentrated
Repková & Stavárek (2014)		2002.–2010.	3, 5	√		Almost unconcentrated
Capie & Rodrik-Bali (1982)	Great Britain	1870.–1920.	5, 10	√		Increased concentration
Filipović, Avramović & Račić (2016)	Serbia	2008.–2014.	5	√		Moderately concentrated
Lis Gutierrez, Macias Rojas, Gaitan, Moros & Vilorio Silva (2017)	Colombia	December 2013-March 2017	1, 2, 3, 4	√	HHI standardized, Rosenbluth, Hall-Tideman, Entropy Index, Standardized entropy index	Highly concentrated
Brezina, Pekár & Čičková (2012)	Slovakia	2009.–2010.	4	√		Concentrated
Alegria & Schaeck (2008)	Austria, Belgium, Brazil, France, Germany, Hong Kong SAR, Italy, Japan, Luxembourg, Spain, Sweden, Switzerland, Netherlands, United Kingdom, United States	1998.–2005.	3	√	CR of 5%	Concentrated in: Hong Kong, Austria, Belgium, the Netherlands, Sweden, Switzerland

*Table 1: An overview of the concentration measures used in selected studies  
(Source: Authors' systematization)*

## 2.1. An overview of the concentration measures used in the research

Different concentration measures are used to assess industry concentration. The importance of concentration measures stems from their ability to capture the structural features of the market. Concentration measures are mostly expressed numerically, however it is possible to use the Lorenz curve as a graphical indicator of concentration. The concentration of the banking industry has been studied in many countries, including the Republic of Croatia. The calculation of concentration measures, in addition to the number of banks, in previous research is based on



the following variables: share capital, total income, total assets, total deposits, total approved loans, depending on the availability and source of data. The most commonly used measure of industrial concentration is the Concentration Ratio ( $C_k$ ), which takes into account the market shares of the  $k$ -largest banks, while "ignoring" the influence of other participants (banks). This index is based on the idea that market movements are determined by the dominance of a small number of large banks (Bikker & Haaf, 2002). Apart from the fact that this measure is limited to a certain number of banks that it takes into account, there is also the problem of arbitrary selection of the number of largest banks ( $k$ ) that are included in the ratio. While Tipurić, Kolaković & Dumičić (2003) calculated the concentration ratio for the four, eight and 20 largest banks, Ljubaj (2005) took into account the two and six largest banks. Bikker & Haaf (2002) include three, five, and 10 banks in the ratio. Which number of banks to include in the concentration ratio depends on the structure of the banking industry of a particular country. The index ranges from 0 to 1, ie from 0% to 100%, where 1 or 100% indicates a monopoly in the banking sector. In addition to the Concentration Ratio, the basic measure of industrial concentration is the Herfindahl-Hirschman Index (HHI), which represents the sum of the squares of the market shares ( $s$ ) of all  $k$  industry participants (Gajurel & Pradhan, 2012). Although its main advantage over the Concentration Ratio is that it takes all banks into account, the disadvantage of this index is that it emphasizes the importance of larger banks. HHI values range from 0 to 10,000 (Filipović, Avramović & Račić, 2016), which is true when market shares are expressed as a percentage. It is expressed by the formula:  $HHI = \sum s_k^2$ . It assumes a value of  $1/K$  when the value distribution is uniform, ie when all banks occupy the same market share. The Gini coefficient is certainly one of the better known relative measures of concentration. This coefficient often serves as a measure of income inequality. In the case of uniform distribution, ie when there is no concentration, the value of the Gini coefficient is equal to zero. A higher unevenness in the distribution indicates a higher concentration, and in that case the value of this coefficient approaches one. The value of the coefficient for ungrouped data is expressed by the formula:

$$\frac{2 \sum_{i=1}^N i x_i - (N+1) \sum_{i=1}^N x_i}{N \sum_{i=1}^N x_i}$$

Where  $N$  denotes the number of banks, and  $x_i$  denotes the value of the variable (Šošić, 2006).

The Gini coefficient can be graphically represented using the Lorenz curve, which is constructed in the first quadrant of the coordinate system. On the abscissa axis is the value of the empirical distribution function, and on the ordinate the same measure for the value of the cumulative sequence of the share of the subtotal in the total. (Šošić & Serdar, 1992) The Lorenz curve is formed by merging points that have coordinates determined by the members of the cumulative sequences, where the first point is at the origin, and the last one has coordinates (1,1). In addition to the Lorenz curve, the graph usually shows the direction of equal distribution, which passes through points (0,0) and (1,1). The double area enclosed by a curve of equal distribution and the Lorenz curve is equal to the magnitude of the Gini coefficient. The farther the Lorenz curve is from the curve of equal distribution, the higher the Gini coefficient, and thus the higher the concentration, and vice versa.

### 3. DATA AND RESEARCH METHODS

For research purposes, the official data of the Croatian National Bank (CNB) published in the Bulletins on Banks from No. 12 to No. 32 were used. The time horizon of the research is the period from 2005 to 2018, so the research can be characterized as longitudinal. Over the years, the methodology of financial reporting has changed, ie there have been changes in the AOP

positions of financial statements, so in this research we used data that are permanent in the balance sheet of banks. Therefore, data on each bank that operated in the observed year include information on total assets, total deposits and total capital as at 31.12. observed years. This research includes selected concentration indicators based on the aforementioned variables of total assets, deposits and equity. The concentration of the Croatian banking sector in this study will be measured by the Concentration Ratio, HHI, Gini coefficient, and Lorenz curve. As the number of banks is less than 50 (which is considered the boundary between the small and large sample), Alegria & Schaeck (2008) recommend the use of a Concentration Ratio of order three versus a concentration coefficient covering 5% of the largest banks and the HHI index. In addition, Ljubaj (2005) confirms that for a qualitative concentration analysis, it is sufficient to analyze several of the most representative indices. According to the recommendations, in the present paper, the Concentration Ratio of the order of two, three, four and eight, HHI, Gini coefficient and the Lorenz curve will be analyzed. *Table 2* shows trends in the number of banks in the Republic of Croatia in the period from 2005 to 2018. In the mentioned period, the number of banks decreased for 38.24%. The number of banks shown in the table represents also the research sample.

Year	Number of banks	Year	Number of banks
2005.	34	2012.	31
2006.	33	2013.	30
2007.	33	2014.	28
2008.	34	2015.	28
2009.	34	2016.	26
2010.	33	2017.	25
2011.	32	2018.	21

*Table 2: Number of banks in the Republic of Croatia in the period from 200 to 2018*  
(Source: Authors' systematization according to data from *Bulletins on Banks* from No. 12 to No. 32)

TABLE 3 shows the gross inflows and outflows of banks. For example, in 2006, compared to 2005, three banks entered the sector, while in 2005, compared to 2006, four banks left, which means that the net effect is one bank less in the Republic of Croatia. During the observed period, mostly net exit rates were recorded, which is consistent with the number of banks shown in the previous TABLE 2. In the observed period, a total of 18 banks persisted, including banks that changed their name.

Year	2005.	2006.	2007.	2008.	2009.	2010.	2011.
Outflows/Inflows	O	I O	I O	I O	I O	I O	I O
	4	3 0	0 1	2 1	1 1	0 2	1 2

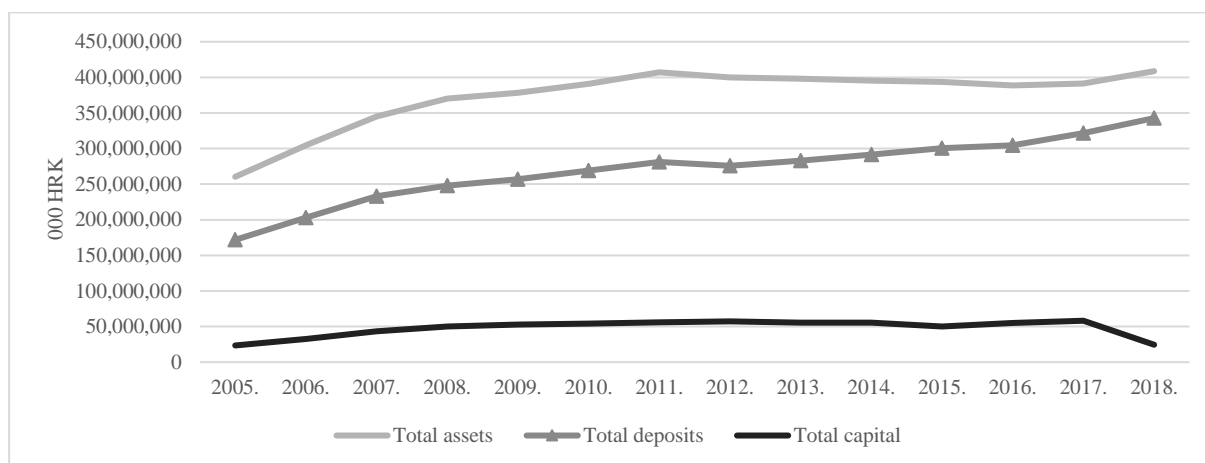
Year	2012.	2013.	2014.	2015.	2016.	2017.	2018.
Outflows/Inflows	I O	I O	I O	I O	I O	I O	I
	1 1	1 0	2 0	0 0	3 1	1 1	0 5

*Table 3: Gross inflows and outflows of banks in the Republic of Croatia in the period from 2005 to 2018)*

(Source: Authors' systematization according to data from *Bulletins on Banks* from No. 12 to No. 32)

GRAPH 1 shows the trend of total assets, total deposits and capital of the banking system of the Republic of Croatia in the observed period, ie the sum of total assets, deposits and capital of all banks that operated in a given year in the banking industry in Croatia.

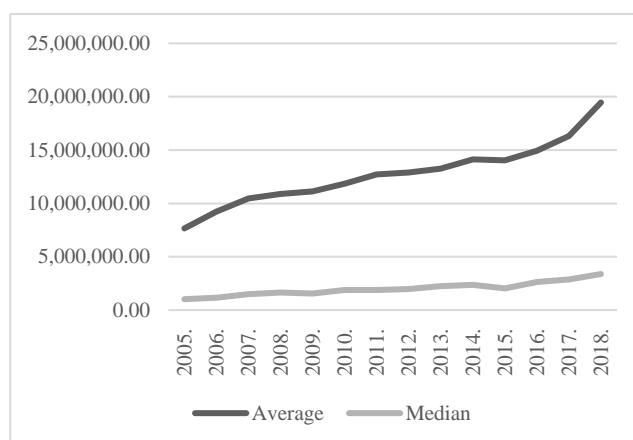
There has been a noticeable decrease in the number of banks continuously over the period, while total bank assets and total bank deposits show a growth trend. This indicates a possible increase in concentration, which will be determined by a specific analysis of the concentration.



*Graph 1: Trends in total assets, deposits and capital of the banking sector of the Republic of Croatia in the period from 2005 to 2018*

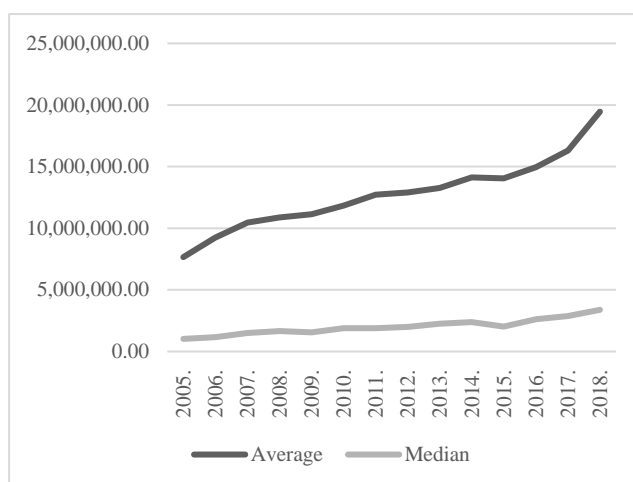
*(Source: Authors' systematization according to data from Bulletins on Banks from No. 12 to No. 32)*

Graphs 2, 3 and 4 show trends in the average and medial values of total assets, total deposits and capital. Throughout the observed period, the average and median total assets and total bank deposits show a growing trend. A higher average than the median shows that several banks make the distribution of the analyzed variables positively asymmetric. Banks that persisted throughout the analyzed period, and whose values of the observed variables in most periods were higher than the average value are: Erste & Steiermärkische bank dd, OTP banka Hrvatska dd, Privredna banka Zagreb dd, Raiffeisenbank Austria dd, Zagrebačka banka dd, and in many periods Hrvatska poštanska banka dd, Volksbank dd (i.e. renamed Sberbank d.d.). In 2018, compared to 2017, a significant decline in the average value of capital is visible. The same tendency is shown by the total capital of the banking system shown in the previous Chart 1. The exit of four banks had a strong impact on this trend, but also the decrease in the capital of Zagrebačka banka d.d. which in 2018 compared to 2017 decreased by 9,293,367,000 hrk or 59.20%.

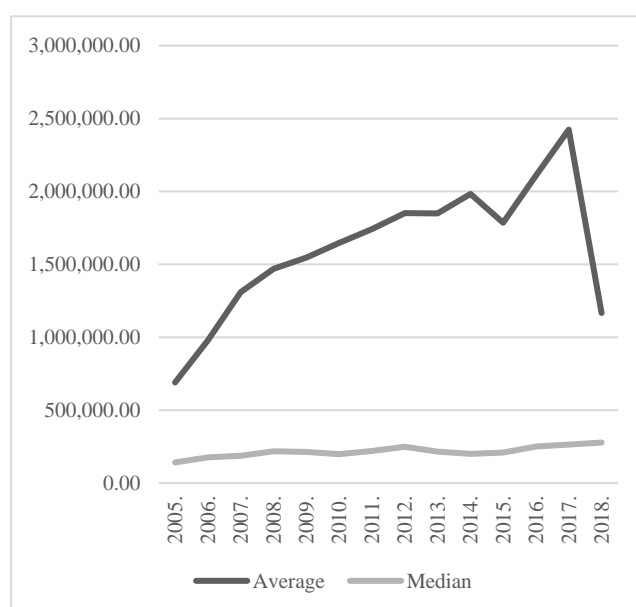


*Graph 2: Average and median values of total deposits of banks in the Republic of Croatia in the period from 2005 to 2018*

*(Source: Authors' work)*



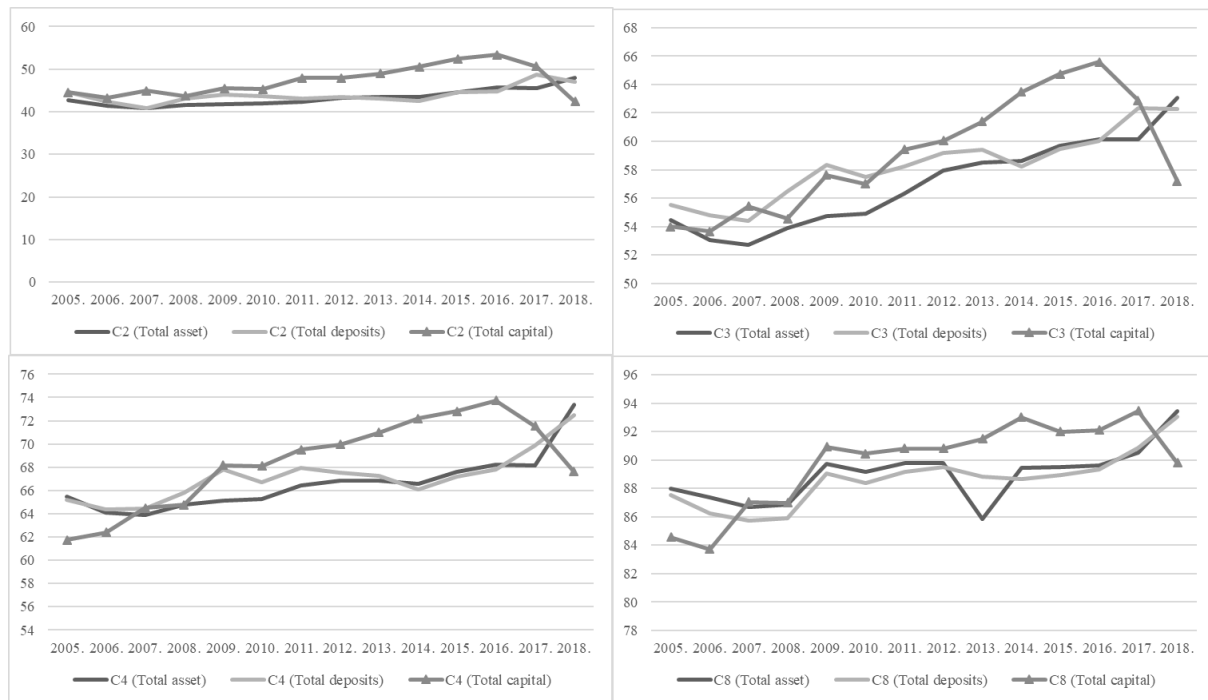
*Graph 3: Average and median values of total assets of banks in the Republic of Croatia in the period from 2005 to 2018  
(Source: Authors' work)*



*Graph 4: Average and median values of the total capital of banks in the Republic of Croatia in the period from 2005 to 2018  
(Source: Authors' work)*

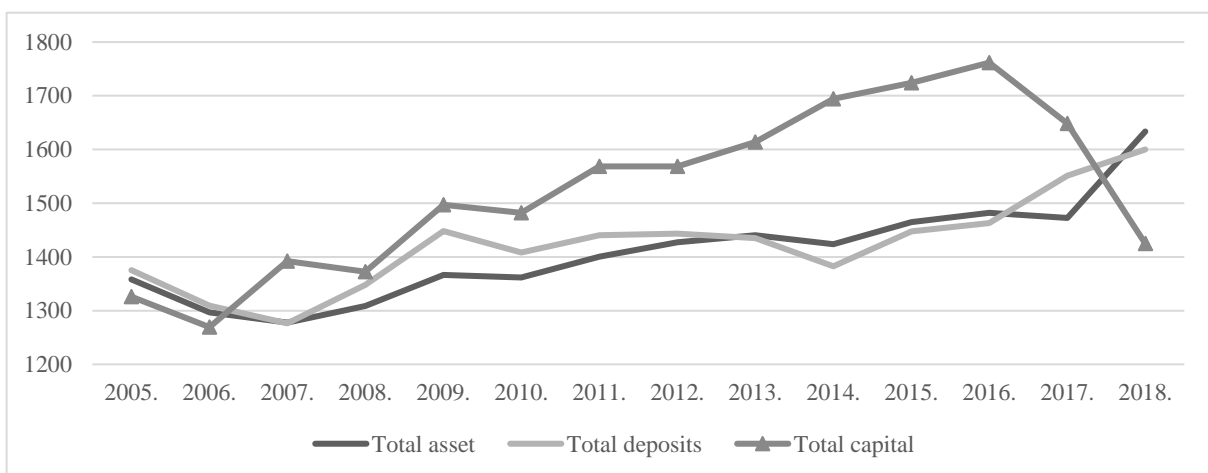
#### 4. RESULTS OF CONCENTRATION

Filipović, Avramović & Račić (2016) state that if the Concentration Ratio of order four (or five) is less than 25%, it is a non-concentrated market. If it is between 25% and 50%, it is a moderately concentrated market, and more than 50% is a highly concentrated market. Graph 5 shows the Concentration Ratio of the order of two, three, four and eight based on total assets, total deposits and total capital of banks in the Republic of Croatia for the period from 2005 to 2018. That the banking sector of the Republic of Croatia is still highly concentrated is confirmed by the average value of the C4 Concentration Ratio, which for the observed period is around 66% - 68% (depending on the observed variable). There is a continuous trend of increasing concentration. In 2018 compared to 2017, a slight decline in the concentration of total capital was caused by the previous reduction in the capital of the leading Zagrebačka banka d.d.



*Graph 5: Concentration Ratio C2, C3, C4, C8 of total assets, deposits and capital of the banking sector of the Republic of Croatia for the period from 2005 to 2018*  
(Source: Authors' work)

According to Nalda & Flamini (2014) if the value of the HHI index is less than 1,500, then the market is considered non-concentrated. If the value of the HHI index ranges between 1,500 and 2,500, then the market is assessed as moderately concentrated. The value of the observed index higher than 2,500 indicates a highly concentrated market. Graph 6 shows the HHI index of the banking sector of the Republic of Croatia for the period from 2005 to 2018. The values of the HHI index of total assets and total deposits show a growing trend over the observed period, approaching a moderately concentrated market. The same is confirmed by their average values of the HHI index, which are around 1,400. And the HHI of total capital also points to a moderate concentration with an average value of about 1,500.



*Graph 6: HHI index of the banking sector of the Republic of Croatia for the period from 2005 to 2018*  
(Source: Authors' work)

The values of the Gini coefficient range from 0 to 1. A value closer to 1, indicates a higher concentration. Table 4 shows the Gini coefficient of the banking sector of the Republic of Croatia for the period from 2005 to 2018.

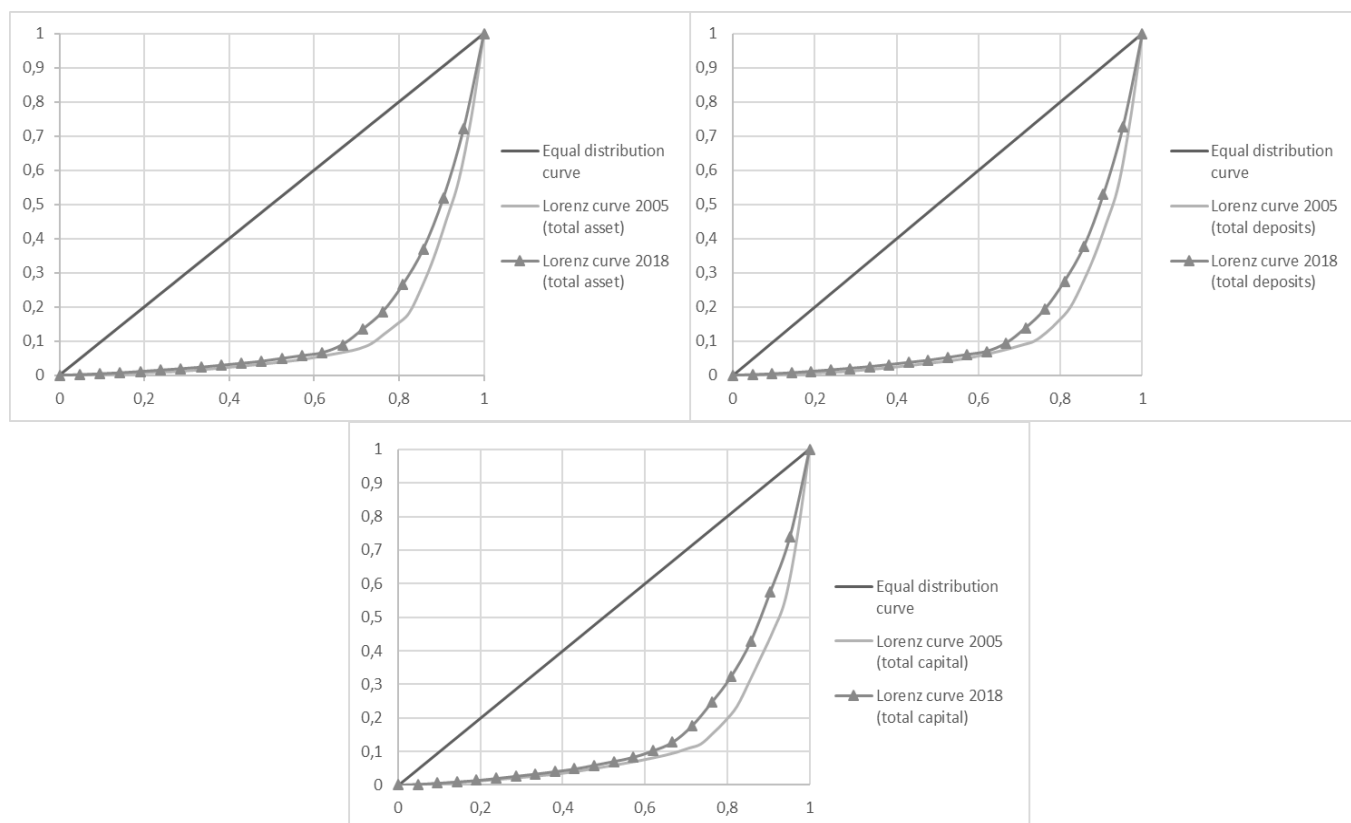
<b>Gini coefficient</b>	<b>2005.</b>	<b>2006.</b>	<b>2007.</b>	<b>2008.</b>	<b>2009.</b>	<b>2010.</b>	<b>2011.</b>
<b>Total asset</b>	0,7619	0,7478	0,7419	0,7527	0,7658	0,7547	0,7556
<b>Total deposits</b>	0,7579	0,7441	0,7388	0,7512	0,7690	0,7549	0,7566
<b>Total capital</b>	0,7294	0,7241	0,7465	0,7570	0,7803	0,7750	0,7785

<b>Gini coefficient</b>	<b>2012.</b>	<b>2013.</b>	<b>2014.</b>	<b>2015.</b>	<b>2016.</b>	<b>2017.</b>	<b>2018.</b>
<b>Total asset</b>	0,7529	0,7449	0,7296	0,7314	0,7164	0,6985	0,7006
<b>Total deposits</b>	0,7529	0,7425	0,7229	0,7279	0,7131	0,7080	0,6941
<b>Total capital</b>	0,7736	0,7765	0,7721	0,7758	0,7576	0,7369	0,6546

*Table 4: Gini concentration coefficient of the banking sector of the Republic of Croatia for the period from 2005 to 2018  
(Source: Authors' work)*

Unlike the concentration coefficient and the HHI index, which represent absolute measures of concentration, the Gini coefficient of concentration represents a relative measure. Although its values in the observed period indicate the concentrated banking sector of the Republic of Croatia, it shows a downward trend, which is the opposite of what absolute concentration measures indicate. The Gini coefficient can also be graphically represented by the Lorenz curve. Graph 7 shows the Lorenz curves of total assets, total deposits and total capital, comparing the beginning and end of the observed period, ie 2005 and 2018. In all three observed variables, a downward trend in concentration measured by the Gini coefficient is visible, which would in fact contradict the previous absolute measures. However, the Gini coefficient is a relative measure, and an uneven distribution of variables (total assets, total deposits and total capital) among banks is observed. As the number of banks decreases over the observed period, and the total values of variables increase, this can be interpreted as large banks occupying an even larger share in the total values, so the concentration is higher. The relative measure shows that as the number of banks decreases, even smaller banks take an increasing share in the total values, which means that the disparity between the remaining banks in the sector decreases. Although these are small shifts, they are still visible.

*Graph following on the next page*



Graph 7: Lorenz curves of total assets, deposits and capital in 2005 and 2018  
(Source: Authors' work)

## 5. CONCLUSION

Ljubaj (2005) conducted a study of banking concentration for the period from 1999 to 2005, and concluded that due to changes in the banking industry it will be necessary to conduct a future analysis of several major concentration measures, which the research sought to fulfill. For this purpose, absolute concentration indicators (Concentration Ratio of the order two, three, four and eight, and the HHI index) were used, as well as a relative indicator (Gini coefficient with the corresponding Lorenz curve). Tipurić, Kolaković & Dumičić (2003) in their research *Concentration Changes in the Croatian Banking Industry in the period from 1993. to 2002.* assumed that the concentration of the Croatian banking industry would increase in the future, gradually and without radical changes. Their assumption proved correct. Namely, in the observed period from 2005 to 2018, absolute concentration measures indicate an increase in concentration. However, the Gini coefficient indicates a reduction in the disparity between banks. According to the obtained concentration indicators, the banking sector of the Republic of Croatia still shows an oligopolistic face, with a tendency of net exit rates. A more comprehensive analysis would show annual changes in concentration, and for this purpose the Lorenz curve should be constructed for all years, not just for 2005 and 2018. In addition to concentration indicators, other determinants such as bank interdependence analysis, exogenous and endogenous barrier analysis and others should be included for a quality assessment of the market structure. Also, for better comparability of results, it is recommended to use the same variables as in previous studies. In addition to the above, the results on the concentration of the banking sector of the Republic of Croatia should be compared with the results of the concentration of the banking sectors of neighboring countries, in order to draw more appropriate conclusions about the similarity of the banking sector with selected countries.

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## EXPLORING SUSTAINABLE CONSUMPTION BEHAVIOR AMONG YOUNG CONSUMERS IN NOVI SAD, VOJVODINA

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### ABSTRACT

*The purpose of this study is to gain a better insight into young consumer's consumption patterns and their view of the notion of sustainable consumption. Namely, empowering young people to accept inherent principles of sustainable consumption could be viewed as a crucial step in the overall process of sustainability and achieving such ecological, economic and social conditions that enable long-term fulfillment of human needs. In order to explore the direct and indirect influences on consumption behavior of young people, we conducted the survey with the students of high schools in the territory of the city of Novi Sad. The investigation about motivations and drivers for sustainable consumption behavior among participants also included their understanding of the implications of consumerism. Analysis of the case study revealed the nature and the extent of youth consumption and identified key factors that prevent young people to adopt sustainable lifestyles. The results and limitations of the study are summarized and suggestions for future research are presented.*

**Keywords:** Behavior, High school students, Survey, Sustainable consumption, Young consumers

### 1. INTRODUCTION

Sustainable consumption refers to the consumption that respond to basic human needs and create or sustain external conditions that minimize the use of natural resources, toxic materials, and emissions of waste and pollutants over the life cycle, bringing a better quality of life (Barth et al, 2014). Global environmental issues such as global warming, the reduction of biodiversity, water and air pollution, call for an education for sustainable consumption decisions and empowering people to take informed decisions aimed at preserving natural resources (Bauer et al, 2018). In other words, there is a need for enhancing the role of individual citizens in ameliorating environmental problems primarily caused by overconsumption and the so-called 'throw away' society (Barr, Gilg, 2006). Providing people with environmental education and information is considered as important first step in encouraging them to behave sustainably as it influences their consumption beliefs, attitudes and intentions (Longo et al, 2019). Typically, public information campaigns are the most common tool intended to overcome public ignorance or inertia. Knowledge of sustainable aspects of consumption also enable that consumers change their status of passive recipients and adopt an active role in order to influence the market (Peano et al, 2019). The promotion of sustainable consumption is particularly important among young consumers because they represent the future of our society, meaning that habits they acquired at a young age will impact their consumption choices as adults, furthermore, they also have the power to influence choices in their households (Vermeir, Verbeke, 2006). Teenagers as independent entities create their own rules of social behavior and represent a lucrative market in its own right, characterized by the new channels of distribution (Spero, Stone, 2004). Congruently, stimulating sustainable consumption among this segment of society has become vital on the research agenda in consumer policy and education for

sustainable development (Fischer et al, 2017). In this paper, we have also focused on young consumers and their consumption patterns. Specifically, the aim of our study was to explore and determine the level of sustainable consumption consciousness among high-school students in the city Novi Sad, using a measuring instrument validated in a sustainable consumption survey for National Youth Affairs Research Scheme (NYARS). The survey for NYARS was conducted by Griffith University and the International Young Professionals Foundation in Australia with a view to identify youth views on the nature and extent of their consumption, possible relations between consumption patterns, social issues and sustainability, potential barriers to and enablers of sustainable lifestyles and overall youth interpretations of the sustainable consumption notion. This paper is arranged as follows. After the Introduction, some necessary fundamental knowledge on sustainable consumption notion is summarized through the literature review in Section 2. Then, in Section 3, the research methodology of the case study and analysis of results are presented, followed by the implications of the study. Finally, conclusions are given in Section 4.

## **2. LITERATURE REVIEW**

Over the past two decades, sustainable consumption field has become a key priority on the sustainable development research agenda and has experienced substantial growth as a multidisciplinary concept with a growing number of publications as well as citations (Liu et al, 2017). Many authors have argued that the biggest challenge is related to the translation of sustainable consumption aims into policy approaches that could prompt individuals to adopt sustainable lifestyles (Hobson, 2003). Considering an ethical perspective, Di Giulio and Fuchs (2014), argue that sustainable consumption should enable individuals to live a fulfilled life but simultaneously must contribute to the improvement of the chances of others, now and in the future, to live in the same way. Commitment to ecological citizenship values, economic viability and a just society enable the possibility for creation such ecological, economic and social conditions that allow people to meet their objective needs without jeopardizing the needs of future generations (Seyfang, 2006). Analyzing the social side, it is obvious that increasing inequity is emphasized, whilst on the environmental side, there are various problems that threaten environment and human life including ozone depletion, farmland erosion, loss of species and pollution. The main cause of these problems is overconsumption of natural resources induced by the processes involved throughout the life cycle of food products from production to consumption (Tanner, C., Kast, S.W., 2003). Generally, sustainable food consumption has been the focus of the myriad studies over the last few years (Reisch et al, 2013, Gorgitano, Sodano, 2014, Verain et al, 2015, Thøgersen, 2017, Lorenz, Langen, 2017, Govindan, 2018, Wang et al, 2019). A vast body of literature have also explored the drivers of sustainable consumption and the motivations of sustainable consumption practices (Antonetti, Maklan, 2014). The consumption patterns are mostly viewed as resistant to change, but diversity and complexity of the consumption motivations including personal values and habits, individual responses to social and institutional norms, health concerns, hedonism and ambition enable a considerable scope for change (Vermeir, Verbaak, 2006). Stemming from the attitude that understanding of the underlying motives behind sustainable consumption decision-making requires knowledge and evaluation of the three basic sustainability aspects, the generational, the coherence, and the spatial aspect, Bauer et al (2018), proposed the extended framework based on the theory of planned behavior (TPB) that integrate the sustainability aspects and include the concepts of sustainability knowledge and sustainability values. Similarly, Vantmay, (2018) used the theory of planned behavior as a theoretical framework to investigate sustainable consumption behavior (SCB) and its determinants among undergraduate youths. The rationale for such approach lies in the fact that young consumers are more open to change and represent the future consumers, future workers and the future innovators that could create much needed

demand for sustainable changes (Hume, 2010). Bentley et al (2004) also highlights that young people aged under 20 years as potentially society's most active agents of change occupy a significant position in society and possess substantial power over the market because they make up 40% of the world population and directly or indirectly impact a large portion of family consumption. The youth and sustainable consumption survey method proposed by the same authors, for interviewing young respondents in NYARS research project, was also used in a case study, presented in the next section.

### 3. CASE STUDY

#### 3.1. Methodology

The survey was conducted between May and June 2021 with the aim to provide a snapshot of current attitudes of young consumers towards sustainable consumption behavior. Responses were obtained from 426 undergraduate youths (248 females, 178 males) aged between 14 and 19 years, from 6 public high schools in Novi Sad, Vojvodina. Table 1 provides the summary statistics of high school students. Approximately 60% of the respondents were female and 40% were male. When we consider age groups, almost 70% of respondents were aged 18-19.

Gender	N	%
Male	178	42
Female	248	58
Age	N	%
14-15	21	5
16-17	115	27
18-19	290	68

Table 1: Socio-demographic characteristics of the sample (n=426)

The rationale for focusing on the fourth grade of high schools (respondents aged 18-19) relies on an assumption that senior students have more knowledge of the concept of sustainable consumption than the freshman students. The research instrument proposed by Bentley et al (2004) was used in investigation, primarily due to its suitability for teenagers and ability to efficiently measure the nature and extent of youth sustainable consumption. The questionnaires were distributed by hand and under the supervision of the teachers. Before questionnaire administration, the pupils were given the option to decline participation in the survey or withdraw at any time. Also, they were given enough time to respond to the questionnaire.

#### 3.2. Results and analysis

This section reports on the analysis of 426 questionnaires obtained from the respondents. Table 2 displays responses on questions about concern for the environment and concern for the people who lack basic necessities, whilst Table 3 show the extent of agreeing or disagreeing with statements about responsibilities, general level of shopping, consequences of shopping choices, and positive effects of changing the amount of and/or things that youngsters buy.

How would you rate your concern for the environment?							
Very concerned		Concerned		Concerned only a little		Not concerned at all	
N	%	N	%	N	%	N	%
207	49	151	35	58	14	10	2
How would you rate your concern for people who lack basic necessities like food and shelter?							
Very concerned		Concerned		Concerned only a little		Not concerned at all	
N	%	N	%	N	%	N	%
199	47	176	41	45	11	6	1

Table 2: Level of concern for the environment and for the people who lack basic necessities

<b>The choices I make when shopping or when using various services can have impacts on the environment and the wellbeing of others.</b>							
Strongly agree		Agree		Disagree		Strongly disagree	
N	%	N	%	N	%	N	%
65	15	158	37	101	24	102	24
<b>I think young people in general buy too much stuff.</b>							
Strongly agree		Agree		Disagree		Strongly disagree	
N	%	N	%	N	%	N	%
37	9	84	20	176	41	129	30
<b>I am responsible for making my consumption choices more sustainable.</b>							
Strongly agree		Agree		Disagree		Strongly disagree	
N	%	N	%	N	%	N	%
158	37	256	60	11	3	1	0
<b>By changing the amount of and/or things I buy, it would have a positive effect on the environment and the wellbeing of others.</b>							
Strongly agree		Agree		Disagree		Strongly disagree	
N	%	N	%	N	%	N	%
76	18	208	49	137	32	5	1

*Table 3: Consequences of shopping choices, general level of shopping, responsibilities, and positive effects of changing the amount of and/or things that youngsters buy*

Although approximately half of those surveyed said that they were very concerned for the environment and the people who lack basic necessities like food and shelter, a considerable number of them minimized the impact of their consumption choices on the environment. The majority of respondents agreed that changing the amount of and/or things they buy would have a positive effect on the environment and the wellbeing of others. However, respondents disagree (41 per cent) and strongly disagree (30 per cent) that young people in general buy too much stuff. This contrasts with findings of NYARS research project conducted in Australia where the results were quite opposite. A possible explanation lies in discrepancies in purchasing power between youngsters in Australia and Serbia. Namely, there are huge differences in income and wages between two countries. The position of Serbia is also unfavorable regarding other key economic indicators. As highlighted in Table 3 the overwhelming majority of high school students agree (60 per cent) and strongly agree (37 per cent) that they are responsible for making their consumption choices more sustainable, which is consistent with the results of previous research (Bentley et al, 2004). In addition, as a some criticism of consumerism, results show that young respondents in general believe that changing the amount of and/or things they buy would have a positive effect on the environment and the wellbeing of others. Analysis of the most important factors that influence the purchase decision (Table 4) reveals that respondents ranked product price, the brand and their friends as the most influential factors in their consumption decision-making. The factors that could be related to the brand image, such as product quality, product reliability and the media effects, were designated as a slightly less significant on youth's consumption patterns. This is followed by the family and personal image, whilst, sustainability of the products was rated as a relatively noninfluential factor.

*Table following on the next page*

<b>What are the most important factors in deciding which products you buy or services you use?</b>		
<b>My friends</b>	N	%
	61	14
<b>The media (TV, radio, billboards)</b>	N	%
	50	12
<b>The brand (Nike, Coke)</b>	N	%
	67	16
<b>Sustainability of product (e.g. damage to environment or work conditions of people who made the product)</b>	N	%
	10	3
<b>Myself (my image)</b>	N	%
	29	7
<b>Product reliability</b>	N	%
	49	11
<b>Product quality</b>	N	%
	51	12
<b>Price of product</b>	N	%
	75	18
<b>My family</b>	N	%
	34	8

*Table 4: The most important factors influencing consumer decisions*

Table 5 demonstrates that a large part of high school students think that their consumption choices have a big impact on the environment and wellbeing of others (62 % responded this way), but there are also a significant number of them who do not share that opinion and believe that their choices have only a little or no impact at all. Additionally, responses show that 90 % of the respondents feel that they have very much or quite a lot of influence over products and services they choose. Interestingly, of the 426 surveyed, 344 respondents (81 %) pointed out that they never consider a products' impact before buying it.

<b>What kind of impact do you think your consumption choices have on the environment and wellbeing of others?</b>							
Very big		Quite big		A little		None at all	
N	%	N	%	N	%	N	%
33	8	232	54	136	32	25	6
<b>How much influence do you feel like you have over which products and services you choose?</b>							
Very much		Quite a lot		A little		None at all	
N	%	N	%	N	%	N	%
186	44	198	46	41	10	1	0
<b>Do you ever consider the effect(s) a product may have on the environment or on the wellbeing of someone else (e.g. child labour) before buying it?</b>							
Always		Often		Sometimes		Never	
N	%	N	%	N	%	N	%
4	1	16	4	62	14	344	81

*Table 5: Impacts of consumption choices, influence over chosen products and services, environmental effects of products*

In the context of barriers and enablers of change, when answering the question “What is the number one reason why you don’t always choose green or sustainable products or services”, more than 70 % of young people selected the “not enough information” and “not easily available” (Table 6).

On the basis of such views, most of the participants designated that education on sustainable consumption and involving the media, represent the key enablers of change and the best ways for encouraging people to adopt sustainable lifestyles (Table 7).

<b>What is the number one reason why you don't always choose green or sustainable products or services (e.g. recycled paper, travel by bike rather than car)</b>		
<b>Too boring</b>	N	%
	2	0
<b>Not enough information</b>	N	%
	135	32
<b>Not convenient to my needs</b>	N	%
	4	1
<b>Too expensive</b>	N	%
	24	6
<b>No substitutes to everyday products</b>	N	%
	20	5
<b>Not easily available</b>	N	%
	169	40
<b>I don't know any sustainable products or services</b>	N	%
	5	1
<b>I have never thought about this before</b>	N	%
	10	2
<b>I do not think it is necessary</b>	N	%
	49	11
<b>I choose sustainable things all the time!</b>	N	%
	8	2

*Table 6: Barriers to change*

<b>What would be the best way to encourage others to accept more sustainable consumption choices?</b>		
<b>Educating in schools, universities</b>	N	%
	179	42
<b>Involving the Media</b>	N	%
	152	36
<b>Getting access to the government</b>	N	%
	28	6
<b>Taking action as part of a youth group</b>	N	%
	29	7
<b>Telling companies what you want</b>	N	%
	38	9

*Table 7: Enablers of change*

Finally, the respondent's views of the sustainable consumption concept included multiple responses, from answers indicating that society and/or individuals need to consume less or need to find more efficient ways to consume, to answers indicating that the notion of sustainable consumption actually refers to looking after the environment or thinking about future generations or all of that. Still, some participants answered that they need further explanations or that they were not familiar with such a notion (Table 8).

<b>What does 'sustainable consumption' mean to you?</b>		
<b>Society needs to consume less</b>	N	%
	84	20
<b>Society needs to find more efficient ways to consume</b>	N	%
	52	12
<b>I need to find more efficient ways to consume</b>	N	%
	28	6
<b>I need to consume less</b>	N	%
	29	7
<b>Looking after the environment</b>	N	%
	58	14
<b>Thinking about future generations</b>	N	%
	55	13
<b>All of the above</b>	N	%
	99	23
<b>Don't know</b>	N	%
	12	3
<b>I need further explanations</b>	N	%
	9	2

*Table 8: Meaning of sustainable consumption*

Those differences in responses, highlights the need for developing awareness about sustainable consumption through widen education and information courses. However, the findings of this research provide a contribution to research on youth's consumption behavior because it reveals their actual knowledge of sustainable consumption and points to consumption patterns among young consumers. The main limitation of this study is a small sample. Clearly, a large-scale empirical survey that would cover the territory of Vojvodina or Serbia is needed to obtain thoroughly understanding of the youth's aspirations and attitudes toward sustainable consumption.

#### **4. CONCLUSIONS**

Since environmental degradation is directly caused by the continued unsustainable mode of consumption, one of the most important global challenges is achieving of sustainable patterns of consumption. A transition to sustainability implies developing habits of sustainable consumption, especially in the younger generations. Therefore, empowering young people to adopt inherent principles of sustainable consumption such are: conservation, social and environmental justice could be viewed as a crucial step in the overall process of sustainability and achieving such ecological, economic and social conditions that enable long-term fulfillment of global human needs. In order to explore consumption attitudes and habits of young people and identify key features that could encourage young people to accept sustainable consumption patterns as a positive contribution to community wellbeing, we conducted a survey at several high schools in the territory of the city of Novi Sad. Besides the investigation about motivations and drivers for sustainable consumption among young consumers, this research also examined their understanding of the implications of over-consumption or consumerism. Respondents agreed that local conditions, including availability of sustainable products or convenience, have a significant impact on their consumption patterns. Findings also revealed that progress in developing habits of sustainable consumption among young consumers has been hampered by a lack of education courses, media campaigns, social marketing and political participation. Therefore, future research could involve education lessons in high school workshops that promote ecological citizenship values and activities, with the aim that young consumers

recognize the importance of such behavior and develop competencies to be able to make informed decisions regarding consumption. Consequently, young consumers can form new aspirations, habits and norms and adopt new consumption patterns that would result in continuous responsible actions for environmental integrity.

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## EMBEDDED HUMAN RIGHTS RESTRICTIONS AND RELATED ISSUES

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### ABSTRACT

*Human rights and freedoms are subject to improvement, supervision, and more and more complete protection both internationally and domestically. However, the fact that there is a growing range of guaranteed human rights and freedoms and that their protection is increasingly diverse and effective does not mean that they are not subject to certain conditions and restrictions. One can talk about three types of such limitations that are allowed by international law: 1) embedded restrictions, 2) restrictions due to extraordinary circumstances and 3) optional restrictions. The paper deals with the first one, which usually are paid less attention to. They are inseparable from the specific human right itself, more precisely from the way in which it is defined or understood. Since, as an integral part of the right itself, they are inextricably linked to it, the characteristic of these restrictions is that they are permanent, always present, meaning that in principle they do not depend on the existence of extraordinary circumstances, nor on the special decision of the state. The author points out the differences between embedded and other permitted restrictions on human rights and freedoms and gives an overview of various ways embedded restrictions can be introduced. He concludes that embedded restrictions are not only reasonable, but in principle necessary and even inevitable, because everything else would lead to chaos and, ultimately, trampling on those same human rights. On the other hand, no human rights restrictions, not even the inherent ones, should ever turn into their opposite, into the abuse of human rights restrictions.*

**Keywords:** *Embedded Restrictions, Human Rights, International Law*

### 1. INTRODUCTION

Human rights and freedoms are a universal topic in our time. They are talked about and written about on all sides, they are subject to improvement, supervision, and more and more complete protection both internationally and domestically. However, the fact that there is a growing range of guaranteed human rights and freedoms and that their protection is increasingly diverse and effective does not mean that they are not subject to certain conditions and restrictions. (Ross 1984, 180-223; Badar 2003, 63-92; McGuinness 2006, 393-421; Paunović et al. 2021, 63-75). The reality of life requires that states be allowed to temporarily suspend or, under defined conditions, limit i.e. reduce in scope some human rights in certain, well-defined circumstances. Without such measures, human rights would seemingly be greater ("unlimited"), which at first glance might seem like the rule of true democracy and freedom. From these positions, state intervention to suspend or restrict human rights could be seen as a step backwards, inappropriate and inadmissible, something that undermines the very idea of human rights. However, this is not the case. On the contrary. If everyone exercised their human rights to the full and without any restrictions, they would jeopardize the functioning and, in some cases, the survival of the entire society because there would be chaos and anarchy. This would ultimately lead to the denial of the protected human rights themselves. Because where everyone is allowed everything, in fact, only the strongest determine the course of events, of course, only while they are the strongest, until someone appears who will impose his will on them as well. But then it is the law of the jungle, which has nothing to do with human rights, or with law and justice, or even with humanity itself.

Viewed from another angle, this is not something that is specific to the subject of human rights. All legally regulated rights, regardless of their content and who is their holder, are enjoyed under certain conditions and restrictions. At the very least, every right is accompanied by an obligation to respect the equally legitimate rights of others. On the other hand, states cannot permanently revoke (cancel) or restrict recognized human rights, especially those guaranteed by international legal instruments. Such a possibility would make the whole modern concept of human rights meaningless, which is one of the most important legacies of civilization, which came about after many centuries of wandering and many sufferings and tribulations. However, when objectively there are exceptional situations or special reasons that justify such steps, states are allowed to deviate from their obligations in an established manner and within the permitted limits in the sense that some human rights or their enjoyment may be limited. The purpose of this is not to annul or diminish a specific human right as such in the essential sense but to prevent its abuse, to protect the equally legitimate rights of others, to protect the interest of the whole community, to ensure the normal functioning of society. Also, certain human rights are limited by the very way they are defined. In this regard, we can talk about three types of restrictions: 1) embedded restrictions, 2) restrictions due to extraordinary circumstances and 3) optional restrictions. They are allowed by international law and, in accordance with that, provided by the constitutions of modern states. Here, of course, we have in mind only the legal limitations of human rights, based on international law. We emphasize this because the limitations of human rights, including human rights as such, can be discussed from other angles - from the standpoint of politics, sociology, economics, theory of international relations, etc. Restrictions due to extraordinary circumstances and optional restrictions are implied by the nature of things. Namely, having in mind that certain restrictions on human rights are in principle inevitable, it is clear that, moving within the framework established by international law, in extraordinary circumstances, states are authorized to temporarily abolish or limit a range of human rights. On the other hand, under international law states can also limit the human rights concerned when they consider that there are determined reasons that require such a measure. These issues are not controversial and have long been addressed in the legal literature. Usually, somewhat less attention is paid to the third type of restriction of human rights, those that are called embedded or inherent. We will deal with them here. Before that, we must look at the very term *human rights and freedoms*. Namely, we usually talk about *human rights and freedoms*, with the aim of pointing out that individuals or groups are authorized to demand active behavior from the state authorities in order to ensure their guaranteed *rights*, while in other cases it is their freedom from state interference, meaning that the state is obliged only not to interfere with the enjoyment of the respective *freedoms*. Although attractive, this division cannot be consistently implemented, as many rights and freedoms lie somewhere in between. Here we will use the term *human rights* in a broader sense, including also those rights that are usually more closely defined as freedoms.

## **2. EMBEDDED HUMAN RIGHTS LIMITATIONS**

### **2.1. The Notion of Embedded Human Rights Limitations**

Embedded restrictions are inseparable from the specific human right itself, more precisely from the way in which it is defined or understood. They are reflected in the fact that in relation to the respective human right, the conditions under which it is enjoyed or the limits of its enjoyment are specified or implied. Since, as an integral part of the right itself, they are inextricably linked to it, the characteristic of these restrictions is that they are permanent, always present. In principle, they do not depend on the existence of extraordinary circumstances, nor on the special decision of the state (state bodies).

## 2.2. Basis of Restriction

These restrictions are usually provided by the very provisions that guarantee and define the right. In the case of restrictions set by internal regulations (domestic, national law), they must be in line with international standards. This is checked in supervisory proceedings before competent international courts (e.g. the European Court of Human Rights), human rights treaty bodies etc. An example of a restriction provided by the national law of the state is the first sentence of Art. 52/1 of the Republic of Serbia Constitution (2006), which reads: „Every citizen of age and business ability of the Republic of Serbia shall have the right to vote and be elected.” When it comes to restrictions established by international legal acts, they can be clearly provided for (e.g. by recognizing the relevant right only to domestic citizens), but they can also be reflected in the provision that this can be done by another regulation. In some cases, space for these limitations is opened by the use of general, insufficiently precise formulations that e.g. prohibit "unreasonable restrictions", which means that those that are "reasonable" are allowed. An example is Art. 25 of the International Covenant on Civil and Political Rights (1966) which reads: „Every citizen shall have the right and the opportunity, without any of the distinctions mentioned in article 2 and without *unreasonable restrictions* (underlined by B.K.): (a) To take part in the conduct of public affairs, directly or through freely chosen representatives; (b) To vote and to be elected at genuine periodic elections which shall be by universal and equal suffrage and shall be held by secret ballot, guaranteeing the free expression of the will of the electors; (c) To have access, on general terms of equality, to public service in his country.” In this regard, it could be noted that a “reasonable” restriction is the fact that these rights are guaranteed to persons living in the country concerned and not to those living abroad. Truth be told, in recent times there is an increasing number of states that allow their citizens to vote in the diplomatic-consular mission in a foreign country, but this possibility is not realistically available to all citizens who are abroad, nor does it apply to all in Art. 25. mentioned rights. Since legal regulations can never encompass life in all its complexity, it is considered that embedded restrictions on human rights always exist when there is an objective place for it, regardless of whether they are explicitly provided for by legal norms. This means that in such a case they also exist when they are not listed as such in a written legal act.

## 3. DIFFERENCES BETWEEN EMBEDDED AND OTHER HUMAN RIGHTS RESTRICTIONS

It has already been mentioned that in addition to the embedded ones, there are two other types of human rights restrictions - 1) those that come into consideration due to extraordinary circumstances, i.e. state of emergency, such as war, civil war, epidemic, etc. and 2) optional, which the state does not have to, but may introduce under certain conditions. There are three basic differences between embedded and those restrictions of human rights related to emergencies: 1) the latter have a basis in the objective needs of a society facing serious challenges (danger) while embedded restrictions are a natural component of the right and conditions for its enjoyment; 2) the repeal of certain rights due to extraordinary circumstances is limited: in time (only as long as such circumstances last), spatially (only in the territory where it is really necessary) and essentially (human rights are limited only to the most necessary extent) while embedded restrictions are always present - on all occasions, in respect of every right, to the extent necessary by the nature of the thing; 3) the restriction due to extraordinary circumstances can refer to a large circle, but not to all human rights (there are also so-called absolute human rights that are absolutely protected), while the embedded restrictions in principle concern all human rights. In some cases, it may be unclear or even controversial whether there is an optional or an embedded restriction of human rights. This is because in both cases the legal framework is, in general, established by the relevant treaty; it is not about any state of emergency; it is not a matter of suspension (temporary revocation) but only a restriction

of the respective rights, etc. However, the difference is mostly clear and is about the fact that embedded restrictions always exist, in themselves, without a special decision of the state, while optional are in principle only a possibility, which becomes a reality when the state, relying on such authority given to it by defining the right itself, decides to introduce it in order to protect important interests of the whole society. In other words, optional restrictions are an exceptional measure, which is why their scope is limited in several ways, especially in terms of the range of rights to which they apply and the nature or effect of the introduced restriction. On closer inspection, the conditions under which optional limitations of human rights are allowed vary somewhat from one treaty to another, but generally boil down to the fact that such a restriction is: 1) provided by law, 2) limited in scope, 3) necessary in a democratic society, 4) introduced in order to achieve a permitted general social goal, 5) subjected to international supervision and evaluation. On the contrary, embedded restrictions are an inseparable part of the right itself and, most importantly, of every human right, not just some of them.

#### **4. METHODS OF RESTRICTION**

Simply put, embedded human rights restrictions can be reflected in conditioning, introducing exceptions, or referring to another regulation. The open question is whether the interpretations from the judgments of the competent international courts for human rights and the reservations of states to multilateral agreements on the subject of human rights can also be considered as embedded restrictions. Embedded restrictions on human rights occur both in universal agreements and regional instruments as well as in the relevant domestic (national) regulations (Hovius 1985, 213-261; Naldi 2001, 109-118; Debeljak 2008, 422-469; Müller 2009, 557-601; Cannie 2011, 54-83; Ahmed & Bulmer E. 2017; Fassbender & Traisbach 2019). As it has already been pointed out, here we are primarily interested in those restrictions that concern international agreements.

##### **4.1. Conditioning**

One can speak about conditioning when a certain right is recognized as such, but, due to the nature of that right, its enjoyment is tied to the fulfillment of some important conditions, formalities, certain restrictions, and the like. Most often, these are conditions on the part of beneficiaries of rights. This has the consequence that although they are guaranteed, the respective rights are limited in the sense that they are recognized only to certain categories of people. Thus e.g. a passport of the country concerned can in principle only be obtained by its national; active and passive voting rights belong only to domestic citizens who are of legal age and have business capacity; guaranteed minority rights are recognized only to members of the minorities concerned; etc. Sometimes these solutions are formulated in an indirect way. Thus e.g. the rule from the Art. 12/4 of the International Covenant on Civil and Political Rights (ICCPR), according to which: "No one shall arbitrarily be deprived of the right to enter his country", limits the right in question only to citizens of the state concerned ("his own country").

##### **4.2. Allowed Exceptions**

Certain restrictions also exist for those rights that are guaranteed without any conditions, and especially without being tied to only certain categories of people, ie. belong to everyone. They could also be called embedded restrictions in a narrower sense, and they are reduced to allowed deviations from the general rules determined by the act by which the right is recognized. These are situations in which, given how a specific human right is defined or understood, a person cannot invoke that right or, more often, cannot enjoy it to the fullest extent. In such a case, the existence of the right itself is not disputable (it is recognized without any special conditions), but in the form of exceptions, certain limits of its enjoyment are specified or implied. In some drastic cases, it can be said not only the person cannot enjoy the relevant right in a certain way,

but even more, that it is forbidden to it to enjoy that right in that way, meaning that ignoring such a prohibition can, depending on the case, rise issue of legal, possibly even criminal liability of person concerned. This will be much easier to understand if we rely on examples. Thus e.g. the right to life belongs to everyone. This is understandable since this is the most important human right, without which all the others have no meaning. However, in countries where the death penalty has not been abolished, this right is limited by the possibility of prescribing, pronouncing and executing that punishment for the most serious crimes. Moreover, even in those states that have abolished the death penalty, it will not be considered a violation of human rights if someone is deprived of life as a result of the application of lawful and absolutely necessary force, such as e.g. when security kills the assassin, when law enforcement kills the person who opened fire on them, when prison guards take the live of a prisoner trying to escape, etc. Everyone has the right to personal liberty. Nevertheless, legal regulations in the form of exceptions determine the cases in which deprivation of liberty is allowed. Thus, the one who commits a criminal offense must reckon with the fact that upon the completion of the criminal procedure and the pronounced verdict, he will be denied freedom for the period for which he was sentenced to imprisonment. And if it is done legally, no one will see human rights violations in it. This is also recognized by international human rights instruments. Thus e.g. Art 5/1 of the European Convention on Human Rights (1950) specifies: „Everyone has the right to liberty and security of person. No one shall be deprived of his liberty save in the following cases and in accordance with a procedure prescribed by law: (a) the lawful detention of a person after conviction by a competent court; (b) the lawful arrest or detention of a person for non-compliance with the lawful order of a court or in order to secure the fulfilment of any obligation prescribed by law; (c) the lawful arrest or detention of a person effected for the purpose of bringing him before the competent legal authority on reasonable suspicion of having committed an offence or when it is reasonably considered necessary to prevent his committing an offence or fleeing after having done so; (d) the detention of a minor by lawful order for the purpose of educational supervision or his lawful detention for the purpose of bringing him before the competent legal authority; (e) the lawful detention of persons for the prevention of the spreading of infectious diseases, of persons of unsound mind, alcoholics or drug addicts or vagrants; (f) the lawful arrest or detention of a person to prevent his effecting an unauthorized entry into the country or of a person against whom action is being taken with a view to deportation or extradition.” Humans are social beings and one of the most important rights, as well as a precondition for achieving any success in the field of politics, business, culture, science, sports, etc., is freedom of association. But it goes without saying that this does not include the freedom to create criminal gangs, terrorist organizations etc. Basic human rights include freedom of speech or. expression, which means the freedom to seek, receive and impart information and ideas of all kinds. That right, however, is limited by the way it is defined, and even in a sense independent of it. This is because its unlimited enjoyment is objectively impossible. Otherwise, everyone could insult anyone whenever he wants not only with impunity but also with a full right, call for the overthrow of the constitutional order, propagate various forms of violence, reveal state secrets to the public or disclose them to foreign secret services, disrupt the work of state bodies (e.g. as a participant or part of the audience in court proceedings), etc. Certain restrictions arise from those provisions of international agreements that establish international crimes, i.e. impose on states to legally prohibit and in practice punish certain behavior. This in itself implies a ban not only on performing certain acts but also on taking other related actions. Thus e.g. although there are freedoms of thought, expression (speech), press, etc. there is no doubt that propaganda of war, racial discrimination, genocide, terrorism, etc. are prohibited and punishable. In other words, the respective restrictions on freedom of expression and related human rights are an integral part of such legal regulation of the respective issues. In this regard, it is rightly noted that if someone abuses the freedom of speech and the freedom to participate

in demonstrations to incite racial or religious hatred, propagate war or encourage others to commit crimes, governments have a duty to interfere in the enjoyment of those freedoms in order to protect the human rights of others (Human Rights 2016). Finally, some embedded restrictions are indirect, they exist even when they are not specified by special, so-called restrictive or prohibitive clauses of a treaty or other legal act. They go without saying in the context of the whole concept of human rights, and even the entire legal system. Viewed from another angle, it follows from the idea that all rights have certain restrictions, even if it is not explicitly specified by some legal regulation. This is a general legal principle, and those principles, as is well known, belong to the main sources of international law. Thus e.g. when it comes to persons serving a prison sentence, it is clear that even without a closer legal regulation (which is, of course, necessary), that punishment in itself, along with deprivation of freedom of movement, implies a narrowing of other rights, such as freedom of assembly, the right to trade union and other association, the right to respect for family life, freedom of correspondence, etc. Similarly, even when not explicitly legally defined, appropriate restrictions by the nature of things also exist regarding certain rights of some other categories of people, such as civil servants (soldiers, police officers, firefighters, etc.) who are required to comply with special rules of service, when necessary be available outside regular working hours, etc.), severe psychiatric patients (who are kept and treated in appropriate institutions), etc. In practice, situations occasionally occur that various countries, social strata or individuals view differently. Thus e.g. in some specific cases concerning freedom of thought, conscience, expression, press, etc. some insist on the unhindered enjoyment of these rights while others perceive it as a gross abuse, and even a severe insult to themselves, their people, their religious group, and the like. In some cases, this causes social unrest and opposition that can cross the borders of the respective state, and in extreme situations, it can lead to violence. We will recall only two cases. When on Sept. 30, 2005 12 caricatures of the Prophet Muhammad were published in the Danish newspaper *Jyllands-Posten* it provoked a stormy reaction from the Muslim community not only in Denmark but also around the world. Muslims perceived this as a severe insult because: 1) Islam forbids and considers blasphemous the portrayal of the Prophet and 2) cartoons suggested that Muhammad and all Muslims were connected with terrorists (at one of the pictures Muhammad was shown hiding a bomb in his turban). Protests and demonstrations broke out in a number of countries, there were attacks on embassies of Denmark and few other European countries, attacks on Christians and Christian churches were recorded, etc. The violence claimed more than 250 lives. Muslim countries also reacted - 11 of them demanded that the Danish government punish those responsibly, and when, invoking freedom of speech, it refused to do so, they demanded that the UN impose sanctions against Denmark; Libya and Saudi Arabia withdrew ambassadors from Copenhagen, etc. (Sturges 2006, 181-188; Keane 2008, 845-875; Kahn 2010, 253-290). Another example refers to the French satirical newspaper *Charlie Hebdo*, which used to publish distasteful and even offensive cartoons at the expense of many people and nations. After it published a series of satirical cartoons of the Prophet Muhammad, Islamic extremists broke into the premises of the paper's editorial office in Paris on January 7, 2015, and shot at everyone, killing 12 and wounding 11 people. In addition, in the next few days, a wave of violence spread in few other European countries, taking 5 more lives. However, in the mentioned two and similar cases, there were actually different interpretations and practices of different countries - their assessment of whether something went beyond the permitted limits, whether it represents the enjoyment of a guaranteed right, or, on the contrary, its misuse and even abuse. It was not about questioning the very principle of the existence of certain embedded restrictions on recognized rights. In other words, it was a problem of application of the respective legal solution, without questioning the right itself and its principle limitation and, on the other hand, without introducing new restrictions.

### **4.3. Reference to Another Regulation**

Sometimes a legal act that guarantees human rights does not specify any special conditions for its enjoyment, nor does it introduce any restrictions, but refers to some other regulation. For this purpose, standards "in accordance with the law", "in accordance with the procedure provided by law", "in accordance with the laws of each country", "in the manner prescribed by law", "in the manner established by law", "according to law" and similar standards are used. Thus e.g. ICCPR reads in Art. 14/5: „Everyone convicted of a crime shall have the right to his conviction and sentence being reviewed by a higher tribunal according to law” and in Art. 9/1: “Everyone has the right to liberty and security of person. No one shall be subjected to arbitrary arrest or detention. No one shall be deprived of his liberty except on such grounds and in accordance with such procedure as are established by law”, while International Covenant on Economic, Social and Cultural Rights (1966) specifies in Art. 8/1/d that the states parties to it undertake to ensure: “The right to strike, provided that it is exercised in conformity with the laws of the particular country.” When it comes to national regulations of states which indicate that the definition of guaranteed rights i.e. their enjoyment is more closely regulated by law, a sufficient example is the Constitution of Serbia (2006) which specifies that: „Acquiring and terminating citizenship of the Republic of Serbia shall be regulated by the law” (Art. 38/1), “Collecting, keeping, processing and using of personal data shall be regulated by the law” (Art. 42/2), “Everyone shall have the right to access information kept by state bodies and organizations with delegated public powers, in accordance with the law” (Art. 51/2), “Seizure or restriction of property to collect taxes and other levies or fines shall be permitted only in accordance with the law” (Art. 58/4), “Right to work shall be guaranteed in accordance with the law” (Art. 60/1), “The employed shall have the right to strike in accordance with the law and collective agreement” (Art. 61/1) etc. Strictly speaking, in such cases, there are in fact no clearly defined human rights restrictions. The relevant legal act says nothing about them. Nevertheless, the mere reference to another regulation actually suggests that although the human right is undoubtedly recognized, there are some elements that require closer regulation, with this being done by another legal act. In other words, it indicates that certain conditions or exceptions exist or are possible, but that they should be sought in another regulation.

### **4.4. Interpretation**

The problem of interpretation, ie. determining the legal meaning of a legal norm also exists in international law, on many levels and in connection with many issues. Here, however, we are only interested in the interpretation that comes from the competent international body, especially the specialized international court for human rights. Namely, when resolving a case, such a court may interpret a certain article or articles of the relevant international agreement in such a way as to conclude that the provisions in question do not apply to certain situations, apply only to a certain extent, etc. Examples are certain interpretations of the European Convention on Human Rights (1950) and its protocols, contained in the judgments of the European Court of Human Rights. In principle, here we see no creation of a new legal norm, but instead, there is just interpretation and application of the existing ones. Since the court does not introduce new legal rules but acts and decides on the basis of those, already existing, it also means that strictly speaking, its judgment does not create any new restrictions on human rights, not even those that belong to the embedded ones. However, in practice, the judgments of such courts sometimes go beyond the mere resolution of a specific case, i.e. the application of the provisions of the relevant treaty to the disputed situation. They, especially when it comes to important and complex issues, become an inseparable part of the relevant system of human rights protection, are often cited, and, most importantly, are often based on the previous decisions of the same court in similar cases. In other words, in a sense, it can be said that in such cases, case law is, exceptionally, a source of international law.



Seen from another angle, although the judgment does not formally become part of the provisions of the relevant treaty, it does so in an essential sense, as it determines how those provisions are understood and applied. Therefore, if the competent international court for human rights decides that a right is limited in a certain respect (although this is not evident from the original text of the treaty itself), such an interpretation becomes in that sense a part of understanding the relevant right and its scope. Accordingly, with all possible reservations, it could be noted that the interpretation of the relevant provisions of the treaty the competent international court of human rights can be seen as a very specific type of embedded human rights restriction (Review of the European Court of Human Rights case law see in: Orakhelashvili A., 2003, 529-568). The situation is actually similar to when the contracting states would subsequently upgrade the relevant provisions (make amendments) in terms of specifying certain restrictions, only that instead it is done by the specialized international court which these same states established precisely in order to take care of the consistent and correct application of the relevant human rights treaty.

#### **4.5. Reservations to Multilateral Treaties**

It may be debatable, but it seems that reservations to multilateral international agreements can be seen as a special type of embedded restriction of human rights. These declarations are formal unilateral statements by which a contracting party distances itself from certain provisions of a multilateral treaty, either by excluding their application to itself or by giving these provisions a certain meaning (a certain interpretation). The fact is that the tolerance of reservations puts the contracting parties in an unequal position to a certain extent. However, it should not be forgotten that reservations produce legal effect only if the other contracting parties explicitly or tacitly accept them. On the other hand, the tolerance of reservations enables as many states as possible to become members of multilateral treaties, which is of exceptional importance in the field of human rights. It is considered that it is better to get more states to join the treaty, even with some deviations than for states to refuse to be bound by the treaty due to certain disputable provisions. Also, there is hope that over time, the state will change its position and give up its reservations. Although it is largely forgotten in relation to restrictions on human rights, it is a lawful step, provided for, *inter alia*, in Art. 1 of the Vienna Convention on the Law of Treaties (1969). In this way, the state can limit its obligations regarding the exercise of certain rights specified by a multilateral treaty, by restricting or not even recognizing the respective rights, by making their enjoyment conditional, or by limiting the circle of their beneficiaries. In this regard, suffice it to recall that when signing and ratifying the Framework Convention for the Protection of National Minorities (1995), a number of states (Austria, Denmark, Estonia, Germany, Slovenia, Switzerland, etc.) have found it appropriate, to underline that the Convention does not contain a definition of national minorities and, on that basis, to specify in respect to which ethnic groups they will implement that agreement - which in other words means that they have not assumed the corresponding obligations with regard to other, unmentioned groups. Thus, e.g. in its declarations given at the time of the signing of the Framework Convention (1995) and its ratification (1997), Germany stated both times: „The Framework Convention contains no definition of the notion of national minorities. It is therefore up to the individual Contracting Parties to determine the groups to which it shall apply after ratification. National Minorities in the Federal Republic of Germany are the Danes of German citizenship and the members of the Sorbian people with German citizenship. The Framework Convention will also be applied to members of the ethnic groups traditionally resident in Germany, the Frisians of German citizenship and the Sinti and Roma of German citizenship.” (Council of Europe 2020, 67). Thus, Germany has made it clear that it is considered bound by the provisions of the Convention, but only with regard to the four precisely mentioned ethnic minorities, and not other similar minority communities living in its territory.

The question may be asked whether it is more appropriate to treat reservations not as a form of embedded, but as an optional restriction, or perhaps even to single them out as a special, new type of human rights restrictions. Regarding the first possibility, it is true that the reservation is a reflection of the freely expressed will of the state, which means that the state can, but does not have to, declare it. Moreover, practice shows that, in general, states do not declare reservations as a rule, but as an exception, when they have special reasons for doing so. These points may lead to the conclusion that reservations are a form of optional human rights restrictions. However, such a conclusion would not be correct. Namely, optional restrictions are about restricting individual and/or group human rights in order to protect the important interests of the whole society. They occur by the decision of the state, provided that the state may impose such a limitation only when the wording of the appropriate provision of relevant international document explicitly states that the human right may be restricted under certain conditions and with the fulfillment of the conditions provided for that. So, this kind of restriction relies on the solution from the treaty, it is allowed within boundaries specified by the treaty, but, on the other side, it can yet does not have to exist - that is why it is called optional. On the contrary, in the case of a reservation to a multilateral agreement, it is a matter of freedom to reformulate or interpret the contractual solution in a certain way, which defines the obligation of the state that declared the reservation somewhat differently. In that case, to her does not apply what is written in the relevant provision of the treaty, but what she formulated with her reservation, accepted by other members of the treaty. This means that something other than the original text of the contract defines only a specific human right, its scope, the conditions under which it is enjoyed, the circle of its beneficiaries, and the like. However, these are not optional, but embedded restrictions, those that are part of the differently defined or interpreted provisions, more precisely, somewhat differently specified or interpreted rights. In principle, these changes can also represent new or different so-called restrictive clauses, which means those provisions that give the state the right to optional restrictions, but even then they are not in themselves optional restrictions on human rights but are only a legal basis for their introduction. Is there a sufficient basis to set aside reservations as a special type of human rights restriction? Although there are such approaches as well (*Human Rights* 2016, 51-52), we are of the opinion that this is not fully correct, because there are not enough grounds for that. On the other hand, it could be rightly objected that the reservations are not about classic embedded restrictions, but about defining the respective contractual provision. It does not have to be about any new restriction of human rights at all, but the reservation can concern various other important issues. In this regard, everything can be viewed also from another angle. In the case of a reservation relating to a right guaranteed by a treaty, there are two types of embedded restrictions at the same time - in relation to the relevant provisions of the original text of the treaty (for other contracting parties) and in respect of those provisions amended by the reservation (for the state that declared it). This means that the essential consequence of placing a reservation and its acceptance by other contracting parties is the same as in formulating a treaty provision, i.e. as if the reserving state and the contracting parties that had agreed to the reservation had concluded some kind of "mini-agreement" within the framework of the relevant treaty, thereby modifying the relevant provisions. But then, it can also mean that in the mentioned cases the embedded restrictions are more or less different. Formally, reservations are a way to, in relation to a specific state, come to a somewhat different definition of the assumed international legal obligation. Essentially, they are one of the conditions under which the respective human rights can be enjoyed. When it comes to a state that has declared a reservation related to a protected right, the solutions and conditions determined by it become inseparable from the specific human right and the way in which it is understood and enjoyed. This gives us a basis to look at them as a special kind of embedded restrictions. However, different approaches are possible as well.

## 5. PROHIBITION OF ABUSE

Nothing, including human rights themselves, but also the way in which their restrictions are established or interpreted, must not turn into abuse, meaning intentional misuse, with the aim of harming someone or obtaining undue benefits. (Кривокапич 2019, 170-184). After all, suffice it to recall that one of the basic principles under which human rights are enjoyed is the principle of the prohibition of human rights abuses. (Paunović et al. 2021, 60-61). Otherwise, the government of each state could, with a simple call for the need to fight terrorism, organized crime, pandemics, etc. trample on most of the guaranteed human rights. This would then make it possible to gradually move to the abridgment of those rights, with a tendency to turn everything into a denial of human rights. Therefore, in accordance with the old legal rule that exceptions must always be interpreted narrowly (*exceptiones sunt strictissimae interpretationis*), all restrictions on human rights must also be reduced to the narrowest, most reasonable, and really necessary level.

## 6. CONCLUSION

Embedded restrictions are an important factor restricting human rights. This is not only reasonable, but in principle necessary and even inevitable, because everything else would lead to chaos and, ultimately, trampling on those same rights. On the other hand, no human rights restrictions, embedded ones included, must ever turn into their opposite, into the abuse of these instruments in order to illegitimate deterioration of proclaimed human rights.

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## BUILDING AND STRENGTHENING THE RESILIENCE OF SMES IN TIMES OF CRISIS COVID-19 AND MANAGING CYBER RISKS

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### **ABSTRACT**

*The COVID-19 crisis, in addition to dramatic damage to human health, has also affected the financial health of companies around the world. As with any crisis, small and medium-sized enterprises are the most vulnerable, both due to the lack of funds and the lack of specialized knowledge, which further complicates the already difficult business position. The crisis caused by COVID-19 is considered to be the most severe global recession of the new age. The closure of people, the transition to work from home and the change of life, both privately and professionally, have led to great shocks in all worlds. This paper deals with the issue of SME progress from the moment of urgent financial impact to the way to build resilience and its strengthening and cyber risks as well as their management in terms of business protection in changed working and living conditions. Building the resilience of SMEs implies the ability to better respond to the shocks caused by the COVID-19 crisis, and strengthening resilience is pursuing a future defense policy in order to survive in some new crises and shocks. Prior to the pandemic, the objectives of the SME and entrepreneurship policy framework were mainly focused on competitiveness and productivity growth. The COVID-19 crisis initiated turbulent business opportunities in which the primary policies of SME goals changed and redirected them and focused on a key goal in the form of strengthening and building resilience. This crisis caused by the pandemic can also be considered a kind of test for the framework of SMEs and their ability to cope with the new situation, as well as for governments and their assistance maneuvers that were forced to learn on the go. At a time when SMEs are focused on maintaining and preserving the company and employees, the shift to teleworking has produced an increase in targeted high-profile attacks that are capable of compromising and jeopardizing the financial and physical resources of SMEs. Security standards such as the use of personal data and wi-fi public networks are often misunderstood. In addition to advanced security technologies and the constant development of cyber security, there are often various failures, especially in times of crisis and stress. Cyber risk management is a necessity to establish policies and procedures in the practice of SMEs in order to further prevent, detect and reduce malicious actions with mandatory compliance with legal regulations, obligations and expectations.*

**Keywords:** *building and strengthening the resilience of SMEs, COVID-19 crisis, cyber risks, cyber risk management*

### **1. INTRODUCTION**

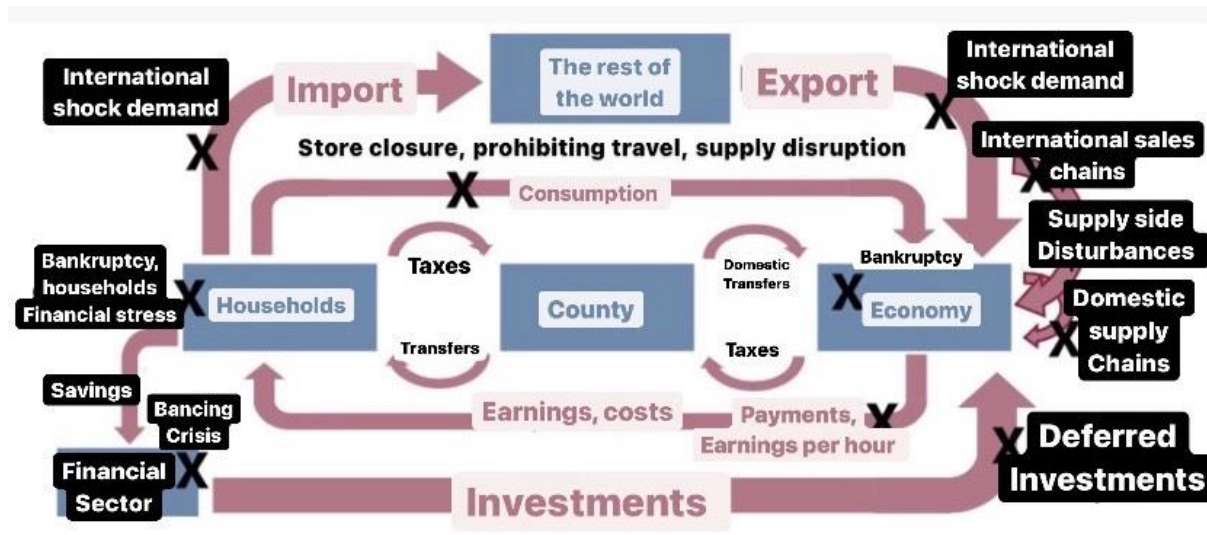
The outbreak of the Covid-19 pandemic in different parts of the world, even in our country, has a great impact on health and the economy, on trade, investments and tourism. All over the world, the locking and application of social distancing has made people cautious and limited their activities outside their homes, which has affected the business of almost all economic entities, including small and medium enterprises, as the most sensitive among them. The emergence of a pandemic has changed the basic definition of SMEs as a driver of a country's economy, as many companies have disappeared from the market due to their sensitivity and inability to adjust due to the long duration of the current crisis. The business of small and medium enterprises is very specific and largely depends on the speed of money turnover from the sale of goods, which means that reduced demand disrupts the flow of money and thus the

business as a whole and in some cases even survival. The government's policy to protect the health of the population and reduce the number of patients in the form of physical distancing and incarceration has led to economic collapse, travel disruption and border closures. Service chains such as restaurants, markets, shopping malls, online transportation and other SMEs are most affected. People were forced to change their shopping patterns to so-called. Online shopping and thus meet your basic and other needs. Many SMEs were not ready to react quickly precisely because of poor or no digital infrastructure and not mastering the necessary skills necessary for the changed business conditions. The lack of promotion and marketing in the form of internet content has greatly diminished their business and the ability to compete with competitors in the market. The digital transformation of SMEs is transforming their offline store into online shopping. The transition of business to online has conditioned the emergence of cyber risks and the need for increasing security of existing systems and, if necessary, the introduction of new ones. Online business is threatened on a daily basis by constant cyber attacks, so the need to organize and manage a team for prevention and regular control of the system is essential for SMEs. Small and medium enterprises are quite clumsy in handling systems and do not have the necessary professional IT staff due to small budgets, so they are an easy target for cyber criminals. In order to protect your property, business and survival, managing cyber risks is the right way to react in time if potential attacks are detected. Crises as big shocks that are difficult to survive, and even harder to survive and recover, also carry certain experiences as lessons on how to prepare small and medium enterprises for future problems more prepared and resilient.

## **2. CRISIS COVID-19**

The Covid-19 crisis began with the appearance of the SARS-2 virus in China in December 2019. Very quickly, the crisis takes on the shape of a global problem, primarily due to the speed of its spread to Europe and the rest of the world. No one was ready for this unprecedented shock, but it was believed that various known tools so far would manage to curb the crisis, reduce it to flows in which it is possible to react and certainly mitigate the consequences. Unfortunately, from then until today, the situation is very unpredictable and despite the great efforts that have been made and are being done every day, the Covid-19 crisis shows the need for even greater seriousness in considering and finding new solutions that will curb it. The health system is weakened by constant action, human mortality is not waning, and people's fear of disease is constantly growing due to new strains of the virus that are still insufficiently studied. The pandemic has led to serious economic destabilization worldwide, so the Covid-19 crisis is considered one of the greatest crises of civilization in terms of scope and duration. The effect of such a crisis equally affects all aspects of life, both social and economic. The destruction of the sudden economic disturbance caused by the pandemic has also created a destabilization of the supply-demand relationship in almost all areas of human activity. In order to protect the population from diseases, the pandemic caused mass closures of economic entities, as well as individuals, as well as entire cities and countries. The policy of social distancing has led to the closure of certain markets, the closure of many companies, factories, production, and all this has resulted in the dismissal of workers, a reduction in purchasing power and the standards of the majority of the population. The current health crisis has caused a serious economic crisis, as evidenced by statistical data in the form of a decline in world production in the previous year, and three times more than during the global economic crisis in 2009. Baldwin (2020) shows how the crisis caused by the Covid-19 pandemic is damaging the economy.

*Picture following on the next page*



Picture 1: Multiple strikes of the Covid-19 pandemic on the economic structure  
(Source: Baldwin (2020))

This crisis, like any other, has hit SMEs the hardest, as they are quite dependent on their routine business transactions and a limited number of customers. If we compare them with large chains and companies that have serious budgets, small and medium enterprises are always in trouble with the lack of resources, both financial and managerial, which makes them a very sensitive category to sudden shocks and changes, especially those with long duration. With the onset of the pandemic, SMEs faced logistical problems due to transport disruptions and labor shortages on the supply side, while measures taken to close and reduce consumer confidence and shut down a number of small businesses caused a drop in demand on the demand side. The ratio of shocks in supply and demand differs greatly, primarily depending on the independence of the company or on whether the SME is knowledge-based or perhaps a link in the supply chain of large companies. It is very important to distinguish between immediate shocks in supply and demand because this allows for an adequate response and a better understanding of short-term and long-term effects and, accordingly, the setting of policy solutions. Immediate effects of the closure of their activities due to the Covid-19 crisis were experienced by mostly all small and medium enterprises of all types of activities. Independent SMEs have faced significant logistical problems and while reduced capacity utilization is one of the key supply challenges, demand side effects pose a greater threat. A large number of independent SMEs are mainly focused on consumers and their business is characterized by flexible demand. The Covid-19 crisis has caused tectonic disturbances in the labor market where consumers are faced with huge uncertainty regarding the preservation of health and the workplace, which limits them financially, and this further leads to a drop in demand. Also, the shutdown of production lines across Europe and the world during closures and the transition to work from home has jeopardized many independent SMEs serving the industrial market and benefited greatly from which customers could rely, mainly for flexibility with little change. Small and medium-sized enterprises that specialize as suppliers and are part of a large system or one link in a large chain have also been severely affected on both the supply and demand sides. Many SMEs had signed exclusive contracts and orders from key customers who were forced to close down due to the crisis, which also shut down the business of their suppliers. Such effects have been most pronounced in the automotive sector, but counting on their specialized focus, such SMEs deliver vital components to their customers, so it is expected that the removal of restrictions will lead to the resumption of production and recovery of demand. Numerous small and medium enterprises changed their activity during the current pandemic, so they temporarily repurposed their activities and concentrated on the production of goods that are consumable and necessary,

such as face masks, chemicals and medical equipment and other necessities and thus at least partially mitigated the decline in demand. The implications on the demand side for knowledge-based SMEs during the Covid-19 crisis were less serious than supply. Knowledge-based small and medium-sized enterprises were quite endangered because their scientists and engineers replaced laboratories with a house from where they could not engage in scientific activities in an adequate way. One thing is for sure, there are economic implications associated with the Covid-19 crisis that go beyond the limits. There are short-term effects that apply to all types of SMEs, and there are medium- and long-term implications that differ among SMEs depending on the activities they engage in. In the short term, there is no doubt that SMEs of all types and activities will face financial problems and liquidity problems. Such a conclusion is based on the special dependence of independent SMEs on external financial support. Prior to this or any other crisis, many small and medium-sized enterprises had limited financial resources, so the closure further jeopardized their demand and supply chain challenges. Also, in order to adjust their business to the current requirements set by the health headquarters, they had to implement significant changes in physical institutions, which required additional capital. In the long run, other and much more demanding challenges will certainly appear, depending on the activity that the small or medium enterprise performs. The importance of investing in digital technologies is for small and medium enterprises in the first place. Closing and moving to work forced many SMEs, which until then either did not have the funds to invest in digitalization or redirected existing funds for production and faster profit, to still undergo training and redirect their employees to a new way of working with the help of IT. and thus ensure survival. From a managerial perspective, digitalization provides new opportunities for firms and this crisis will certainly contribute to and accelerate the reaction of SMEs to take advantage of them. In addition to digitalisation, the consequences of a pandemic can also give new impetus to other trends affecting SMEs in manufacturing such as the transition to environmental sustainability. The Covid-19 crisis will certainly lead to a change in the global value chain. Decades before the pandemic, global value chains were characterized by a globally scattered production system that was adapted to optimize costs through cheap labor and production at the right time. This crisis has definitely shown the need to make global value chains more resilient through diversification of supply chains and reliance on only a few key suppliers, which will enable them to reduce the risk of monopsonistic situations in the future. The appearance of the vaccine against Covid-19 calmed both the health and economic elite and raised awareness that the prospects for salvation from this complete collapse still exist and that the end of this serious, now mental, crisis is in sight. Forecasts now say that GDP in the current year will be 5.5%, while global production will return to the level before the pandemic, which actually defines that only mass vaccination leads to recovery and returns the global economy to normal.

### **3. BUILDING AND STRENGTHENING SME RESISTANCE**

SME policymakers in most countries of the world reacted quickly and responded to the crisis. COVID-19 adopted the necessary control measures and started a strategy of action to mitigate the impact of the crisis on SMEs. In the first months since the pandemic was declared, a small and medium-sized enterprise policy initiative was urgently launched, which is important in terms of ensuring fast delivery, and these are low administrative thresholds for access to state aid and digital delivery systems. Public support measures were generally available to most SMEs with limited checks and meeting certain criteria that would facilitate and expedite delivery. In addition to the existing measures, certain countries have further simplified access to support measures during the first wave of the pandemic in order to accelerate their implementation. An equally important factor for the rapid delivery of support is the development of digital infrastructure. The very beginning of the crisis marked the possibility of delivering a policy of support for all SMEs that needed this type of assistance, which led to an



increase in demands and needs, and was accompanied by the implementation at a very enviable level. Almost all countries have implemented support policies and they have differed from each other, but their goal has been the same, which is to simplify access to assistance, reduce or abolish certain fees, shorten approval procedures and provide tailored support to SMEs for easier access. Efforts made for the benefit of the survival of small and medium-sized enterprises have called into question the correctness of the policy of quick and easy access to state aid and certain relief measures, as practice has shown that there was a lot of abuse and that this aid unfortunately reached some who did not. SMEs and those who did not need it, as well as those who were not entitled to it. Certainly some lessons have been learned on how to find a better balance between strengthening accountability, fast delivery and mass consumption. At the beginning of the pandemic, new SMEs were most at risk due to their increased risk profile and particularly limited access to state aid. The second half of 2020 was marked by a better status of new companies and a slight increase in the opening of future SMEs, which led to a recovery. The support of the government at the very beginning of the crisis was large-scale, mainly in the form of financial debt which was supposed to alleviate the liquidity of SMEs and which they desperately needed as a so-called. injection for the immediate overcoming of the initial shock at the time of mass closures and the threat to their survival. Small and medium-sized companies that managed to get financial help will fight to repay their debts as soon as possible, so that in the future, if the earthquakes last, they can borrow again and thus survive the introduction of new measures and ensure their own survival. The key goal of the policy of measures is to examine the way that will contribute to solving the lack of liquidity and at the same time increase the leverage ratio of users. Recommended potential capital and apparent capital measures include:

- Support for grants as a key advantage of the possible benefits to a wide range of firms including SMEs with limited growth potential, without increasing debt. Grants are mostly used for the purpose of salary subsidies, compensation of lost income or fixed costs, vouchers for digital support or restart.
- Forgiveness loans that relate to certain loans that can be converted into grants under certain conditions that allow the firm not to repay the debt received. This applies mainly to wage protection programs aimed at encouraging SMEs to retain employees. If certain criteria are met and the employee is retained, the loan is forgiven.
- Subordinated loans that are already in use in many EU countries and represent loans that create debt in the event of liquidation with the possibility of repayment only after the repayment of other primary debts.
- Equity funds-convertible bonds as an opportunity to expand existing and introduce new schemes that have been launched for small and medium enterprises and concern participation in the capital of enterprises.
- Group financing as an action implemented as a financing instrument that could potentially meet the financial needs of a larger segment of the SME population compared to capital market instruments, enabling them to raise capital by selling securities in the form of capital, income share or convertible bills. Some governments have introduced new regulations to allow SMEs to use the funds of small investors as a way and need to increase capital rather than debt.
- Tax policy to strengthen SME capital as a government incentive for private investment in small and medium enterprises. From the very beginning and during the pandemic, and even today, tax incentives have been implemented and are being implemented to attract private investment for new companies and SMEs, such as personal income tax relief or income tax reduction.

Initiatives to restructure the existing debt of SMEs is another way that is in the research phase and should show how to reduce large leverage and the risk of insolvency of small and medium enterprises. Some countries are constantly extending loan terms and grace repayment periods. Addressing the impact of increasing SME indebtedness will require further reform of the insolvency regime, which should allow for the successful restructuring of insolvent companies. The previous instruments that were designed to combat the immediate impact of the crisis, with the appearance of a pandemic, have thus been greatly surpassed in practice. There are also some new elements, such as the knowledge gained during the pandemic, which were supposed to be of a temporary nature, and have become permanent features of politics and will remain so when the crisis calms down. These short-term schemes that have been used as certain necessary crisis tools can be mobilized, maintained and used in different conditions as a lesson of enterprise resilience. Even during every crisis, including this one, governments are largely dealing with and considering the possibility of taking certain packages of measures that will contribute to rapid reconstruction and recovery. Sustainability is the most important component of the recovery package, with a strong emphasis on clean energy, resource efficiency and greener consumption. The packages are also focused on making efforts for massive digitization, innovation and skills. The new packages, also called better construction packages, will certainly continue to address the circumstances of small and medium-sized enterprises and include measures that suit their needs. It is certainly very important that the needs and views of SMEs are consulted, heard and taken into account when adopting the package. A central element of support and policy to strengthen recovery and resilience is the mass digitalisation of SMEs, which has involved all countries as measures coming from three areas: teleworking, e-commerce and digital infrastructure and skills. Governments recognized that the inability to invest in digitalisation among SMEs was caused by a lack of funds, so they launched wider digital packages to strengthen the digital infrastructure and at the same time organized free employee training. The goal of these packages is to simplify the process, reduce administrative costs and increase regulatory compliance. It is generally known that small and medium-sized enterprises are the most sensitive economic entities that suffer the most in times of crisis, and in order to start and move towards construction, they must first become more resilient to everyday challenges and blows. We therefore define SME resilience as a response to shocks and real policies that will help to feel as little negative impact as possible and to be an example for some other shocks. Resilience also refers to internal factors such as a firm's reserves or the firm's digital connection to external actors through which it engages in global supply chains. SME and entrepreneurship policy goals differ but there are some of the same and equally important goals, such as strengthening competitiveness, increasing productivity and resilience.

#### **4. CYBER RISKS**

The accelerated development of digital technologies and disruptive innovations over the last ten years have completely changed our visions and opportunities for socio-economic development. Easy availability and mass production of technological means and devices have greatly changed the way of production and work, business, ways of informing, culture and entertainment, models of functioning, etc. to almost unimaginable proportions that until recently were completely unknown and difficult to understand. The pressure created by the introduction of rapid digitalization has generated a new strategic environment called the new age, characterized by very dynamic processes of networking everyone with everyone and everything with everything and everywhere, which has resulted in the introduction of new life rules and patterns under constant threat and pressure of current disruption. The wide application of new technologies has led to general growth trends by introducing changes of unprecedented proportions not only in the economy and industry, but in all other areas related to them and life in general.

In addition to the current risks in the economic sense, the pandemic also caused the appearance of various threats and cyber risks. Due to the constant burdensome information about the number of patients and the concern for their own health, the majority of the population is in constant fear of disease and survival, which creates a very favorable ground for the growth of cybercrime and cyber attacks in general. Due to the pandemic, the changing and turbulent strategic environment has created very favorable conditions for the expansion of cybercrime. Cyber attacks on Internet content have existed before and have been constantly increasing from year to year, but the Kovid-19 crisis has contributed to cybercrime quickly adapting to the new changes in business and life in general and reaching unexpected proportions. Cybercriminals quickly adapted by changing the means and methods of attack as well as the choice of potential targets, ways to cover up, ways of criminal communication as well as the goals of action. In addition to the goals of obtaining illegal property benefits, frequent reasons for cyber attacks are political background, terrorism, and during the Kovid-19 crisis, espionage, obstruction and revenge. Cyber criminals have become very informed, they have become very creative and innovative, and therefore very arrogant, ruthless, persistent and dangerous. Even the most powerful countries in the world are not spared from cyber risks in the military and technological sense, because they are in direct danger of networks of very professional and trained hackers who are supported by certain governments. Recent cyber research has shown that pandemic-related cybercrime includes online and offline distribution of protective equipment, pharmaceutical and sanitary products, fake vaccines and virus tests, numerous real estate fraud schemes, various forms of pedophilia, numerous companies that place false and intimidating information, compromising business emails, etc. An extensive Interpol report for the current year states that the number of criminal cyber actors has skyrocketed and that the current pandemic crisis is being skillfully used to advance and perfect new attack techniques and reach the highest level of concealment. The EU was among the first to understand the need to develop and frame policies, mechanisms and means for protection against cyber threats and risks. It has acted through its institutions and agencies and placed the fight against cybercrime at the very top of its priorities in addition to the standard and persistent fight against terrorism, protection of infrastructure and public spaces as well as border security. New tools are available performance. The most common evolving threats on the market are: fishing, web applications, based web attacks, malware, identity theft, insider threats, information leaks, ransomware, cyber espionage, crypto mining.

#### **4.1. Fishing**

Fishing as a type of fraud used to steal user data, credit card data or steal money using technical and social engineering techniques. The attacks are mostly designed to act harmlessly and to be sent from credible email sources which will certainly dispel suspicion to the recipients and provoke them to launch a malicious attachment. The targeted system of identity theft is based on the technique of researching the personality and getting acquainted with the habits of the same, which will enable them that the fraud seems more adapted to the victim and is therefore considered one of the most successful in company networks. Hackers are generally very innovative and by constantly changing techniques they manage to reduce the success rate of various common spam attack protection systems. As the mentioned emails are the main carriers of cybercrime, recent research indicates that a large number of these activities have been replaced by sending messages on social networks, where the number of these and similar attacks is constantly growing. The assumption is that very soon this type of cyber risk will be modified by new methods of sending messages that will become much riskier with the help of artificial intelligence that will prepare and send specific content in the form of vectors for other threats such as unintentional internal threats. The pandemic has increased the number of fishing attacks that have been distributed to the public in the form of messages e.g. Disease monitoring

agencies or the World Health Organization, whose task is to entice unsuspecting and worried users to send a malicious link. Outdated security and operating systems of individuals, companies and institutions that provide a chance for cybercrime to exploit their vulnerability and exposure pose a serious cyber risk. The data showing that in just the first two months since the beginning of the pandemic, the number of fishing attacks increased by 667% is also alarming, which shows that criminals have seriously perfected this type of fraud.

#### **4.2. Web applications**

Attacks through web applications and their complexity and widespread use of their services have increased significantly, which has caused an increase in threats and challenges of various motivations, ranging from reputational damage through financial damage to the theft of important personal data. SQL Injection attacks are a well-known example and the most common threat to these services since web services and applications are largely database-dependent whether they are intended to be stored or delivered. They are also known as so-called attacks on multiple sites and operate on the principle of intrusion of malicious actors on certain web applications, forms and other input forms of victims who have weak security protections and maliciously redirect them to another site. The expertise of the organizations in the jobs they deal with is reflected in the constant development of the necessary automation to the highest level of security and is at the same time the most important part of their offer and priority parameter. Such complex environments created with the task of adopting new services such as API applications whose role is to raise the security level of the web application by introducing more detective and preventive measures.

#### **4.3. Web-based attacks**

Web-based attacks are a very attractive method by which threat actors deceive victims by using web systems and services as threat vectors. The mechanism by which they work is to send malicious URLs or malicious scripts in order to redirect them to the desired web address from which they easily download malicious content or by turning malicious code into a real but compromised website, steal information, threaten various extortions via ransomware and lead to illegal property benefits.

#### **4.4. Malware**

Malware is the most common way of stealing data whose main purpose is data or identity theft, espionage or interference with services. Cybercrime malware contains cryptominers, viruses, worms and spyware and ransomware. Given the great interest in cryptocurrencies in recent years and the increase in business, cryptocurrencies are a serious threat and make serious costs of information technology costs, increase electricity consumption costs and at the same time reduce employee productivity. The business world has reported an increase in malware detection related to the Windows operating system in all economic entities in the last two years. Also, a high percentage of organizations have experienced numerous malware activities that have spread within the corporate network, which means from employee to employee and this is also called lateral expansion, not internet and is characteristic of attacks on the public sector to collect as much ransom after data locking. The emergence of pandemics and previous attacks in the form of malware theft of personal data, malware designed to persecute victims, and there are interesting forms of malware that are actually services and distribution centers and originate from forums related to the underground. The owners of these malware are actually services to other criminals to whom they provide certain information and training, carefully following the entire attack process in the form of a package containing a command and control server, backdoor system to take complete control of the infected computer, initial loader.

Malware is a common technique in the field of mobile banking where mobile applications are specifically designed to steal data, especially personal, then payment data and the amounts of funds that victims have in their accounts. Cybercrime is constantly advancing and constantly surprising with its innovations. One of the novelties created and marketed in times of crisis is the so-called Trojan software for the Android operating system, which is able to take control of a legitimate banking application by abusing the access functions of the operating system to automate malicious transactions. These malicious financial malware software is also available on black market forums where security avoidance techniques are constantly being refined. The latest in a series of cybercrime innovations is the ability of malware to be based on a motion sensor activated by the launch of a smartphone, and a cracked Trojan most commonly used for mobile banking and capable of detecting an environment protected by security codes. There are also various types of malware that are created through file-free malware, and since it does not contain an executable file, it manages to avoid most common security filters and professionally bypasses the approval methods according to the allowed list model.

#### **4.5. Identity Theft**

Identity theft is the unauthorized use of the victim's personal data on the basis of which the cyber criminal, by presenting himself as a person whose data he is alienating, acquires an illegal financial benefit or other benefits. Violation of data secrecy is a cyber attack on certain information or entire information systems due to misuse or alienation of obtained data. These malware are often the result of human error or inadvertent exposure of data. The problem with these malware is the time it takes to detect, which is usually long, about two hundred days, which indicates the unpreparedness and poor prevention of organizations, and then the delayed reaction of corrective and security mechanisms and finally catastrophic damage.

#### **4.6. Insider threats**

Insider threats are mostly incidents caused by individuals or groups of people who are related to the victim and in doing so abuse their privileged position and illegally cooperate with external factors and open unauthorized access to certain information and property status. Some insider threats include insiders' carelessness in terms of improper use of data and unauthorized installation of applications, dissatisfied employees who want to harm the company they work for, irresponsible third parties who endanger security through intelligence work, malicious approaches and misuse and use of organization resources, theft of information from by insider agents for third parties.

#### **4.7. Information leakage**

Information leakage is a cyber attack on data breaches for which the organization is responsible and which are compromised due to poor security systems, which violates their confidentiality, availability or integrity.

#### **4.8. Ransomver**

Ransomware is a type of malware whose task is to fraudulently infiltrate the system, and then immediately encrypt and lock the victim's computer files and initiate the extortion process by demanding ransom, but without a guarantee that the stolen material will be returned to its original state. This is a cyber attack that is popular for harming governments, politicians, companies and individuals. Security measures against these attacks have existed for twenty years and still do not provide a clear answer to this cyber threat, except that during the pandemic there was an increased interest in insurance against such damages, so extortion costs are covered by contracts with insurance companies.

The attackers generally know that damage to reputation is very important and that they will be able to collect a ransom from either the victim or the insurance company. Given the frequency of such a scenario in favor of cybercriminals, it gives them the wind in their backs to continue with this kind of action because they are confident of success.

#### **4.9. Cyber espionage**

Cyber espionage is a very specific phenomenon from the domain of cybercrime, which is considered both a threat and a motive. This involves the use of computer networks to illegally access confidential information that is largely owned by governments or other important institutions. Cyber espionage is most often focused on the geopolitical field, where business secrets, intellectual property and other information from strategic areas are stolen. This type of cybercrime mainly employs economic and industrial actors, but also foreign intelligence services, ie. persons working for them.

#### **4.10. Crypto mining**

Crypto mining is the unauthorized use of cryptocurrency mining device resources. The most common consequences for the organization are increased IT costs, degradation of computer components and increased electricity consumption, but also a decrease in employee productivity caused by slow workstation functions.

### **5. CYBER RISK MANAGEMENT**

Accelerated technological development and progress are accompanied by major challenges such as the threat of cyber risk, which requires additional design and protection in accordance with the new changes in the form of response or cyber security. The special and unexpected connection between the digital transformation and the pandemic was created as a result of the constant growth of cyber challenges and threats that threaten individuals as well as companies, the economy as a whole, the military security sector and ultimately the state. If we look at the scale and dynamics of the spread, as well as the durability and comprehensiveness, since it has spread to the whole world, the pandemic that is still in full swing, according to experts, is the biggest global catastrophe in the last hundred years. The business of small and medium enterprises has almost completely changed with the transition to online and has led to an overload of digital infrastructure and internet platforms. The digital way of thinking is already visible in our societies. The Covid-19 pandemic has only encouraged us to embrace it, build trust and help SMEs thrive in a growing digital economy. A strong cyber security response enables and maintains a healthy and secure online business environment. As the backbone of the economy of almost all countries, SMEs represent 99% of all companies in the EU and employ about one hundred million people, which means that they make up more than half of GDP and play a vital role in adding value to all sectors of the economy. During these years, full of various challenges and problems, SMEs were forced to digitally educate and modernize existing digital systems in order to continue their business. In order to continue to serve their clients unhindered, they quickly transformed and switched to new types of business, neglecting the moment of security. New opportunities for performing the primary activities of the company have moved the work of employees from offices to their homes, so-called, remote work and normal access to file processing, which is thus much easier. In order to ensure safe and continuous business, a need has been created for a cyber control individual or team to take care of the security of cybercrime abuse. By managing cyber risks using personal experiences or the experiences of other external actors, cyber attacks can be very successfully prevented and prevented.

Research and real-life experience show that companies that actively deal with and manage the security of their systems are much easier to deal with and more effectively overcome cyber problems compared to SMEs that are not aware of the need for this type of security. Efficient management as well as safe and secure business requires certain preparations such as:

- The need to develop a culture of cyber security
- The need to ensure efficient management of third parties
- The need to organize the necessary training
- Development and development of a plan for the needs of adequate and rapid response in case of an incident
- Mandatory investment in security devices and secure access to systems
- Secure network
- Secure backup storage
- Improving physical security

Previous research shows that SME network security is mainly addressed only when cyber attacks occur due to low employee awareness and knowledge of IT, lack of financial resources necessary for renewal and modernization of the network, if any, necessary training and hiring of professional IT staff. Management is an essential link that should highlight the need for and support the safe keeping of networks as a prerequisite for secure business. Management must possess knowledge and be committed to the idea that security is at the highest level of need in SME business. The SME cybersecurity management management team needs to focus on three key areas, namely people, processes and technical recommendations. Effective cybersecurity management provides SMEs with the confidence that enables them to grow, innovate and find new ways to create value for their clients in our online and interconnected world. Cyber risk management is the right way to support SMEs on their path to so-called lateral protection against cyber threats, thus preserving their cash and assets and business data and justifying their basic goal of existence in terms of productivity and competitiveness growth.

## **6. CONCLUSION**

The global health crisis caused by the Covid-19 Pandemic has produced a series of negative shocks, which has drastically slowed down the global economy. Almost all countries of the world were affected, but those whose economies are directly related to service activities such as tourism and transport suffered the most due to the long period of closure. The appearance of the new virus has interrupted the strong growth of numerous investment activities in transport and construction, as well as in energy, education, tourism and all other branches of the economy. After the proclamation of the measures and the use of epidemiological measures, the governments of various countries became very seriously and responsibly involved in the fight to preserve stability, primarily health, and then economic. In order to prevent the negative consequences of this crisis, but also to establish a stable direction of development, the governments of different countries reacted differently by preparing a package of socio-economic measures. The packages were made in order to overcome the difficulties in the business of economic entities, including SMEs, which were affected by measures to prevent the spread of the infection and their closure prevented them from operating normally. The economic perspective largely depends on the success of the implementation of economic policies, the availability of the vaccine and its mass application, but also the duration of the pandemic. It is certain that the situation will have a negative impact on the banking sector due to lower liquidity of the economy and uncertainty of economic recovery. Particularly vulnerable SMEs have also suffered a number of consequences, some of which have managed to reorganize and remain in the market with the help of support packages, but unfortunately a large number of these companies have failed to survive and shut down due to lack of funds.

SMEs that have remained in the market have had to endure various challenges to learn from their own and others' lessons on the go and react quickly to preserve their business and their customers. Many SMEs have hired experts in the field of marketing and IT and thus showed seriousness in their work and a desire to progress even in these difficult conditions, considering that almost the entire business has moved to the network system. Digitization has become an inevitability and an essential need of every individual and business entity if he wants to be informed in new trends and included in them and enable himself normal life needs. The growth model should therefore be innovated in terms of the development of an economic structure based on the application of so-called green and information technologies, as well as smart specialization, and attracting foreign investment can greatly help this process. SMEs are encouraged through a range of assistance to take advantage of all possible second-hand opportunities by using and adopting new technologies. SME management, if it underestimates cyber security threats and does not react quickly in order to prevent them, increases the vulnerability and risk of the company. The role of management is very important and managing cyber risks paves the way for security, especially in these years of the current pandemic, which records an incredible increase in cybercrime. Cyber risk management through management as a key guide in maintaining the security of SMEs generally operates on the established principle of perspectives such as: threats, behaviors, practices, awareness and decision-making. SMEs need to pay more attention to managing cyber security risks due to the size of their market share and the huge impact of potential cyber attacks on them. The lack of affordable security solutions for SMEs could jeopardize these enterprises and their related supply chain. Further studies of the cybersecurity behavior of SMEs could minimize potential threats, especially those that rely on e-commerce. A great effort and progress has been made in order to enable further digitalization of the economy and the public sector in the past period, and the readiness of state institutions to continue on this path is noticeable. The predictions of world authors regarding the effects of the current pandemic in the coming years are not at all optimistic. It is almost certain that the coming recession will significantly affect the sharpness of the decline in the employment rate, ie result in new layoffs, falling labor costs and rising poverty. Only coordinated responses in the form of government policy, support programs, determined strategic leadership and security protection as a necessity, and on the other hand empowering employers and the workforce through various loans, subsidies and adjusting work arrangements can be a precondition for overcoming the current Covid-19 crisis.

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## **CORRUPTION AND CORRUPTION RISK IN PART OF THE SECURITY SYSTEM OF BULGARIA**

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### **ABSTRACT**

*Latest monitoring reports of the European Commission for Bulgaria point to the insufficient efforts of the state in the fight against corruption. Significant efforts are being made to improve results in this area through already established measures. It is therefore appropriate to scan the fight against corruption in the system of Ministry of Interior (MI), as the latter is designated as one of the most corrupt systems in the public sector.*

**Keywords:** *Corruption, Corruption risk, Security system*

### **1. INTRODUCTION**

Corruption in MI can largely deflate all organizational, functional and sanctioning anti-corruption measures in various spheres of public life. The task of the Ministry of Interior is to detect and investigate corruption crimes in society. Due to the high responsibility of the ministry, the sensitivity to corruption is stronger here and the appropriate response to corrupt behavior should be comprehensive and uncompromising. In this regard, in 2016 the Concept for Prevention and Counteraction of Corruption in the Ministry of Interior 2016 - 2020 was adopted, and the internationally recognized three-pillar approach for prevention and counteraction of corruption was applied in it, adapting it to the Bulgarian conditions. It takes into account the publicly declared national priorities, the experience accumulated as well as all good and bad practices. The three elements of this approach used are: training, prevention and law enforcement. The three elements are independent of each other, and the connecting measures within and between them are developed, improved and implemented through annual anti-corruption plans. The main goal of the Concept is to achieve real and lasting results in the prevention and counteraction of corruption in the structures of the Ministry of Interior. In order to achieve the main goal, it is necessary to identify all vulnerable to corruption positions and to take adequate preventive actions to limit and eliminate corrupt practices in them; to encourage a culture of transparency, shared responsibility, mutual support and intolerant attitude towards corruption among the employees of the Ministry of Interior; to take effective measures against employees who have committed acts of corruption; the leaders in the Ministry of Interior to create and improve stable partnership relations between their structures and the public as well as private sector.

### **2. PREVENTION**

Prevention is the most effective way to combat crime in all its forms, including corruption. It includes a set of measures aimed at identifying, limiting and eliminating criminogenic and victimogenic factors. It reduces crime and saves costs for detecting, investigating and punishing it, increasing the security of citizens and their confidence in the ability of human rights institutions to protect their rights and legitimate interests. The prevention of corruption in the Ministry of Interior determines the development of a comprehensive package of measures and standard operating procedures for protection of the system of Ministry of Interior and for support of its most valuable asset - its employees.

The concept proposes integrated development of the following exemplary measures:

- Preparation of an annual Corruption Risk Assessment as a basis for planning of anti-corruption measures. Conducting periodic surveys on the level and development trends of corruption risk in certain areas of activity and in the main structures of the Ministry of Interior.
- Profiles preparation of typical corruption problems in the system of the Ministry of Interior. Standard operating procedures for solving them are to be developed.
- Structures with heightened corruption risk should consider introducing of a standard form (register) for management decisions validation for related to corruption problematics (or proposals to managers for management decision making). This will ensure transparent, consistent and based-on-facts, impartially taken decisions after taking into account all alternative options. This will identify the responsibility for the decisions taken and will ensure the protection of respective manager or employee against unfounded accusations.
- Developing mechanisms to verify the integrity of initial recruitment and career advancement. Promoting common standards of integrity and practical ways to assess them will reduce the risk of candidates prone to corruption to take and retain positions in the Ministry of Interior.
- Planning and conducting preventive thematic and random integrity tests. They are organized in places with a heightened risk of corruption. It is necessary for the employees performing the indicated activities to be familiar with the loyalty standards and the indicators for their implementation. The results of them should be used in attestation and evaluation of employees.
- Modern technology implementation (cameras, software, etc.) in places with heightened corruption risk in order to monitor work processes. Planning of human resources measures to reduce corruption risks in conducting the procedures for initial employment, career development and disciplinary proceedings.
- Establishment of organization and introduction of a rotation cycle of employees working in areas at risk of corruption.
- Taking measures to reduce bureaucracy by: delegating powers, lowering decision-making levels, using the capabilities of modern technologies to simplify paperwork, etc.
- Implementation of a consistent policy to reduce administrative burdens in line with the set government's strategic objectives.

### **3. LAW ENFORCEMENT**

Law enforcement - the application of the law is a basic obligation of the executive authorities, part of which is the Ministry of Interior. The proper functioning of the state does depend on its effectiveness. Law enforcement in the anti-corruption policy of the Ministry of Interior aims to interrupt and sanction any act of corruption, clearly showing that the possibility of disclosure, prosecution and imposition of punishment exceeds any expected benefit that could be otherwise obtained through corrupt and unethical behavior. The concept aims to ensure constant, accurate and consistent application of the law in the anti-corruption activities of the Ministry of Interior, by implementing the following exemplary measures:

- Creating of an organization for effective investigation of each disclosed corruption case among employees of the Ministry of Interior. To achieve this, clear priorities, optimization of operational procedures, allocation of relevant resources and provision of adequate training to the staff involved in this activity should be set. Ensuring effective interaction with the prosecutor's office and other control authorities by organizing periodic trainings, practical seminars and meetings for planning measures on specific cases.

In case of disclosed administrative or disciplinary violation, taking the statutory measures against the violators.

- Development of a systematic and coherent approach for effective use of the received information (operational or from transparent sources) regarding corrupt practices in the Ministry of Interior.
- Focusing at the most optimal planning of the specific operational measures that are to be taken when investigating each signal for a committed crime of a corrupt nature. Development of guidelines and standard procedures in the field of operational planning for obtaining information and gathering evidence under the Criminal Procedure Code.
- Planning, organizing and conducting of controlled integrity tests in places with heightened corruption risk or when concrete signals are received. They are to be carried out when serious grounds for corrupt behavior exist, c/o undercover officers and volunteers during engineered routine situations. The tests are performed in strict compliance with current legislation.
- Development and periodic implementation of specialized procedures for checking the integrity of the employees working in the anti-corruption structures in the Ministry of Interior.
- Establishment of a working system for declaration and in-depth verification of the circumstances related to the property status and the conflict of interests. Close cooperation and interaction with institutions external to the Ministry of Interior. Carrying out effective actions for disclosing conflict of interest if respective data is available.

In general, corruption undermines the functioning of the state and state authorities at all levels. Effective regulation of the fight against corruption, transparency and integrity in the exercise of state power can strengthen legal systems and trust in state authorities. The fight against corruption must be based on evidence of the prevalence and form of corrupt practices in the country, on the conditions that contribute to the unfolding of corruption, and on the legal, institutional and other incentives that can be used to prevent, detect and sanction corruption. Definition of Police Corruption - this concept is formulated by Interpol (Interpol: Global Standards for Combating Police Corruption. AG2001-RAP-14) and includes:

- the solicitation or acceptance, whether directly or indirectly, by a police officer or other employee of a police force/service of any money, article of value, gift, favor, promise, reward or advantage, whether for himself/herself or for any person, group or entity, in return for any act or omission already done or omitted or to be done or omitted in the future in or in connection with the performance of any function of or connected with policing;
- the offering or granting, whether directly or indirectly, to a police officer or other employee of a police force/service of any money, article of value, gift, favor, promise, reward or advantage for the police officer or other employee or for any person, group or entity in return for any act or omission already done or omitted or to be done or omitted in the future in or in connection with the performance of any function of or connected with policing;
- any act or omission in the discharge of duties by a police officer or other employee of a police force/service which may improperly expose any person to a charge or conviction for a criminal offence or may improperly assist a person not being charged with or being acquitted of a criminal offence;
- the unauthorized dissemination of confidential or restricted police information whether for reward or otherwise;
- any act or omission in the discharge of duties by a police officer or other employee of a police force/service for the purpose of obtaining any money, article of value, gift, favour, promise, reward or advantage for himself/herself or any other person, group or entity;
- any act or omission which constitutes corruption under a law of the Member State;

- participation as a principal, co-principal, initiator, instigator, accomplice, accessory before the fact, accessory after the fact or in any other manner in the commission or attempted commission or in any conspiracy to do or omit to do any act referred to in the preceding provisions of this Article;
- abuse of power - exceeding or non-fulfillment of rights - granted to an individual or a team within the position. Abuse of power is committed during or on the occasion of performing certain activity for the purpose of personal or corporate benefit;
- benefit - as an element of a corruption crime, it may be of a material or non-material nature and is obtained illegally by the official as a result of the performance or non-performance of the authority granted to him/her;
- bribery - a major corruption tool used at various levels in various areas of government and governance, as well as in the private sector of the economy, political parties, civil society structures, the media and others;
- corruption practices - ways of committing corruption crimes, i.e. actions of preparation, commission and concealment of crimes with elements of corruption, including the corruption schemes established by the perpetrators.

Depending on the stage of formation and the degree of public danger, the corruption in the Ministry of Interior can be classified as follows:

- Small, petty corruption - characterized by a low degree of public danger. Revenues are usually small, but on the other hand it is too widely spread. This corruption is latent, because in many cases it remains unregistered and unreported. It is associated with accepting small gifts and services as a token of gratitude, using a company car for personal purposes, etc.
- Large, sophistic - this is a form of corrupt behavior, characterized by a high degree of public danger: blackmailing of offenders; concealment of criminal activity; issuance of a report for non-occurred traffic accident. The implementation and concealment of such acts of corruption requires complex training and special knowledge. The revenues from this type of corruption are usually large, resp. very large, yet compared to small-scale corruption, its manifestations are not so frequent. There is direct contact between the employees of the Ministry of Interior and organized crime.

With its specific functions, the system of the Ministry of Interior as a law enforcement system is closely related to the justice system, which also turns out to be a generator of corrupt practices. The monopoly on the judiciary and the maintenance of public order is the most important prerequisite for this. Opportunities for abuse of power and corruption in law enforcement and the judiciary (police, investigation, prosecution, court) may arise in the following circumstances:

- Finding and registering a committed violation or crime;
- Drawing up acts, imposing fines and other types of sanctions;
- Determining or changing detention measures;
- Prosecution;
- Refusal to initiate preliminary proceedings;
- Termination of preliminary proceedings or return for further investigation;
- Extradition of individuals who have committed a crime or have been convicted, etc.

Opportunities for corruption also arise in the execution of imposed sentences for committed crimes - postponement of execution of sentences, changes in the regime of serving the sentences, use of the procedural possibilities for early release / amnesty, interruption of the execution of sentence, etc.

Corrupt practices may also lead to providing protection (or non-interference) in the implementation of illegal activities (drug sales, begging, illegal gambling, etc.). We must acknowledge that corruption in the police and the judicial system is perceived as one of the most important factors contributing to the growth of corruption in the entire public sector. It generates a sense of impunity for corrupt employees and discourages citizens. Therefore, significant joint efforts are needed to reduce this problem and, through joint initiatives, to implement preventive mechanisms. As already mentioned above, corruption contributes to civil society distrust in the institutions, as well as an opportunity to build illegal mechanisms of governance and control in all areas: social, economic, political, judicial, etc. As an authority called upon to guarantee national security and public order in the country, the Ministry of Interior has established a mechanism for combating corruption at all levels through the establishment of a dedicated body, the Internal Security Directorate. It is charged with tasks of prevention, averting and detection of criminal acts, including corruption, by employees of the Ministry of Interior. Gaining professional experience of more than 10 years now, this structure of the Ministry of Interior is developing and proving to be an effective mechanism for fighting corruption. In close cooperation with the prosecutor's office, the Internal Security Directorate achieves significant results not only through the repressive mechanisms imposed by the legislator, but also through the mechanisms of prevention, innovation and in cooperation with the media and civil society. In the last few years, this structure of the Ministry of Interior has gained significant professional experience and the following has been achieved (Table 1):

<b>Corruption related signals among employees of the Ministry of Interior</b>				
<b>Number</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>
Total number checked	205	210	334	208
Credible	93	23	27	29
For a crime in line of duty – art. 282 - 285 of Penal Code	54	50	76	61
For bribery - art. 301-307a of Penal Code 13 79 130 69	13	79	130	69
For a crime in the line of duty - art. 282 peak 301 of Penal Code 81 84 62		81	84	62

*Table 1: Corruption related signals among employees of the Ministry of interior*

Characteristics of the perpetrators of corruption in the ministry of interior (Table 2):

*Table following on the next page*

Perpetrators of corruption cases				
Number	2015 r	2016	2017	2018
Total number of perpetrators	193	187	290	192
Security police officers	36	29	106	41
Traffic police officers	42	34	77	37
Operational and search activity officers	29	35	27	32
Investigating Officers	4	5	8	4
Border police officers	60	73	41	50
Fire police officers	3	1	4	5
Employees of other structural units: BGIDD – Bulgarian IDs Directorate, TSL – Technical Scientific Laboratory, Migration Directorate, etc.)	10	6	14	11
Director, Regional Dept.Chief/ Police Dept.Chief	9	4	13	12
In a managerial position	181	25	32	45
In an executive or expert position		38	37	53
Jr. executive	14	98	217	92
Ministry of Interior Law Stats		161	283	184
Public Officers Law Status			3	6
Contracted employees		26	4	2
Up to age of 29		4	14	13
Aged 30-39		41	58	33
Aged 40-50		95	68	51
Aged over 50		35	21	22

Table 2: Perpetrators of corruption cases

The main mechanism for prevention is the introduced in 2015 video surveillance system of road control on the employees performing traffic control. This new anti-corruption measure, the implementation of which requires the availability of financial, information and human resources, has achieved its goals since it has been started. Thus, through the video surveillance control system from 2015 to 2018, the employees of the Internal Security Directorate exposed 964 committed violations of duty discipline. Given the positive results of this control system, the Ministry of Interior has expanded controls to include law enforcement officers. In 2012, the Ministry of Interior prepared a methodology for analysis of the operational situation in the field of prevention and counteraction against corruption in the structures of the Ministry of Interior, with commitment to:

- create an effective system for analysis, assessment and management of the operational situation in the field of prevention and counteraction of corruption, allowing adequate response to its changes;



- determine the risk factors and indicators influencing the operational situation in terms of prevention and counteraction of corruption during and on the occasion of the performance of official duties by the employees in the structures of the Ministry of Interior;
- draft proposals for reduction of the corruption risk and optimize the process of reaction to changes in the operational environment in the field of counteraction and prevention of corruption, by applying the most effective forms and methods of action;
- assisting the Ministry of Interior Management in preventing and counteracting corruption in the structures of the Ministry of Interior.

Adhering to the main theoretical aspects of the risk analysis, the Ministry of Interior defines objective (external) and subjective (internal) elements of the analysis of the operational situation for prevention and counteraction of corruption in the structures of the Ministry of Interior. The objective elements include territorial-geographical, socio-demographic, and socio-economic in the area of administrative responsibility of the analyzed structure; functional-organizational and differentiated as per the occupational rights and obligations. The subjective element is resource provision; specifics and content of the activity and organizational climate in the analyzed structure. The application of the method is focused on professional areas of activity - traffic control, permit regimes, etc., where the analysis is performed regularly and on random principle. During the analysis of the operational situation in the field of prevention and counteraction to corruption, the following stages are followed:

- Determining a specific object of analysis – the structure of the Ministry of Interior;
- Collection, systematization and evaluation of data on all objective and subjective elements of the operational environment;
- Drawing up conclusions about the influence (positive and negative) on the corruption risk in the analyzed structure;
- Identification of positions of the analyzed structure organizational model, where public officers perform their duties under increased corruption risk;
- Development of proposals for reducing the corruption risk and optimizing the process of response to changes in the operational environment in counteracting and preventing corruption in the analyzed structure, by applying specific explicit and operational forms and methods of work.

Analysis of the corruption risk is performed by collecting, systematizing, processing and evaluating data from sources of information about objective and subjective conditions and factors, which together determine the essence of the operational situation in terms of prevention and counteraction of corruption in the structure of the Ministry of Interior, functioning in the respective field of professional activity by taking into consideration the following factors:

- Territorial-geographical, socio-demographic, socio-economic characteristics of the operational territory or area of responsibility of the analyzed structure;
- Functional-organizational: normative-defined functions, tasks and activities performed by the analyzed structure;
- Differentiated occupational rights and obligations of the employees of the analyzed structure;
- Organizational relations - internal (among employees of the analyzed structure and other structures of the Ministry of Interior) and external (among employees of state authorities, court, prosecutor's office, public / private organizations and other juridical entities or citizens) during and on the occasion of the implementation of official duties.

The following additional criteria are taken into account when preparing the analysis on the corruption prevention topic:

- Content and specifics of the analyzed structure activity - occupational rules and technological order for implementation of the individual and group functions and tasks;
- Status of human resources in the analyzed structure: positions occupied by staff, gender, age, marital status, education, professional qualification - category, length of service of employees of the Ministry of Interior analyzed structure; controllability quotient (manager - subordinates ratio); workload quotient (work operations, activities, citizens served by one employee / workplace);
- Career development and professional perspectives for the employees in the analyzed structure; disciplinary practice and system applied for professional stimulation in the analyzed structure;
- Activities' technical-material and technological provision, influencing the quality and time frame of the performed tasks and / or the services provided by the analyzed structure.

Corrupt practices have various manifestations in the various structural units of the Ministry of Interior. The organizational units in the Ministry of Interior have their specific functions and powers, defined in the Ministry of Interior Law and the Ministry of Interior Law Enforcement Rules and in a number of internal acts. In fact, access to classified information, their official contact with citizens and a number of other factors enables Ministry of Interior officers to find opportunities for abuse, which are usually aimed at material benefit and ultimately negatively reflect on a wide range of social groups and people. The degree of corruption risk is determined by the official position of the various employees, as well as by the possibility to exert influence and pressure on them in the performance of their official duties. Employees who are at risk fall into the following categories:

- managers who take decisions on undertaking operative-investigative, criminal-procedural and administrative measures towards the criminal contingent;
- employees who are in direct contact with criminal contingent;
- employees who directly identify administrative violations and take action on the spot;

From the analyzes performed over the years in the Internal Security Directorate, the mechanisms (schemes) of corrupt behavior can be grouped as follows:

- patronage and provision of information to assist persons engaged in criminal activity;
- extortion of citizens;
- participation in channels for smuggling of goods, illegal migration and human trafficking;
- unregulated contacts with criminals;
- exceeding the powers;
- providing official information in order to obtain a dishonest benefit;

In this study we will specify manifestations of corrupt behavior in the relevant areas of activity in the Ministry of Interior:

- As regards to Security and operational activities:
  - failure to file signaling for crimes;
  - unscrupulous and tendentious work on files; bribery of complainants in order to take action on complaints, for detecting criminal and economic crimes, submitted by them;
  - delay and filing of documentation in the wrong direction;
  - disposing official information, collected in the course of the work;
  - use of the Ministry of Interior information banks for personal benefit;

- protection of subjects from the criminal contingent;
  - concealment of information about a committed crime for the purpose of subsequent bribery of the perpetrators;
  - carrying out illegal research of persons for the realization of economic interest (the so-called company intelligence);
  - corruption-based personal commitment;
  - bribery of foreign citizens during their long stay in Bulgaria.
- Corruption among employees from the administration:
    - request for unregulated payment in the performance of a specific activity, which is imposed on them ex officio, and most often refers to the issuance of permits or certificates for presentation to various authorities;
    - employment in the Ministry of Interior;
    - preparation of expert opinions in a certain direction;
    - absorption in various material resources;
    - incorrectly conducted public procurements.
- The following subjective factors can be defined as specific corruption risks:
    - The combination of unprofessionalism and poor organization.
    - Lowering the criteria for selection and subsequent training of staff.
    - Existence of a vague system for evaluating the results of policing activities.
    - Insufficient payment of police work.
    - The licensing and permitting regimes issued by the police for possession and carrying of weapons, the operating of private security activities, etc.
    - Long-term work in actually closed teams.
- The following measures can be mentioned as main guidelines for effective counteraction to corruption in the Ministry of Interior:
    - Development and implementation of a modern and free from any subjectivism personnel policy;
    - Development of relations between the police and the civil society in order to make police authority actions fully transparent;
    - Establishment of reliable internal control mechanisms for prevention, inspection and sanctioning of corruption cases;
    - Improving legal framework, structural construction and organization of the police authorities;
    - Restriction of permit regimes.

The counteraction to the corruption in the system of Ministry of Interior has been developing over the years. Taking into account the significant response and intolerance of the society to these negative manifestations, the Ministry of Interior has taken strategic steps to limit this process, using the method of prevention as well as involving the civil society in this activity. The relations between the police and the civil society can be an anti-corruption factor. Civil control means control over the results of police activities and the professional conduct of employees. The creation of an adequate system of criteria for reporting the results of police activities is of particular importance for the public's trust in this institution. The evaluation criteria should not come from the police organization, but from the society itself. A key element in these must be the unconditional respect for human rights by police officers. The fundamental for this can be effective training and professional guidance of the police force.

Secondly, the necessity to improve the regulatory framework should be noted. The result of the implementation of this set of measures should be establishment of a modern Bulgarian police, which is not a closed system, but turned and open to society. It is also necessary to set up police structures that allow effective solution of the tasks set by law, accompanied by maximum protection of citizens. Improving internal control mechanisms is essential to combating corruption in the police system. These mechanisms must allow for an uncompromising attitude towards corrupt and violating human values police officers.

The anti-corruption measures in the system of the Ministry are based on:

- raising the status of police units counteracting corruption;
- establishment of a departmental mechanism for internal control of corruption;
- adoption of measures for transparency in the Ministry administration activities and its structural units;
- clear regulation of the rights, obligations and procedures in connection with the exercise of current powers (decision-making as appropriate);
- introduction of mechanisms for prevention of cases of conflict of interests;
- raising the criteria and constant control of the process of staff selection, training and transfer of service introduction of anti-corruption training for employees at various levels in the ministry and its structural units;
- preventing performance of activities incompatible with the policing service;
- annual submission of a declaration of property and income;
- precise definition of the powers and responsibilities of the political and professional leadership of the ministry;
- instituting real and effective mechanism for civil control over the activities of the Ministry of Interior.

#### **4. CONCLUSION**

By the end of this study we can conclude that the counteraction and restriction of corruption practices depend entirely on the will of the law enforcement authorities as well as on the will of the civil society itself. Development of unified strategies for prevention of corruption, as well as departmental plans are contributing to the purposeful, phased and effective implementation of such aims. This could be achieved through close cooperation of institutions at all levels. The security sector is part of the public administration sphere and is directly related to law enforcement, which is why, in order to respond to the new corruption challenges, it must correspond to institutions both at national and international level. The risk analysis of corrupt practices is an integral part of the successful strategic management of any system. In general, the fight against corruption cannot be reduced to a standard set of universal measures, uniform for all public sector areas. Specific risk factors also need to be taken into account. There is a need for comprehensive anti-corruption strategies that increase transparency and integrity in all sectors of society and focus on the problems' core. These strategies should be based on threats, vulnerabilities and risk factors assessment. Part of the EU's anti-corruption approach also includes the necessity for reliable and effective integrity measures, efficient anti-corruption systems and effective, accountable and transparent state institutions at all levels. A comprehensive approach to fighting corruption must be based on a combination of preventive and repressive measures. This requires independent and impartial justice system that effectively enforces anti-corruption legislation through impartial investigations and prosecutions, and effective, proportionate and dissuasive sanctions, including the effective seizure of assets acquired through corruption. This, in turn, requires a stable legal and institutional framework, sufficient administrative and judicial capacity as well as political will for coercive measures (Terziev, 2017; Terziev, Georgiev, Bankov, 2020).

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## TRADE SECRET AND WAYS OF PROTECTION IN REPUBLIC OF SERBIA

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### ABSTRACT

*The paper explains the concept of trade secret and legal regulation of trade secret in the Republic of Serbia. The first part of the paper explains the way of defining trade secrets in the literature and positive legal regulations in our country. The second part of the paper is dedicated to the representation of trade secrets in companies operating in the Republic of Serbia, in contracts of employees. The next part of the paper deals with the ways of protection of trade secrets, while the next part of the paper deals with the criminal-law protection of trade secrets. This part of the paper will explain the way of defining the criminal offense of revealing a trade secret in the legislation of the Republic of Serbia. The special value of the work is researching the number of committed criminal acts of revealing trade secrets on the territory of the Republic of Serbia in the ten-year period (2020-2011). The methods that will be applied in the paper are the statistical method and the method of document content analysis. The results of the research will be of great importance because they will clearly indicate the problems that occur in labor-law, civil-law and criminal-law practice.*

**Keywords:** *trade secret, protection of trade secret, criminal offenses, criminal procedure*

### 1. INTRODUCTION

Business or trade secrets were not always very important and the subject of protection of rights. Although people passed from generation to generation some important secrets and information, at a lower level of development of society, the abuse of secrets was less socially dangerous, and therefore they were not even protected. Today, at today's level of development of society, the center of everything is information. Information becomes the key to success or failure, it leads to social status, fame, material well-being, power and reputation in society. When society was industrial capital was the center of everything. Today, in the age in which we live, the center of everything is information, which is why today's society is called information society (Naisbitt, 1985). It is precisely because of the great importance of information that the need to protect information has arisen. At the beginning of the 20th century, it began to develop and separate at a new branch of law, intellectual property law, whose main goal is the protection of intellectual creations, including business secrets or trade secrets. In everyday speech, the term secret is used to define data or information that is not known to others. A secret understood in this way does not necessarily have to be information that is important for society. It can be information that is of subjective importance and that does not have a great impact on relations in society. In addition to this broader understanding of the term secret, there is a definition of a secret in a narrower or legal sense. In the legal sense, a secret is information that is defined as a secret by law, general act or other act. (Zlatović, 2009).

Due to the growing importance of information for today's society, which is considered an information society, the position of science and practice is that the new source of power in the information society does not consist of money in the hands of a few, but information in the hands of most people. (Naisbitt, 1985). Particular care should be taken to ensure that information pollution does not occur in society. It usually comes as a consequence of the great availability of information technology. Information spreads at a high speed, as a rule uncontrolled and disorganized, which always leads to their contamination. Thus, valuable, useful and correct information becomes worthless and "polluted". Such information leads to confusion in society and that is already the first signal that the state must react and regulate this area in accordance with positive legal regulations. In such cases, the legislator has the obligation to create such a legal framework that will regulate the creation, dissemination, use, but also storage of information. (Pravni leksikon, 2009). The protection of business or trade secrets is not a product of the modern age. The issue of protection of primitive forms of trade secrets has been taken care of since the beginning of the development of the regulated exchange of goods and services. There are texts in which it is pointed out that a kind of protection of trade secrets existed in the earliest communities where trade secrets could not be protected by written laws approved by the legitimate government, so they were protected in their own way from copying and spreading - magical rituals. Such spiritual-magical rituals were performed by special magicians who would protect a business or trade secret and charge for their service. (Suchman, 1989). Well-known American legal theorist *Arthur Schiller* was the first to deal with the issue of trade secrets. In his works, Schiller believes that in Roman times business secrets were protected with *actio servi corrupti* or *actio de servo corrupto*. He believes that at the time of the late republic and the early empire, which is considered a period of prosperity of economic activities, it was very important to protect trade secrets and defend against unfair business practices. (Schiller, 1930). More details about *actio servi corrupti* can be found in the texts of eminent legal theorists of classical Roman law such as Ulpian, Paulus and Gaius and in the Praetorian Edict (*Edictum praetoris / Edictum perpetuum*) and Justinian's Digests. However, when we look at the period of legal regulation of secrets that is a little closer to us, we can conclude that all efforts to define business secrets and limit its exploitation are present in today's legal practice. In order to protect basic human rights, emphasis must also be placed on the protection of secrets. It is not disputed that the most important human rights and freedoms include: protection of the right to life; protection from slavery; protection against genocide; protection from torture; freedom of thought; freedom of religion; freedom of speech; freedom of the press; freedom of movement; ban on retrial for the same crime; prohibition of forced labor; asylum law; equal protection by law; the right of association; the right to nationality; the right to legal proceedings; presumption of innocence; right to defense, etc. It is also certain that the right to privacy of a person is one of the most important human rights (Grum, 2004). Based on this, human rights were proclaimed by the 1948 Universal Declaration of Human Rights of the United Nations General Assembly (Službeni list FNRJ, 0/1948), The European Convention for the Protection of Human Rights and Fundamental Freedoms (1950.), (Službeni list SCG – Međunarodni ugovori, 9/2003, 5/2005), International Covenant on Civil and Political Rights (1966.) (Službeni list SFRJ, 7/1971), and many other international acts, and are explicitly determined by the provisions of Art. 23–74 of the Constitution of the Republic of Serbia (Službeni glasnik RS, 98/2006). However, the most concrete protection comes from the Criminal Code of the Republic of Serbia (Službeni glasnik, 2019). Therefore, the right to privacy, which is often mentioned, is guaranteed by an internal act of the highest legal force, the Constitution of the Republic of Serbia, but criminal protection also provides some protection, especially in case of unauthorized disclosure of secrets, illegal interception and recording, unauthorized photography, etc.

Depending on the content of specific data and the degree of its confidentiality, we talk about state, military, official, business, professional and personal secrets. A personal secret means any fact that a person, who makes his / her vocation, has learned from a citizen to whom he / she provides his / her service, or which he / she has noticed from a citizen when the service has been provided to him / her. However, every fact found out of doing business will not be a secret, but only the one for which there is an interest of the citizen to be undisclosed. (Jovanović, 1973). The facts that represent a personal secret can be the most diverse. These are the most common facts that refer to some personality traits (for example, some of his physical or mental shortcomings) or to some of his thoughts, ideas or actions. They should be distinguished from the facts that are presented or transmitted by committing the criminal offense of presenting personal and family circumstances. The criminal offense of presenting personal and family circumstances is a criminal offense against honor and reputation, so the facts, which are presented or transmitted by the commission of this criminal offense, must be such as to harm the honor and reputation of the persons to whom they refer. The facts that are unauthorisedly revealed by committing these crimes are not such as to harm the honor and reputation. They can be such as to cause shame in the passive subject or to cause regret in those who hear about them, but this is not the same as a violation of honor and reputation. For example, sexual impotence can cause shame and regret, but it does not have to be a violation of honor and reputation, if it is not talked about with the intention of belittling (Atanacković, 1985). The secret is also what was learned in the business, and the person to whom it refers does not want other people to get acquainted with it. However, when we have the so-called personal secrets, these must be facts from the life of a person that can be objectively considered a secret, and not because that person does not want others to know. Whether, such a fact is a personal secret is determined in each specific case according to its content and the harmfulness of the consequences that would occur after disclosure (Lazarević et al., 2004).

## **2. DEFINITION OF BASIC INSTITUTES RELATED TO TRADE SECRETS IN THE LEGISLATION OF THE REPUBLIC OF SERBIA**

The Law on the Protection of Trade Secrets in the Republic of Serbia was passed in May 2021, and began to be applied at the end of June 2021. Only four months before this text was written. This fact makes the topic we are dealing with topical and socially justified. Prior to the adoption of this Law, we had a Law about trade secret that was passed 2011. It regulates the legal protection of trade secrets from illegal acquisition, use and disclosure.

If an information is a trade secret, it must following these conditions:

- That is a secret because they are not generally or in terms of the structure and set of their components generally-known or easily accessible to persons who in their activities usually come into contact with this type of information,
- have commercial value, because they represent a secret,
- the person who legally controlling them has taken reasonable steps in the circumstances to protect their secrecy.

The holder of a trade secret may be an individual or a company under whose legal control the trade secret is. For the purposes of this Law, a person who has violated a trade secret is an individual or company that has illegally obtained, used or disclosed a trade secret. Information that is a trade secret most often includes knowledge and experience, business information and technological information. Companies are obliged to take reasonable measures to maintain the confidentiality of information such as drafting an internal act on the handling of trade secrets and the circle of persons and their rights and obligations when handling trade secrets, measures of physical or electronic protection of access and trade secrets, marking documents with "business secret "or similar label, restricting access to premises and files containing information



that is considered a business or trade secret or concluding confidentiality agreements, i.e. non-disclosure of confidential information with persons who could potentially come into possession of trade secrets, including employees, business partners, external associates and consultants, i.e. signing statements of confidentiality or non-disclosure of confidential information by these persons. However, it should be noted that the Law on Protection of Trade Secrets also prescribes certain conditions when a trade secret can be obtained in a lawful manner. According to the Law, this is the case in the following four situations:

- 1) „by independent discovery or creation;
- 2) by observing, studying, disassembling or testing a product or object which has been made available to the public or which is lawfully in the country of the information provider (reverse engineering) which is not bound by a legally valid obligation to limit the acquisition of trade secrets engineering;
- 3) exercising the right of employees or employee representatives to information and consultation in accordance with special regulations;
- 4) another action that is in the circumstances of the specific case in accordance with good business practices.

However, there are certain ways of illegal disclosure of trade secrets and the Law prescribes these ways in Article 4. "Obtaining trade secrets without the consent of the holder of trade secrets is considered illegal if it is done by unauthorized access, misappropriation or duplication of documents, objects, materials, substances or electronic files which are under the legal control of the holder of a trade secret and contain a trade secret, or a trade secret may be derived from them or by other conduct which, in the given circumstances, is considered to be contrary to good business practice. In addition, the use or disclosure of a trade secret is considered illegal if it is performed without the consent of the holder of the trade secret by a person who is found to have obtained the trade secret illegally or violated a confidentiality agreement or other obligation to prohibit the disclosure of a trade secret.

### **3. DETECTION AND PROOF OF ECONOMIC CRIME**

Disclosure of a trade secret is a crime against the economy. For that reason, it is very important to discover the basic characteristics of crimes against the economy. There is no single definition of economic crime in domestic or foreign literature, although great efforts have been made to create a definition. Many scientists believe that crimes against the economy should also include crimes against human health and crimes against official duty. However, in the domestic literature, there is an established understanding that economic crime is considered to be behavior that the competent state authorities qualify as a criminal offense in the established procedure. This implies delinquency of individuals and companies in the field of financial operations. Therefore, this definition includes economic crimes as well as criminal offenses and economic offenses and misdemeanors. A somewhat narrower understanding of economic crime would be that they are only criminal economic and financial offenses, but economic offenses and misdemeanors are excluded. (Matijević & Marković, 2013). Economic crime consists of all tortious behaviors committed in economic relations by individuals or companies that, as subjects of these relations, have appropriate authority over the property on which these relations are based, and which tortious behaviors directly damage that property and injure or endanger economic relations. (Petric, 1982). A special feature of economic crime is that it can occur anytime and anywhere starting from production, warehousing, internal or external trade in goods, cash or accounting. According to the currently valid Criminal Code (2019), criminal offenses against the economy include: fraud in economic activities, fraud in insurance, embezzlement in economic activities, abuse of trust in economic activities, tax evasion, non-payment of taxes, abuse of position of a responsible person, abuse in a relationship with public

procurement, abuse in the privatization process, concluding a restrictive agreement, accepting bribes in economic activities, giving bribes in economic activities, causing bankruptcy, causing false bankruptcy, damaging creditors, illicit production, illicit trade, smuggling, disabling control, non-enforcement business name and other special marks of goods or services, damage to business reputation and creditworthiness, disclosure of trade secrets, counterfeiting of money, counterfeiting of securities, counterfeiting and misuse of payment cards, counterfeiting of tokens of value, counterfeiting of tokens, i.e. state stamps for marking goods, measuring instruments and objects made of precious metals, making, procuring and giving funds for counterfeiting and money laundering. Economic crime has several specifics such as concealment. In this type of criminal offense, concealment is manifested both in the form of concealment of the offense and in the form of concealment of the perpetrator. As a rule, the crime is always discovered first, and then the perpetrator. This is due to the fact that the criminal offense of revealing a trade secret is most often related to a job where one or more persons are engaged. That is why the literature has taken the position that economic crime and the frequency of its execution are characterized by a "dark number". The presented statistical data (which are presented in the last part of the paper) may indicate the extent of the commission of these types of crimes, but not completely. These data, however, most closely represent the number of recorded crimes of revealing trade secrets as a result of the activities of state bodies (Bošković, 2005). Dynamics is another characteristic of economic crime. Dynamics occurs due to the influence of many factors such as market development, the influence of the state in the form of stimulation of certain activities, etc. All this leads to the emergence of new forms of economic crime, modification of existing forms and the disappearance of obsolete forms. Economic crime is a type of crime characterized by a high degree of specialization or professionalization of perpetrators. These are most often persons who are in the same jobs and who repeat this crime under the same or similar conditions. In this way, committing crimes and constant recidivism becomes their main source of income. In addition to the above, it is not so rare that the perpetrators of crimes against the economy are connected, work together and it is a reason why this type of crime acquires another feature, organization. The basic evidence in detecting economic crime is various types of documents. As a rule, all activities of companies are recorded in various types of business books, and the proof of these criminal acts is always accompanied by falsification of documentation or its damage or destruction. The practice of state bodies in charge of detecting economic crime is the temporary seizure of business books or any documentation due to the destruction, damage or falsification of documentation.

#### **4. REGULATING THE DISCLOSURE OF TRADE SECRETS IN THE CRIMINAL LAW OF THE REPUBLIC OF SERBIA**

According to the provisions of the Criminal Code of the Republic of Serbia, disclosure of a trade secret as a criminal offense is regulated by Article 240. The Criminal Code stipulates that this criminal offense exists if "a person unauthorisedly discloses, hands over or otherwise makes available information that is a trade secret or who obtains such information with the intention of handing it over to an uninvited person." Such behavior could be punishable by imprisonment from six months to five years. If this act is committed out of selfishness or especially confidential information is disclosed, the punishment for a person who reveals a business or trade secret will be a prison sentence of two to ten years and a fine. It should be noted that if the disclosure of a secret is done through negligence, there is also a criminal offense of disclosing a trade secret and such a person can be punished by imprisonment for up to three years. For the purposes of this Code, trade secrets are data and documents that have been declared a trade secret by law, other regulation or decision of the government passed by law, the disclosure of which would cause or could cause harmful consequences for the company.

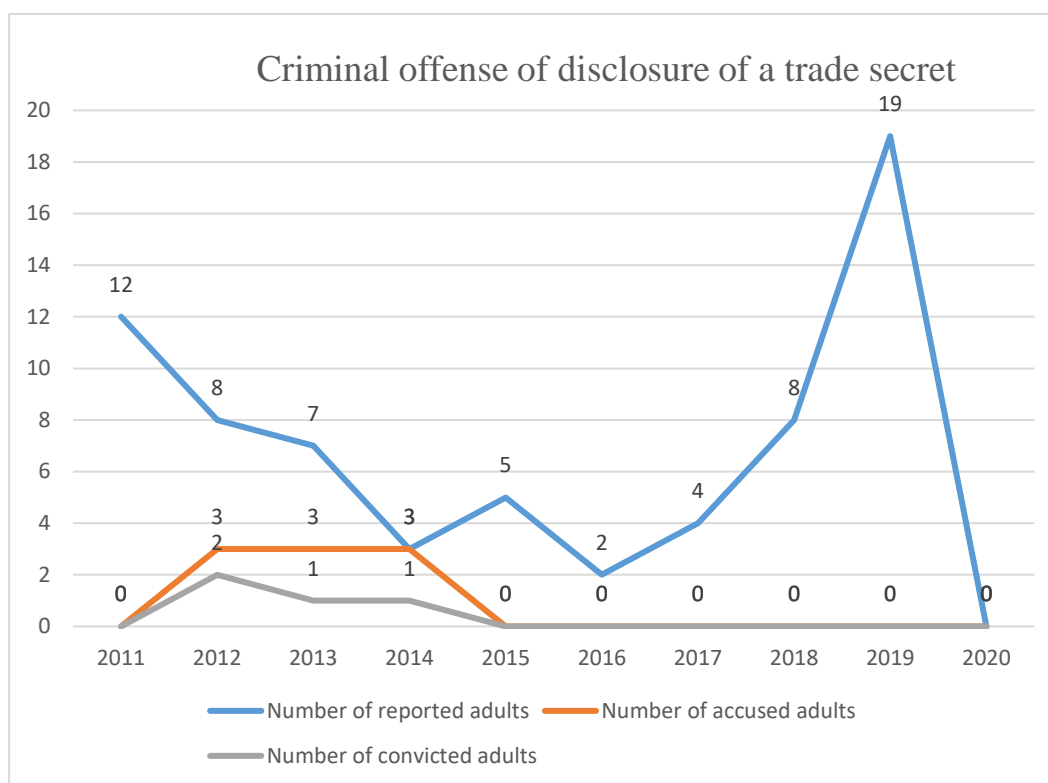
The act of a criminal offense is the disclosure of a secret that was learned by performing the activity. This seems to be oral or written communication to another person, but other ways of execution are also possible, such as providing insight into the documentation that contains a secret, handing over the file, showing it, etc. The data that are the subject of disclosure are data on the person, his characteristics, health condition, relations in the family or with other persons and all other data that make up the sphere of privacy of the passive subject. It is enough that the secret is revealed to only one person, who can also belong to the circle of persons who are obliged to keep the secret. If the same secret is revealed more than once and to different persons, there will be an acquisition of this act with the possibility of applying the construction of a prolonged criminal offense (Lazarević et al., 2004). Disclosure of a trade secret can be done in several ways, such as: in writing or orally. The transfer of a secret can be done directly to a person, but it can also be done indirectly through another person or left at an agreed place. A criminal offense can also be committed by obtaining information that is a trade secret with the intention of handing it over to an unknown person (Stojanović & Perić, 2007). The object of the action are data that represent a trade secret (Stojanović, 2009). The perpetrator of this crime can be any person. Although it is logical that the executor can only be a person who has a business secret, this is not always the case in practice. A person who reveals a secret may also be a person who obtained the secret in an illegal manner.

## 5. TRADE SECRET IN CRIMINAL LAW PRACTICE

In this paper, we observed the criminal law treatment of revealing trade secrets in the period from 2011 to 2020. For the purposes of analyzing the observed phenomenon, we collected and analyzed data on the number of reported, accused and convicted adults in the territory of the Republic of Serbia for the criminal offense of revealing trade secrets. In order to facilitate the understanding of the collected data, in the continuation of the paper we give a tabular and graphical presentation of the observed phenomenon. We collected data on the number of reported, accused and convicted persons in order to see how often this crime against the economy is committed and whether there is a large degree of "loss of crime", i.e. what percentage of the total number of reported persons is charged, and how many persons will be convicted. The data presented in the table and chart are taken from the official Bulletins of the Republic Statistical Office and have a high degree of accuracy.

Year	Number of reported adults	Number of accused adults	Number of convicted adults
2011.	12	0	0
2012.	8	3	2
2013.	7	3	1
2014.	3	3	1
2015.	5	0	0
2016.	2	0	0
2017.	4	0	0
2018.	8	0	0
2019.	19	0	0
2020.	0	0	0
$\Sigma$	68	9	4

*Table 1: Total number of reported, accused and convicted adults for the criminal offense of disclosure trade secrets from 2011 to 2020 in the territory of the Republic of Serbia  
(Source: Republic Statistical Office)*



*Graph 1: Total number of reported, accused and convicted adults for the criminal offense of disclosure trade secrets from 2011 to 2020 in the territory of the Republic of Serbia (Source: Republic Statistical Office)*

For the criminal offense of revealing a trade secret for a period of ten years, a total of 68 times were reported. The indictment for the criminal offense of revealing a trade secret has been filed nine times, while we have a total of four convictions for the same criminal offense. In the first year of the observed period, twelve persons were reported, but in the same year no indictment was filed and no verdict was rendered. In 2012, there were eight registered adults. Three people have been charged with the criminal offense of revealing a trade secret. Two people were convicted of the criminal offense of revealing a trade secret. In this case, the court decided on imprisonment and a suspended sentence. Next year of the observed period, seven persons were reported for this criminal offense, three accused and one person were sentenced to imprisonment. A total of three persons were reported for the criminal offense of revealing a trade secret in 2014, while an indictment was filed for one adult, and only one person was convicted for the criminal offense this year. The sentence decided by the court in this case is a suspended sentence. Next year, five adults were reported for the criminal offense of revealing a trade secret, but no person was accused or convicted. This trend - there are reported persons, but there are no accused and convicted persons for this crime, it lasts continuously for five years, from 2015 to 2019. The only deviation from the usual numbers occurs in 2019, when we have the largest number of registered adults in the entire observed period, nineteen of them. It is especially interesting that in the last year of the observed period, the statistics show that there was no criminal act of revealing a trade secret, more precisely, no adult person was reported, accused and convicted for this criminal act. Based on all analyzed available data, we can conclude that the criminal offense of disclosing a trade secret is not a criminal offense with a high frequency of execution, but it is an offense with a high percentage of "loss of crime". Of the total number of reported persons in the period of the observed and analyzed ten years, only 13% are accused persons, and only 6% are convicted persons.

## 6. CIVIL-LAW PROTECTION OF TRADE SECRETS

In case of violation of a trade secret, the Law on the Protection of Business Secrets determines the possibility of protection of rights by a lawsuit and prescribes several possibilities:

- 1) "determination of injury;
- 2) cessation of the violation or prohibition of the use or disclosure of a trade secret;
- 3) prohibition of production, offering, placing on the market or use of goods which have been infringed, i.e. prohibition of import, export or storage of goods which have been infringed for the purposes of production, offering, placing on the market or use of goods;
- 4) the imposition of measures relating to infringing goods, which include the withdrawal of such goods from the market, the removal from the goods of properties which constitute a trade secret or the destruction of infringing goods, or their withdrawal from the market, provided that the withdrawal of the goods does not endanger the protection of the trade secret to which the lawsuit relates;
- 5) in whole or in part, destruction of documents, objects, materials, substances or electronic documents that contain a trade secret or which themselves constitute a trade secret or handover these documents, objects, materials, substances or electronic documents in whole or in part to the prosecutor."

The same article, Article No. 5, stipulates that in case of disclosure of a trade secret, preventive action may be taken, so it is determined that "against a person whose unauthorized taking of a certain action represents an immediate threat to illegally obtain, use or disclose a trade secret, secrets may file a lawsuit requesting the cessation of taking that action and the prohibition of illegal acquisition, use or disclosure of a trade secret". For the purposes of this Law, a lawsuit may also be filed against an "intermediary who provides services used by a third party in actions by which it illegally acquires, uses or discloses a trade secret, or whose undertaking poses an immediate threat to illegal acquisition, use or disclosure of a trade secret". The procedure for the lawsuit is urgent and the deadline for filing a lawsuit for violating a trade secret is one year from the day when the plaintiff found out about the violation and the person suspected of violating a trade secret, and no later than five years from the day the violation was committed. Against a person who has violated a trade secret, who knew or should have known to participate in the illegal acquisition, use or disclosure of a trade secret, the holder of a trade secret or licensee may do a claim for damages. The holder of a trade secret is entitled to compensation for material and non-material damages. According to Article 8, "when determining the amount of damage, the court shall take care about all the circumstances of the case, such as the negative economic consequences suffered by the holder of the trade secret, which include ordinary damage, lost benefit and the benefit a person who has violated a trade secret". This Law also stipulates that "on the proposal of a trade secret holder who makes it probable that a trade secret exists, that he is a holder of a trade secret and that illegal acquisition, use or disclosure of a business secret has occurred or will occur, the court may order a temporary measure of termination or prohibition of the use or disclosure of a trade secret; prohibition of production, offering, placing on the market or use of infringing goods, or prohibition of import, export or storage of infringing goods for the purposes of production, offering, placing on the market or use of goods or confiscation of goods suspected of being infringement committed, including imported goods, in order to prevent its placing on the market and its circulation. In the event that the court allows a person suspected of violating a trade secret to continue to use a trade secret, this may be done only on condition that he or she provides bail to secure damages to the holder of the trade secret. At the end of the Law, penalties are determined in case of violation of a trade secret and it is prescribed that "a company that illegally acquires, uses or discloses a trade secret will be fined for an economic crime in the amount of 100,000 to 3,000,000 RSD."

For such an action, the person responsible for the economic crime in the company will be fined in the amount of 50,000 to 200,000 RSD. An entrepreneur will be fined in the amount of 50,000 to 500,000 RSD for the same act. In addition, an individual will be fined in the amount of 20,000 to 150,000 RSD for such an act.

## 7. CONCLUSION

All modern countries have paid great attention to the protection of trade secrets, because its protection is the basis, but also the future of successful business, healthy competition and a developed economy. Business secrecy is protected through several institutes such as contract law, criminal law and civil law. However, the most specific protection is provided by statements on the obligation to keep business secrets, internal regulations in companies, but also employment contracts. Trade secret is, more or less, treated in all legal systems of developed countries as information that is important for the owner and which represents a competitive advantage for him, which is why he strives to protect it. Despite all that, the legislator never fully defines the secret, but leaves the issue open. This is due to the fact that in the information society in which we live, data that can represent business or trade secrets are constantly revealed, so their legal determination would require constant changes in the law. In that way, the notion of business secret becomes completely adaptable to all situations, times and opportunities, spaces, without the procedure of changing legal regulations. Very often in the literature we can see claims that the legal protection of trade secrets was created and developed as a relatively young concept in law, but historical data show that even ancient peoples knew that the value of data is secret, so these data are in different ways protected. This is evidenced by the history of the development of trade secrets, which can also be found in Roman law. The special value of this paper is the research part, where the practice of criminal courts on the entire territory of the Republic of Serbia in a ten-year period is analyzed. The collected data showed that the frequency of committing the criminal offense of disclosing a trade secret is not high, which may lead to the conclusion that a larger number of persons decide for civil protection of trade secrets or that the activity of state bodies in detecting this criminal offense is low. On the other hand, it cannot be claimed that behaviors that are recognized as an attack on trade secrets are less present today, because we live in an information society in which the danger to intellectual property is greater every day. That is why the authors put the opinion that this crime is under a "dark number" and that the investigative bodies have a great responsibility. The "loss of crime" in this case is very large and amounts to 94%. The legal regulations in the Republic of Serbia on the protection of trade secret are at a satisfactory level and fully harmonized with the countries of the European Union, especially with the adoption of the new Law in 2021, which replaced the previous Law that was valid for 10 years.

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# INFLUENCE OF LINEAR INCREASING OF BRIGHTNESS ON IMAGE QUALITY WITH JPEG AND SPIHT COMPRESSION METHOD AT DIFFERENT BIT TRANSMISSION

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## ABSTRACT

*This paper provides a comparison of static image compression quality using two methods - SPIHT and JPEG. The methods were applied to images with different degrees of illumination and for different values of flow rate (bpp) using Matlab software. The quality of the compressed images was evaluated based on the values of MSE, SNR and PSNR. The obtained values are tabulated and graphically presented. Based on the given graphs, a comparison of image compressions with different degrees of brightness was performed and it was determined which compression gives better results in relation to different levels of image brightness and how the compression quality changes with changing image brightness at different flow rates.*

**Keywords:** JPEG, EZW, SPIHT, Brightness, Compression, Bit transmission

## 1. INTRODUCTION

With the development of digital image processing, the possibility of storing digital images in several different ways has emerged. To save images to a computer, with large formats, it is necessary to compress the images or reduce the file. Compression is the process of compressing data, that is, converting data into a form that takes up less memory. JPEG (Joint Photographic Experts Group) is a standardized procedure for image compression. It was created to compress both colour and black-and-white images (with shades of gray). It is created for photographs, natural painting and similar applications, and is not suitable for texts, simple drawings and technical drawings. Along with GIF, JPEG is the most popular image transfer format on the Internet due to the high degree of compression and almost all web browsers. JPEG is used only for compression of a static image (one image) and belongs to the so-called group of "intraframe" compression methods, but there is a similar MPEG standard that deals with the compression of moving images (series of images), the so-called "intermediate frame". The JPEG standard includes two basic compression methods. The first is based on DCT (discrete cosine transformation) and belongs to the lossy compression - "losses" and the second which is based on predictive coding and belongs to the lossless compression - "lossless". The DCT based method is the Baseline method. It is most commonly used. The EZV (Embedded Zerotree Wavelet) algorithm enables a coding process in which the coefficient transformation is arranged in such a way that progressive transmission of compressed images is achieved. Using this algorithm, it is possible to interrupt the encoder encoding at any time to achieve the desired bit rate. Zerotree symbols enable concise coding of significant value positions by creating highly compressed descriptions of less significant value locations.



Zerotree is a quad-tree in which all nodes are less than or equal to the value of the root, which is less than the threshold with which the values of the wave coefficients are compared. The EZV algorithm has very good performance (PSNR achieved) if we compare it with other compression algorithms at lower baud rates [1]. It preserves significant coefficients on all scales. The main disadvantage of the EZV algorithm is its need for complex calculations, which represents a significant resource load [2, 3]. Based on the EZV algorithm, a large number of compression methods have been developed, the most popular of which is SPIHT (Set partitioning in hierarchical trees). SPIHT unlike EZV does not use an entropy encoder to achieve better performance so a significant reduction in algorithm complexity is achieved. It was designed and introduced by Said and Pearlman to compress the static image [4]. This method gives better results at higher compression ratios for different images compared to EZV. The term hierarchical tree refers to a quad tree consisting of parents and children as defined for EZV. Set partitioning refers to the way a quad tree performs a partition of the waveform values for a given threshold.

## 2. COMPRESSION QUALITY MEASUREMENT

The three most commonly used measures for objective image measurement are Mean Square Error - MSE and Signal to Noise Ratio - SNR and Peak Signal to Noise Ratio - PSNR. Image quality measurement provides information on how lossy compression effects on image quality. An image can be viewed as a matrix, where the elements of the matrix are the elements of the image. The evaluation procedure is reduced to determining the difference between the individual elements of the output and input matrix. This makes it possible to compare the efficiency of different compression techniques, as well as the efficiency of the same compression procedure, but with different degrees of compression. At the entrance to the compression system we have a matrix  $A$  with elements  $a_{ij}$ , where is,  $i \in \{1...M\}$ ,  $j \in \{1...N\}$ ,  $M$  is equal to the number of image elements in the vertical direction, and  $N$  is equal to the number of image elements in the horizontal direction [5].  $M \times N$  is the total number of image elements in the observed image. At the end of the compression system, a matrix  $A'$  with elements  $a'_{ij}$  is formed. The difference between matrices  $A$  and  $A'$  represents a loss of quality. The higher the degree of compression implicates the higher error. The degree of compression can be adjusted by the user as desired and thus directly affect the amount of data required to display the compressed image, and the quality of the reconstructed image [5].

Reconstruction error is defined as:

$$E = \sum_{i=0}^{m-1} \sum_{j=0}^{n-1} ||a_{ij} - a'_{ij}||^2 \quad (1)$$

The difference between matrices  $A$  and  $A'$  can be shown using the Mean Square Error - MSE:

$$MSE = \frac{E}{MN} = \frac{1}{MN} \sum_{i=0}^{m-1} \sum_{j=0}^{n-1} ||a_{ij} - a'_{ij}||^2 \quad (2)$$

where  $MN$  is the total number of pixels in image, and the sum is defined by processing all the pixels of the image.

The amplitude of the image elements has a range  $[0, 2^n - 1]$ , where  $n$  is the number of bits required to display the amplitude of the elements of the original image.

The MSE does not consider the amplitude of the image elements, so a Peak Signal to Noise Ratio (PSNR) is introduced as:

$$PSNR = 10 \cdot \log_{10} \left( \frac{MAX_I^2}{MSE} \right) = 20 \cdot \log_{10} \left( \frac{MAX_I}{\sqrt{MSE}} \right) \quad (3)$$

Here, the  $MAX_I$  is the maximum pixel value of the image. When pixels are represented by B bits per sample,  $MAX_I$  is  $2^{B-1}$ .

If we assume that  $n = 8$  bits per image element then it is:

$$PSNR = 10 \cdot \log_{10} \left( \frac{255^2}{MSE} \right) \quad (4)$$

Typical PSNR values for lossy images are between 30 and 50 dB.

### 3. METHODOLOGY

For the analysis of objective image quality, 8-bit uncompressed images saved in TIFF format were used, with original resolutions of 512x512, 2048x2048 and 4096x4096 pixels. Images are brightness to varying degrees using Matlab software. Figure 1 shows an example of one of the analysed images with brightness degree with 10%, 30%, 50%, 70% and 90% in relation to the original, and its corresponding histograms are shown in Figure 2.



Figure 1: Example of the analysed image: a) original, and brightness b) brightness 10%, c) brightness 30%, d) brightness 50%, e) brightness 70%, f) brightness 90%

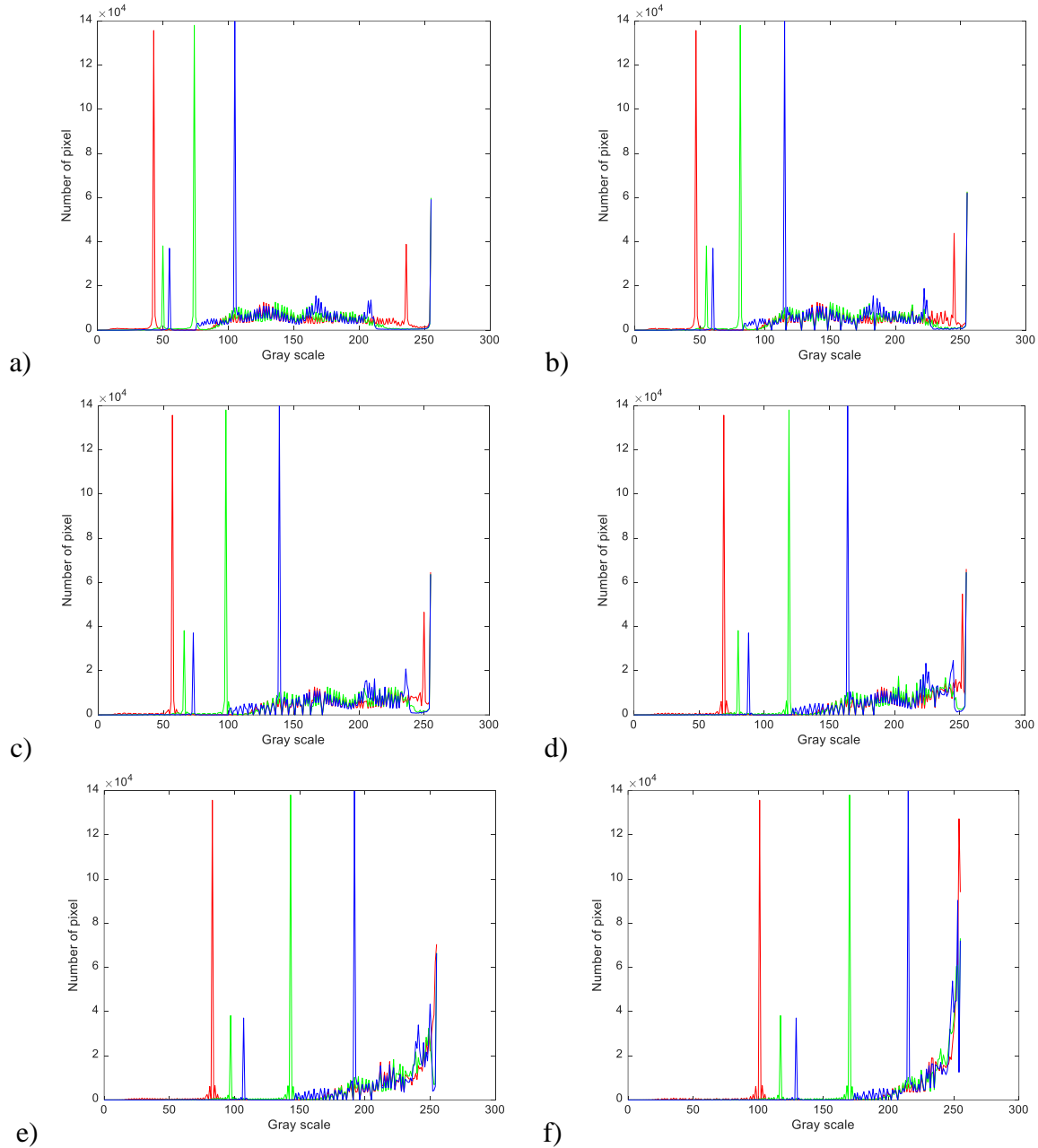


Figure 2: Histogram of the analysed image: a) original, and brightness b) brightness 10%, c) brightness 30%, d) brightness 50%, e) brightness 70%, f) brightness 90%

Image compression was done in the Matlab software package using a compression module. Nine baud rates were applied: 0.1, 0.2, 0.3, 0.4, 0.5, 0.7, 1.0, 1.5 and 3.0 bits per image element (bit per pixel). Based on the resulting difference between the original and the reconstructed image, the mean square error (MSE), signal-to-noise ratio (SNR), and peak signal-to-noise ratio (PSNR) were calculated.

#### 4. RESULTS AND ANALYSIS

The values of MSE, SNR and PSNR for different baud rates during JPEG compression for differently images brightness are given in Table 1, Table 2 and Table 3, respectively. A graphical representation of the change in PSNR with increasing baud rate during JPEG compression is given in Figure 3.

Image	bpp								
	0.1	0.2	0.3	0.4	0.5	0.7	1	1.5	3
Original	415.9	106.1	49.9	32.8	25.1	17.5	12.2	7.6	3.0
10%	398.5	110.0	54.4	37.4	29.0	20.6	14.2	8.9	3.1
30%	397.4	115.6	61.4	41.1	31.6	22.1	15.5	9.9	3.2
50%	399.5	117.1	63.5	42.7	33.1	23.6	16.4	10.4	3.2
70%	410.3	119.6	65.4	44.1	35.0	24.5	17.6	11.3	3.1
90%	418.1	121.6	66.5	45.3	36.1	25.4	18.2	11.7	3.1

Table 1: MSE values for JPEG compression

Image	bpp								
	0.1	0.2	0.3	0.4	0.5	0.7	1	1.5	3
Original	7.8	13.8	17.0	18.8	20.1	21.6	23.1	25.2	29.3
10%	8.4	14.0	17.1	18.7	19.7	21.3	22.9	25.0	29.5
30%	8.6	14.0	16.7	18.5	19.5	21.2	22.7	24.6	29.6
50%	8.6	13.9	16.6	18.3	19.3	20.9	22.5	24.4	29.6
70%	8.5	13.8	16.4	18.1	19.1	20.7	22.1	24.1	29.6
90%	8.3	13.6	16.3	17.9	18.9	20.4	21.9	23.8	29.6

Table 2: SNR values for JPEG compression

Image	bpp								
	0.1	0.2	0.3	0.4	0.5	0.7	1	1.5	3
Original	21.9	27.9	31.2	33.0	34.1	35.7	37.3	39.3	43.4
10%	22.1	27.7	30.8	32.4	33.5	35.0	36.6	38.7	43.2
30%	22.1	27.5	30.2	32.0	33.1	34.7	36.2	38.2	43.1
50%	22.1	27.4	30.1	31.8	32.9	34.4	36.0	37.9	43.1
70%	22.0	27.4	30.0	31.7	32.7	34.2	35.7	37.6	43.2
90%	21.9	27.3	29.9	31.6	32.6	34.1	35.5	37.4	43.2

Table 3: PSNR values for JPEG compression

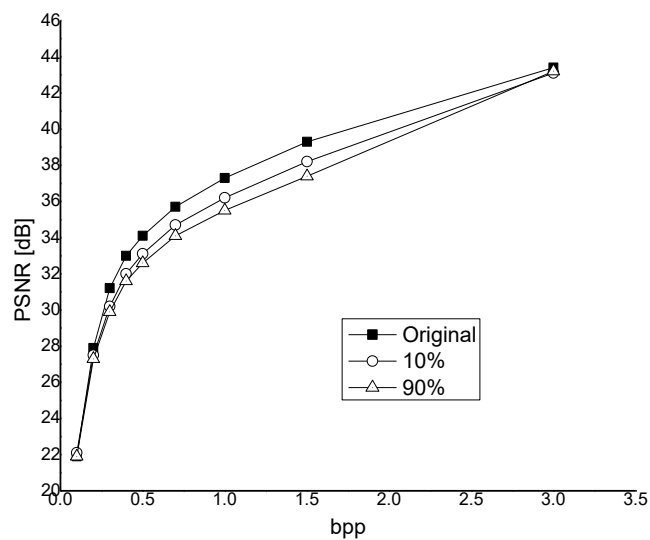


Figure 3: Graphical dependence of signal-to-noise peak ratio (PSNR) for JPEG compression method

From the given tables it can be seen that the values of MSE decrease, ie the values of SNR and PSNR increase with increasing bit per pixel in all images with different degree of brightness. At lower and higher bit per pixel values, the change in MSE is less pronounced in images with different brightness. From the graphs shown in Figure 3 and from Table 3 it can be seen that at lower flow rate values, the PSNR values are the same. But in situation with increasing flow rate there is a decrease in PSNR for images with higher brightness. At high flow rates, the PSNR values become the same again, regardless of the brightness of the image. The values of MSE, SNR and PSNR for different baud rates during SPIHT compression for differently brightness images are given in Table 4, Table 5 and Table 6, respectively. A graphical representation of the change in PSNR with increasing transmission rate during SPIHT compression is given in Figure 4.

Image	bpp								
	0.1	0.2	0.3	0.4	0.5	0.7	1	1.5	3
Original	68.8	35.0	23.1	17.0	13.7	8.9	6.5	3.6	0.6
10%	79.3	40.2	26.8	19.7	15.8	10.5	7.5	4.2	0.7
30%	85.2	43.3	29.1	21.5	17.2	11.4	8.2	4.5	0.7
50%	89.2	45.8	30.9	23.0	18.3	12.2	8.6	4.7	0.7
70%	92.2	48.1	32.4	24.4	19.3	12.8	9.0	4.8	0.7
90%	94.5	49.9	33.7	25.4	20.2	13.2	9.2	4.8	0.7

Table 4: MSE values for SPIHT compression

Image	bpp								
	0.1	0.2	0.3	0.4	0.5	0.7	1	1.5	3
Original	15.6	18.6	20.4	21.7	22.7	24.5	25.9	28.5	36.2
10%	15.5	18.4	20.2	21.5	22.5	24.2	25.7	28.3	36.2
30%	15.3	18.2	20.0	21.3	22.2	24.0	25.5	28.1	36.1
50%	15.1	18.0	19.7	21.0	22.0	23.8	25.3	27.9	36.1
70%	14.9	17.8	19.5	20.7	21.7	23.5	25.1	27.8	36.1
90%	14.7	17.5	19.2	20.5	21.5	23.3	24.9	27.7	36.1

Table 5: SNR values for SPIHT compression

Image	bpp								
	0.1	0.2	0.3	0.4	0.5	0.7	1	1.5	3
Original	29.8	32.7	34.5	35.8	36.8	38.6	40.0	42.6	50.3
10%	29.1	32.1	33.9	35.2	36.1	37.9	39.4	41.9	49.8
30%	28.8	31.8	33.5	34.8	35.8	37.5	39.0	41.6	49.6
50%	28.6	31.5	33.2	34.5	35.5	37.3	38.8	41.5	49.6
70%	28.5	31.3	33.0	34.3	35.3	37.1	38.6	41.4	49.6
90%	28.4	31.1	32.9	34.1	35.1	36.9	38.5	41.4	49.8

Tabela 6: Vrednosti PSNR pri kompresiji SPIHT metodom

From the given tables it can be seen that, as in the case of the JPEG compression method, the value of MSE decreases, ie SNR and PSNR increase with the increase of the flow rate in all images with different degree of brightness. From the graph shown in Figure 4 and from Table 6 it can be seen that the PSNR increases with increasing flow rate. If you compare the images by the degree of brightness, you can see, unlike the JPEG compression method, at lower values of the flow rate, the values of PSNR are different. While for high values the flow rates of the PSNR values are approximately the same. The original image has the highest PSNR values.

As the brightness of the image increases, the PSNR decreases. The difference in PSNR between images with different degrees of illumination is most pronounced at flow rate values of 0.5.

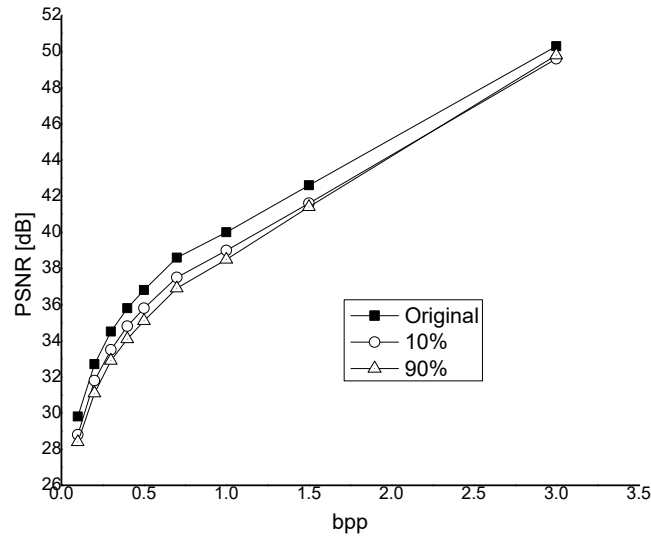


Figure 4: Graphical relationship of peak signal-to-noise ratio (PSNR) for SPIHT compression method

Figure 5 compares the PSNR for the JPEG and SPIHT compression method for the least and most brightness analysed image. The JPEG method gives lower PSNR values compared to the SPIHT method, regardless of the level of illumination.

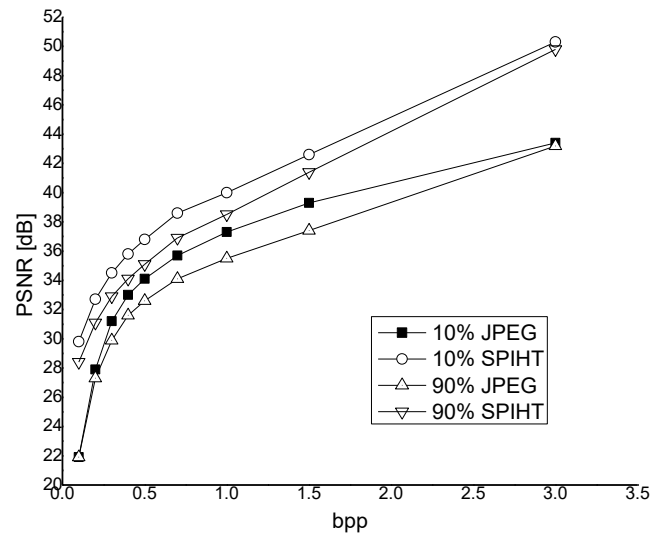


Figure 5: Graphical dependence of peak signal-to-noise ratio (PSNR) for JPEG and SPIHT compression method at different levels of brightness

## 5. CONCLUSION

Based on the obtained results, it can be concluded that the quality of the compressed image is the same at higher values of the flow rate, regardless of how much the image is brightness. This applies to both compression methods analysed. By reducing the flow rate, better quality is obtained for darker images.

At extremely low bit rate (0.1 bit / image element) the compression quality is the same with the JPEG method, regardless of the brightness of the image, while with the SPIHT method the rule still applies that better results give darker than brighter images. In terms of the compression method, in all analyses the SPIHT method gives better results compared to the JPEG compression method.

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## GLOBALIZATION AT THE CROSSROADS: CONTEMPORARY RISKS OF INCLUSION IN GLOBAL VALUE CHAINS

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### ABSTRACT

*The second decade of the 21st century has posed numerous existential challenges to the world economy and the globalization process itself. International economic relations, that is international trade, international production and foreign investment, already disrupted by recurring financial crises, experienced the greatest disruption in post-war history during the Covid-19 pandemic. Globally networked production, as the most important determinant of modern globalization, is the focus of this research. This article analyses disturbances in the functioning of global value chains (GVC), caused by the current challenges of the pandemic crisis. The current declining trends in EU value chains are analysed, and their effects on the economy of Serbia are explored. This interdependence was determined by correlation between the Serbia's GDP and the share of foreign value added (FVA) in EU exports. The assumption is that disturbances in GVCs are not only the result of financial crises and pandemic challenges, but in same time, they are the main means of transmitting the crisis to the countries involved. Through value chains, the various types of external shocks have affected even the countries where production has not been interrupted due to the internal impediments. This paper investigates the main mechanisms of the impact of the pandemic crisis on the disturbances of the global production network such as: disruption in international transport due to pandemic closure, disruption of demand, mainly in the direction of its rapid reduction, growing trade restrictions and protectionism. The results showed a remarkably high degree of dependence of the Serbian economy from changes in EU GVCs. The paper points out to the importance of increasing independence in the production of basic goods, as a way to overcome a number of existing and potential causes of disturbances within European GVCs.*

**Keywords:** Covid-19 pandemic, Global value chains, Globalisation, international trade, international production

### 1. INTRODUCTION

Global production chains (GVCs) are groups of internationally dispersed linked production units. Globally networked production is the most important determinant of modern globalization, and global production networks form the core of the modern world economy (Kotlica, Stanojević, 2017). The inclusion of the Serbia's economy in these production networks, at the beginning of transition process, was necessary and potentially positive for its development. On the other hand, economies which opened up quickly usually became too dependent on foreign trade, especially imports, as well as on foreign capital. The FDIs of large multinational companies in Serbia mainly provided benefits only for investors (Stanojevic, Kotlica, 2015; Kotlica, Stanojevic, 2018). There were almost no greenfield investments, which would enable the launch of a new production process, or raising technology level in current production. As the largest volume of FDI came from EU countries, the Serbian economy, as well as other Western Balkan economies, became dependent on the production within EU production chains.



Integration into global value chains in modern times is necessary and inevitable. However, heavy dependence on external factors usually carries great risks. Withdrawal of foreign investors from many countries - a link in the chain, and grouping of production in a smaller number of countries, began after the Global Financial Crisis (GVC). Since then, value chains have lost in importance, despite its importance for ensuring Europe's strategic autonomy and the EU's industrial future. In just ten years, the share of value chains in European exports has fallen from 52% to 41%. Europe's competitive advantage at the global level is declining sharply. An additional reduction or even the cessation of activity in European GVCs has occurred in 2020 due to the lockdowns caused by the Covid-19 pandemic. Through value chains, the epidemic has affected even the countries where production has not been interrupted, even those whose production is not directly dependent on vulnerable economies (Stanojević, Kotlica, 2021). The focus of this research is the consequences of these changes on the Serbian economy, as one of small, too open economies, highly incorporated into the EU production chains. The assumption is that the halt of the production in EU companies had strong effects on the supply-chain exports of the Balkan countries. The basic hypothesis of this research is that the current disruptions in the supply chains of the EU have a very strong negative effect on the economy of Serbia, even when they do not directly involve Serbian companies. This assumption is based on the following indicators. This is, first of all, the unfavourable position of the Serbia's economy within the European GVCs. Whether upstream or downstream, Serbian and other Western Balkan's producers generally do not have comparative advantages strong enough to hold an important position within any international production process. In other words, they are easily interchangeable. Another problem is the high share of foreign capital in the Serbian economy. It occurs due to the fact that the most important export companies are in foreign ownership, which is why every problem in their business directly endangers the domestic economy, while the government is left without the possibility of intervention. The next indicator is the almost-rule that major changes in the international trading system always have stronger negative consequences for smaller, more open and less developed economies than for large ones, with a greater degree of independence. Disruptions in European production chains bring the more severe negative effects for the countries of the Western Balkans than for EU countries themselves. In addition to being small and very open, Serbia is not members of the EU, and suffer from additional consequences of restrictive EU trade measures. The research question is to what extent the current disturbances in EU value chains affect the economy of Serbia. To prove the hypothesis and answer the research question, a simple linear regression used, because we are interested in the effects of only one phenomenon - disturbances in the EU GVCs. The dependent variable is GDP of Serbia, while the independent variable is the share of foreign value added (FVA) in EU exports, as a measure of involvement in global value chains. The aim of the research is to determine the correlation between Serbia's economy and changes in the EU production chains.

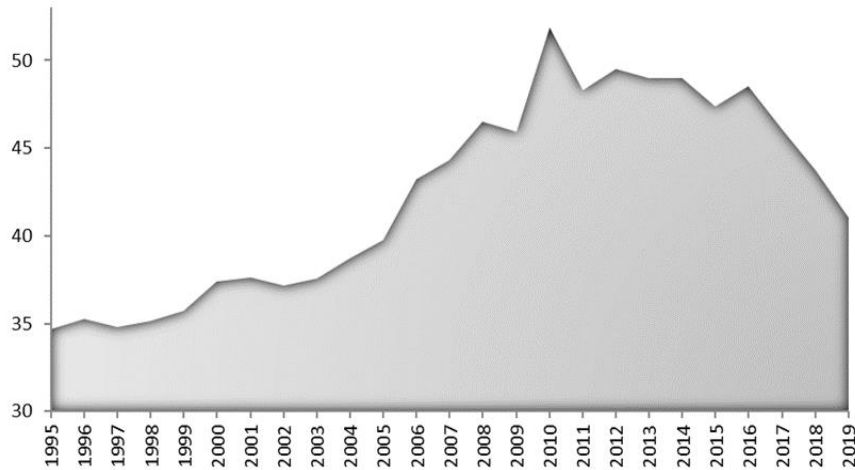
## **2. LITERATURE REVIEW**

The analyses of global supply chains and global production networks are relatively few, given the role and power of global corporations in the world economy. The lack of research in this area is even more unusual given the estimate that one third of international trade takes place between global corporations and another third within their global supply chains. The relocation of production abroad was first described as an example of globalized production by the famous Japanese strategic economist Kenichi Ohmae (1996, 1999), although at that time none of the current terms were still used: production chains, value chains, supply chains, etc. The important theoretical framework and advantages of GVCs were given by Gereffi (2018). The authors Cattaneo, O., Gereffi, G. and Staritz, C. (eds.) (2010) analysed the state of GVCs after the Global Financial Crisis (GFC), but generally didn't recognize its fragility and future inability

to recover. An interesting approach has Maswood (2018) who identified the whole process of globalization with globally networked production. In that sense, he marks the period from the end of the 20th century as the beginning of modern globalization. UNIDO reports (2016; 2018) stressed the usefulness of the value chain approach for understanding development and especially industrial development, its sustainability and inclusiveness. GVC participation is positively correlated with the domestic sector's value-added growth for both developed and developing economies (UNIDO, 2018, p. 27). Kummritz (2016) finds that 1 per cent increase in GVC participation causes a rise in domestic value added within the range from 0.1% to 0.6% and in labour productivity of 0.3%. Kummritz et al (2016) argue that expanding and strengthening a country's GVC participation may lead to higher output, productivity, value added, and jobs through a variety of channels. The research of Kordalska and Olczyk (2019) is significant for this research, due to analysis of the role of the hub of Germany in the trade of the selected CEE countries. That research stressed the deep integration of CEE into 'Factory Germany', but most important it revealed Germany's role in redirection of CEE export to non-European destinations. As many authors have observed in recent times (Baldwin and Lopez-Gonzalez, 2015; Meng, 2019; Kordalska and Olczyk, 2019), GVCs are not configured as a linear sequence of production stages such as chains but as complex networks, with some countries having the role of hubs. Changes, i.e. weaknesses in the peripheral points of this network, do not have far-reaching consequences, because their place in the chain can be taken by another manufacturer. However, when the processes of international production lose their importance in the hubs in which they meet, where a lot of trade routes within GVCs are intertwined, this is reflected in the weakening of all participants in the entire network. The weakening of international interconnectivity and shortening of GVCs is a completely new phenomenon so there is very little literature on these processes. Only two studies that record GVCs disorders can be highlighted. One is the estimates of Solleder and Velasquez (2020) which suggest that EU imports of manufacturing inputs will drop significantly after 2020. The other is the empirical research of Backer and Flag within the OECD (2017) which shows that the world economy is facing a number of structural shifts that may dramatically change the outlook of GVCs in the coming years. So, the goal of this study is to fill the existing gap in the literature by analysing how the declining share of GVCs in the European Union affects the Serbian economies.

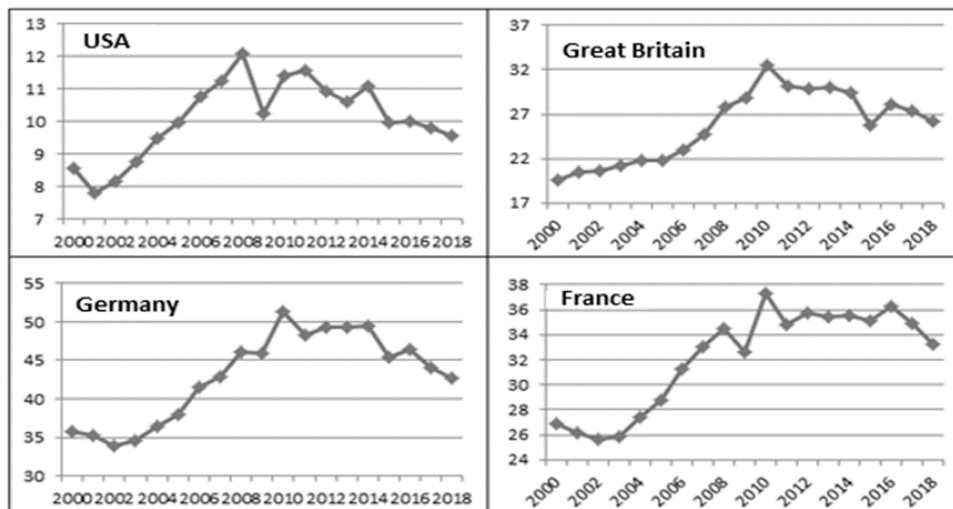
### **3. DISRUPTION OF GLOBAL VALUE CHAINS AND ITS CAUSES**

One of the key aspects of modern globalization is the international segmentation of production processes. The goal and driver of international production segmentation was to achieve the most cost-effective structure for each stage of the production process. This is the core activity of modern multi-national companies (MNC). Almost all exporting companies, with or without the participation of foreign capital, are parts of global value chains (GVC). In its broadest form, globalized production is seen as a global production network, grouping of interconnected but geographically dispersed production units. Global production networks have become a dominant feature of the modern world economy. One third of total international trade takes place between global corporations and another third within their GVC, meaning that most global exchanges take place within global manufacturing networks. The main indicator of economic integration in international production is foreign value added (FVA). This is the value of imported semi-finished products that is ready for further processing and export. So, it is a part of trade, but a part that implies much wider changes in the world economy than the decline of trade. From 1995 to 2009, the rise of share of FVA in exports of EU grew much faster than the world average, from 34% to 53% of EU exports (figure 1).



*Figure 1: Share of foreign value added in EU export  
(Source: Author according UNCTAD (2020) Eora Database)*

Globally, the share of FVA in exports fell from 31% to 27% (2019, p. 2) in the decade after the GFC. Data for the EU, however, point to a much sharper decline, from 53% to 40% of EU exports (figure 1). The host countries of the largest multinational companies, the US and the UK, are also facing a steady decline in FVA, as does Germany, whose international production mainly takes place in the European Union's neighbourhood. In the years after the GFC, FVA share in export of the most developed EU countries, that is the largest investor in the region (UK, Germany and France), are reduced by an average of about 5% (figure 2).



*Figure 2: Integration of major investor countries in global product chains, reflected by the FVA share in exports (%).  
(Source: Stanojević, 2020, p. 352)*

There are several causes of the shortening of value chains. One is growing protectionism. The weakening of economic activity during the GFC initiated a number of restrictive trade measures of developed and developing economies. For example, 71 measures imposed on corn exports from Serbia are a part of the general package of EU import duties from 2017. None of these restrictive measures are directed against Serbia, but are used only as a way to protect domestic economy in a large economic system. All products covered by protectionist measures are part of international production, i.e., parts of long European production chains.

Another reason is a retreating of MNCs due to instability of global market after GFC, and due to uncertainty in return on investment. During and after the Covid-19 pandemic, trade protectionism escalated. Despite a number of formal restrictions provided by the WTO and especially the EU, all countries have provided massive subsidies to large companies, airlines, banks, etc., to save them from bankruptcy, during 2020. On 27 April 2020, the European Commission issued Regulation No. 2020/573, imposing an import duty on maize, sorghum and rye. The duty rate was set at EUR 5.27 per ton. Less than a month later, an additional radical increase followed. On 5 May 2020, the European Commission issued Regulation No. 2020/615, imposing an import duty on maize, sorghum and rye. The import duty was increased from EUR 5.27 to EUR 10.40 per ton. Lockdowns caused by the pandemic further contributed to the disruption of value chains and accelerated the process of their shortening. GVCs are impacted directly through supply chain linkages, when companies in any country stop producing. In addition, the Covid-19 also affected value chains by causing disruption in international transport. Even when production itself was not compromised, the inability to supply export partners in many cases led to production interruptions. The Covid-19 pandemic had the strongest and most lasting effect on GVCs by reducing demand. As the OECD (2020) report points out, lower demand for final products in a given country reduces demand for inputs produced in other countries. This phenomenon can affect multiple locations at once. Demand has decreased for all manufacturing GVCs except for those for medical supplies. Breaking up value chains in some sectors resulted in pressure to re-nationalize production in the belief that this would provide greater security of supply. Uncertainty on the future trade and investment as a consequence of COVID-19 is also a risk currently assessed by firms and that will impact the organization of their value chains (OECD, 2020, p. 5). Through value chains, the epidemic has also affected countries where production has not been interrupted and whose production is not directly dependent on vulnerable economies. Producers at the beginning of the production chain (raw materials and services) are prevented from exporting goods due to demand disruptions in the next downstream market. Manufacturers of parts, components and semifinished goods reduce their output due to the suspension or reduction of imports of the downstream market of finished goods. Therefore, they also reduce inputs from abroad. From a Serbian perspective, the EU is the largest importer of manufacturing inputs. The factory shutdown in the EU had strong effects on the supply-chain exports of Serbia. The direction of change in the EU refers not only to the disruption of existing GVCs but also to the announced direction of future ones. Namely, the current and future demand on which production chains could be based was defined by the European Commission in 2018, and none of them go in favour of the Serbia or any Balkan economies. The identified six key strategic value chains are: Clean and autonomous vehicles, Hydrogen technologies and systems, Smart health, Industrial Internet of Things, Low-CO<sub>2</sub> emission and Cybersecurity (Strategic Forum, 2019).

#### **4. MEASURING DEPENDENCY OF SERBIAN ECONOMY OF EU VALUE CHAINS**

The flows within Global value chains cannot be measured by usual statistic data of international trade. Namely, for more complex final products, it is not uncommon for a product to cross several borders or the same border several times at different stages of production. Trade statistics, at each transit, record the entire value of the product (Kotlica, Stanojević, 2018), so that the foreign trade data have thus become over-dimensioned. Instead of data of foreign trade, in international statistics foreign value added (FVA) is used as the indicator of economic integration in GVCs. FVA is the value of an imported semi-finished product that is ready for further processing and export. In this analysis, we have used UNCTAD data as it relates to the most recent period. The current trends in GVC will be analysed at the EU level, and then their effects on the Serbian economy will be explored.

The dependence on GVCs trends in the European Union is determined by applying linear regression on GDP of Serbia. Simple linear regression has a general form:

$$Y_i = \alpha + \beta X_i + e_i \quad (1)$$

The analysis is based on Ordinary Least Squares (OLS) commonly used for the estimations of the parameters of linear equations. The parameters of the equations were defined by minimizing the residual sum of squares. The relation between EU value chains and Serbian economy has the following forms:

$$GDP_{St} = \alpha + FVA_{EUt} + e_i \quad (2)$$

where  $Y_{St}$  is the GDP of Serbia in millions of current US\$ in year  $t$ . The source of data for the GDP is the World Bank indicator database.  $FVA_{EUt}$  is a share of FVA in export of EU in year  $t$ , according to UNCTAD data, EU denotes data for European Union indicators,  $s$  denotes data for Serbia.

Foreign value added is most often analysed as a share of a country's exports. However, the focus of this research is not the openness of EU economies, but the future of the Serbian economy, which are highly dependent on European GVCs. Therefore, the share of FVA in their exports is not crucial, but the value of goods that EU countries import under GVCs. The data on FVA statistics is obtained from the UNCTAD (2020). Serbian producers have different positions (upstream and downstream) and different degrees of participation in European GVC, depending on the manufacturing sector. Therefore, we consider the most appropriate method is analysing the relationship of the total FVA in the EU to Serbia's key economic parameter, in this case to GDP. In order to obtain aggregate values, we collected the FVA of EU members, taking into account the years of their membership. In the assessment, yearly data in time series for period 1995-2019 will be used. The t-test is test of hypothesis which follows a Student's t-distribution under the null hypothesis. The t test explains how significant the differences between groups are, that is, if those differences (measured in means) could have happened by chance. This part of the research aims only to illustrate the effects of the disruption of EU value chains on the Serbian economy and not to estimate Serbian GDP in the coming period. Government has at their disposal a variety of economic policy measures in crisis situations, which can significantly reduce these negative effects. The results obtained can be considered statistically reliable and valid by all criteria. What the model shows with high certainty is that the Serbian economy is under extremely strong influence of the ramifications of European value chains. This is indicated by a high determination coefficient of 67% ( $R^2$  in table 1).

<i>Parameter</i>	<i>Least Squares Estimate</i>	<i>T Statistic</i>	<i>ANOVA</i>
Intercept	-54890.1* (12932.1)	-4.25	<i>F-Ratio</i> 47.46
Slope	2088.9* (303.2)	6.89	<i>P value of ANOVA</i> 0.00
Correlation Coefficient	0.82	Standard Error	8369.1
R-squared	0.67	Mean absolute error	5747.5

*Table 1: Results for Serbia*

*Notes \* represent significance at 1, respectively. Standard Error is given in parentheses.*

The correlation coefficient equals 0.82 indicating a strong relationship between the EU FVA and Serbian GDP. The results show that the reduction of FVA in exports of EU countries by only 1% contributes to the reduction of GDP of Serbia by \$820,000 US. Changes that may be more permanent ensue from the fact that some supply routes will not be renewed. Manufacturers, due to a long delay in supply, find other partners or, if possible, find internal resources to complete the production process. These major changes in the long run are not necessarily negative. The problems are current external shocks and periods of adaptation to new conditions.

## 5. CONCLUSIONS AND RECOMMENDATION

The post-COVID global economy will become less integrated as a result of trade barriers, reshoring of supply chains, and reduced labour migration and foreign direct investment. Through value chains, the epidemic has affected even countries where production has not been interrupted and whose production is not directly dependent on vulnerable economies. As the Serbia is intensely involved in the GVCs of the EU, disruptions in European production chains have strong effects for its economy. One of the main reasons is general fragility of small and very open economies on external shocks. The second one is that, as a non-member of the EU, Serbia suffers additional consequences of restrictive EU trade measures. This empirical research has shown a very high correlation between the reduction of FVA within the EU and the decline in GDP of Serbia. However, this paper is not an announcement of the catastrophic decline of Serbian economy, but an attempt to point out that the direction of change in European value chains has a negative impact on the production of the analysed countries. Future scientific research or, even better, analysis by the competent ministries and development bodies should identify production chains in which production is continuously lagging behind due to supply shortages. Thus, the decline in exports of certain products may be, and most often is a consequence of the general decline in demand for some goods. This situation is not the subject of this research, and in general, the governments of any country can do little about it. This topic refers to supply problems in situations when European companies reduce the volume of work, close, merge with other related companies (mergers), which reduces the number of suppliers, etc. In these situations, which are becoming more common, the recommendation is to intensify regional cooperation within production chains. International business cooperation could take many forms depending on the industry. In cases where separate production does not meet the needs of large markets, joint deliveries can be organized (provided that the characteristics of the product are uniform in advance). In other cases, the specialization of the Serbia within a particular production chain would have significant effects. This would enable higher productivity, efficiency and competitiveness in external markets. These, as well as all other potential state interventions, should go in the direction of regionalization, in order to overcome the basic weaknesses of the Serbian economy, which mainly stem from small production opportunities. The joint appearance of the economies of the Western Balkans on the European market would give these small economies a better chance. This is in line with new initiative of *Open Balkan*. Strengthening regional operations, even without the EU as a participant in the production chain, shortening supply chains and staying closer to the consumer is one of possible strategies.

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## INCREASING CUSTOMERS' BRAND AWARENESS WITH INFLUENCER MARKETING: A FOCUS ON INSTAGRAM

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### ABSTRACT

*As social media marketing is becoming an advantage for companies, they are increasingly investing in influencer marketing i.e. digital influencers to endorse their brands. Digital influencers are ordinary people that generate a base of followers by creating and posting content with an expertise in a certain area. They monetize their base by endorsing brands for a fee. This study examines social media users' involvement in Instagram influencer following and their perceived trust in Instagram influencer branded content with the aim to determine how they affect customer's brand awareness. For the purposes of the research study an online questionnaire was sent to Instagram users in the Republic of North Macedonia using the non-probabilistic purposive sampling method. The multiple linear regression method was applied to a set of effective 77 responses, using the statistical software SPSS to test hypotheses. The results indicate that involvement in Instagram influencer following positively affects customer's brand awareness. This study is the first, as known by the authors, to examine the effect of involvement and perceived trust on customer's brand awareness with the focus on Instagram. This study is also the first, as known by the authors, to examine the direct effect of involvement and perceived trust on brand awareness, as opposed to their mediating role being already analyzed in the literature. At the end of the study, conclusions along with theoretical contributions and practical implications, are given. Especially important are the recommendations given for companies and their marketing departments regarding influencer marketing activities on Instagram when it comes to improving customer's awareness of the existence of their brand.*

**Keywords:** Brand awareness, Influencer marketing, Involvement, Perceived trust, Social media

### 1. INTRODUCTION

Social media marketing is an advantage for companies (Rebelo, 2017) due to social media use becoming a habit among people (Gottfried and Shearer, 2016). The evolution of social media has empowered customers to build relationships with brands (Uncles, 2008) and has led to the emergence of digital influencers (Rebelo, 2017). Digital influencers are ordinary people (Lou and Yuan, 2019) that act as microcelebrities (Rebelo, 2017), generate followers base by visually sharing their lifestyle and monetize their base by endorsing brands for a fee (Castillo and Fernández, 2019). Digital influencers create and post content on social media usually with an expertise in specific area (fashion, food, travel, health etc.) (Lou and Yuan, 2019). Moreover, Munnukka et al. (2016) points out that to increase ad effectiveness, brands should use normal-looking endorsers. The rise of Instagram is, as the fastest growing social media network nowadays, more than evident (Garifova, 2016). Accordingly, Instagram influencers are more fascinating than celebrities because Instagram users perceive them as ordinary people (Rebelo, 2017).

In that direction, influencer marketing is experiencing a rapid growth as well (Lou and Yuan, 2019) since brands are increasingly investing in digital influencers to endorse their brands by creating and posting brand related content to both: digital influencers' followers base and brands target customers (Yodel, 2017). Several theories may explain the relationship between social media users and influencers. Hence, the media dependency theory points out that social media users are dependent on influencers since the latter ones are perceived by social media users as an online source of information (Castillo and Fernández, 2019). This is in line with the theory of observational learning which refers to people as observers who use the information gained through observation (Bandura, 1977). Based on the integrated social media influencer value (SMIV) model developed by (Lou and Yuan, 2019), this study examines social media users' involvement in digital influencer following and their perceived trust in digital influencer branded content based on the following assumption: involvement and perceived trust affects customer's brand awareness. Although the role of digital influencers in brand communication with customers is becoming an increasingly relevant topic, there is still a lack of research focusing on customer's involvement in digital influencer following and their perceived trust in digital influencer branded content, especially with a focus on Instagram. Hence, the study will contribute to filling the gap with the aim to determine the effect of involvement in Instagram influencer following and perceived trust in Instagram influencer's brand related content on customer's brand awareness. The remainder of the paper is organized in the following order: first, literature review and development of hypotheses is presented; followed by methodology and data analysis and results. At the end, conclusions and theoretical and practical implications are discussed.

## 2. LITERATURE REVIEW

*Trust:* Given the fact that digital influencers are content generators with an expertise in a certain area (Lou and Yuan, 2019), according to Hall (2016), consumers trust more those influencers that collaborate with brands similar to digital influencers' specific area of expertise. According to Giffin (1967) consumers perceive the message source to be trustworthy if it is perceived as truthful, honest, or sincere. On the other hand, the study of Racherla et al. (2012) reveals that both the content element (message quality) and social element (perceived background similarity) of a product review contribute to increased consumers' trust. Social media users' trust in sponsored ads has a positive effect over brand awareness and their willingness to take certain actions resulting from the information received (Lou and Yuan, 2019).

*Involvement:* Zaichkowsky (1985, p. 342) defines involvement as "a person's perceived relevance of an object based on inherent needs, values, and interests" and high involvement is in line with high personal relevance (Greenwald and Leavitt, 1984). According to Park and Mittal (1985) involvement is goal oriented. Originally, O'Cass (2000) has divided involvement into four dimensions: product involvement; purchase decision involvement; consumption involvement and advertising involvement, all of which are important prior purchasing (Choo et al., 2014). According to Cohen (1983) an actualized interaction must exist so that there is a customers' potential involvement level and according to their level of involvement, customers process advertising messages differently (Pornpitakpan, 2004). According to consumer involvement theory, involvement forms a link between customers and a certain object (e.g., products, advertisements etc.) (O'Cass, 2000). Customers became involved in a particular object when they perceive a potential for satisfying their psychological need (O'Cass, 2000). In other words, social media users tend to be more involved in digital influencer following when their content provide psychological satisfaction to customer's needs.

*Brand awareness:* Brand awareness increases the likelihood that a particular brand will be taken into account when considering the buying decision process, due to the fact that the customer is already familiar with the brand (Moisescu, 2009; Alhabash et al, 2015; Lou and Yuan, 2019). Regarding influencer marketing goals, brands are pursuing to reach brand awareness as a goal since is important for customers' purchase decision (Barreda et al., 2015) and purchase behavior (Lou and Yuan, 2019). The study of Alhabash et al. (2015) also contributes to the understanding of the effect of brand awareness over customer's purchase intentions. Brand awareness is connected with customers' confidence in purchase decision due to their familiarity with the brand (Moisescu, 2009). According to Farquhar (1989) companies should build strong brands by stimulating brand awareness. Brand awareness is the key driver for brand loyalty (Aaker, 1991). Brand awareness reflects customers' ability to identify (Keller, 1993) and recall the brand in a specific product category and therefore it is essential in buying decision process (Moisescu, 2009).

Taking into account previous research on this topic (O'Cass, 2000; Munnukka et al., 2016; Rebelo, 2017; Castillo and Fernández, 2019; Lou and Yuan, 2019; Balaban and Mustățea, 2019) and the need for in-depth research focusing on one social network (e.g., Instagram) on the other hand, we propose following hypotheses:

- H1: Involvement in Instagram influencer following positively affects customer's brand awareness.
- H2: Perceived trust in Instagram influencer's brand related content positively affects customer's brand awareness.

### 3. METHODOLOGY

#### 3.1. Sample and measures

For the objective of this research, an online survey was conducted where respondents were reached through non-probabilistic purposive sampling method composed of Instagram users in the Republic of North Macedonia. The sample consisted of total 126 respondents. However, the questionnaire listed 3 eliminatory questions at the very beginning that wouldn't allow respondents to further participate in the survey if they didn't meet the following criteria: have an Instagram account, actively use Instagram and follow Instagram influencers. Finally, the effective number of responses which were further analyzed was 77. The sample size is above the recommended minimum level of at least five times as many observations as the number of variables to be analyzed (Hair *et al.*, 2010). Most of the respondents were female (77%), with higher education (51%), that spend up top 1 hour on Instagram per day (18,7%) and publish at least one post on Instagram per week (45%). We measured perceived trust in influencer's brand related content using twelve 7-point semantic differential scales ("honest/ dishonest;" "trustworthy/ untrustworthy;" "ethical/ unethical;" "genuine/ phony;" "reliable/ unreliable;" "sincere/ insincere;" "convincing/ not convincing;" "credible/ not credible;" "reasonable/ unreasonable;" "unquestionable/ questionable;" "conclusive/inconclusive;" and "authentic/ not authentic") adapted from the studies of Lou and Yuan (2019) and Wu and Lin (2017). The involvement was measured using a 7-point Likert scale (1 - strongly disagree and 7 - strongly agree) to determine the degree of agreement with statements that define respondents' involvement in Instagram influencer following. The statements originally used by Choo et al. (2014), were adapted from the study of Lou and Yuan (2019). Furthermore, the dependent variable: brand awareness was also captured by measuring degree of respondents' agreement with statements represented by 7-point Likert scale (1 - strongly disagree and 7 - strongly agree). The statements were adapted from the studies of Lou and Yuan (2019) and Yoo et al. (2020). Since the original items and statements were adapted from English they were translated to Macedonian language when conducting the online survey.

## 4. RESULTS

### 4.1. Assessment of reliability and construct validity

We used the statistical software SPSS and the multiple linear regression method to explore hypotheses. The regression model determined the effect of involvement in Instagram influencer following and perceived trust in Instagram influencer's brand related content on customer's brand awareness. Prior conducting multiple linear regression we determined reliability of scales by calculating Cronbach's alpha coefficients. Cronbach's alpha coefficients for involvement (0.931), perceived trust (0.937) and brand awareness (0.916) were above 0.7 and indicated high internal reliability of scales because they exceed the threshold value recommended by Hair et al. (2010). Exploratory factor analysis was used to assess construct validity in each of the models. Principal component analysis with Varimax rotation was used to identify the factors as conceptualized in the literature. Three factors were extracted (involvement – 5 items, perceived trust – 12 items and brand awareness – 5 items) that explain 68.543% of variance. One item: "I have difficulty in imagining X in my mind" from the factor brand awareness was removed. Standardized factor loadings for the EFA model exceeded the 0.5 threshold as recommended by Hair et al. (2010). Table 1 shows factor structure and loadings after rotation.

No.	Indicator	Factor		
		1	2	3
	<i>Perceived trust</i>			
1	Sincere	0.872		
2	Reliable	0.844		
3	Reasonable	0.835		
4	Credible	0.834		
5	Convincing	0.782		
6	Authentic	0.774		
7	Conclusive	0.729		
8	Trustworthy	0.727		
9	Genuine	0.717		
10	Honest	0.703		
11	Etical	0.642		
12	Unquestionable	0.598		
	<i>Involvement</i>			
1	Following their posts/updates on social media is an important part of my life.		0.892	
2	I am very much involved in following their posts/updates on social media.		0.877	
3	I pay a lot of attention to following their posts/updates on social media.		0.836	
4	Following their posts/updates on social media is a significant part of my life.		0.827	
5	I am very interested in following their posts/updates on social media.		0.775	
	<i>Brand awareness</i>			
1	I am aware of X.			0.864
2	Some characteristics of X come to my mind quickly.			0.856
3	I can recognize X among other competing brands.			0.855
4	I can quickly recall the symbol or logo of X.			0.842
5	I know what X looks like.			0.832

Table 1: Factor analysis results, factor loadings (N=77)  
(Source: Authors' calculations)

#### 4.2. Multiple linear regression model results

Prior running the statistical data analysis we checked whether the model meets the assumptions of multiple linear regression in terms of multicollinearity, normality, linearity and homoscedasticity. The model meets all the assumptions associated with a linear regression model (see Table 2). Tabachnick and Fidell (2012) recommend examining the assumptions: normality, linearity and homoscedasticity by creating and analyzing charts and diagrams of standardized residuals from multiple linear regression, so we visually examined those assumptions.

Multiple linear regression equation is as follows:

$$Y = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \varepsilon$$

where: Y = brand awareness;  $x_1$  = involvement;  $x_2$  = perceived trust;  $\varepsilon$  = standard error

	Model values
<b>Durbin-Watson test</b>	1.885
<b>Tolerance</b>	0.898 – involvement
	0.898 – perceived trust
<b>Variance Inflation Factor</b>	1.113 – involvement
	1.113 – perceived trust

Table 2: Linear regression model assumptions  
(Source: Authors' calculations)

The Durbin Watson test for autocorrelation in the residuals from a regression analysis, has a value ranging between 0 and 4. Values closer to 2 confirm that there is no autocorrelation, while values that are closer to 0 or 4 indicate high autocorrelation, positive or negative (Durbin and Watson, 1971). In this study the d value is closer to the value 2 indicating there is no autocorrelation. We assessed multicollinearity by examining tolerance and the Variance Inflation Factor (VIF) and confirmed that there is no multicollinearity among variables since both tests exceed all threshold values recommended by several authors. According to Hair et al. (1995) maximum acceptable value for VIF (Variance Inflation Factor) is 10. Considering tolerance most common threshold value is 0.10, recommended by Tabachnick and Fidell (2001). The p-value 0.006 for the F-test of overall significance of model (effect of involvement and perceived trust on brand awareness) is less than the significance level 0.05 indicating that the regression model is statistically significant and explains a significant variation in the dependent variable. The coefficient of determination  $R^2 = 0.132$  and adjusted coefficient of determination  $R^2 = 0.108$  indicate that respectively 13.2% and 10.8% variation in brand awareness is explained by involvement and perceived trust. Falk and Miller (1992) recommend that  $R^2$  value should be greater or at least approximately 0.1. On the other hand, the small  $R^2$  value indicates the existence of other factors that may influence brand awareness, as a sensitive topic, which are not subject to this research. Furthermore, given the fact that the p-value for the independent variable involvement (p-value = 0.004) is less than the significance level 0.05 we can conclude that involvement in Instagram influencer following positively affects customer's brand awareness. and by that confirm H1. On the other hand, H2 is rejected due to the p-value for the independent variable perceived trust (p-value = 0.706) which is greater than the significance level 0.05 indicating that perceived trust in Instagram influencer's brand related content doesn't affect customer's brand awareness. Coefficients and significance level for each variable is given in Table 3.

Dependent variable	Brand awareness	
Independent variables	Involvement	Perceived trust
F-test	5.539*	
coefficient of determination R <sup>2</sup>	0.132*	
adjusted coefficient of determination R <sup>2</sup>	0.108*	
p-value	0.004**	0.706**

Table 3: Multiple regression model results

\*at model level \*\*at variable level

(Source: Authors' calculations)

## 5. CONCLUSIONS AND IMPLICATIONS

This research study determines the impact of involvement in Instagram influencer following and perceived trust in Instagram influencer's brand related content on customer's brand awareness. This study, the first known by the authors to empirically examine how involvement level and perceived trust affects brand awareness with a focus on one social network i.e., Instagram, represents an attempt to fill the gap in the theoretical research literature regarding this topic. The results indicate that perceived trust in Instagram influencer's brand related content did not play a role in affecting customer's brand awareness. This may be because brand awareness is under influence of the actual consumers' exposure to brands (Shojaee and Bin Azman, 2013) and entertainment as a social media marketing activity (Bilgin, 2018). Therefore, the analysis shows that involvement in Instagram influencer following positively affects customer's brand awareness. These results are consistent with the claims of Lou and Yuan (2019) in terms of involvement positively affecting customer's brand awareness.

### 5.1. Theoretical contributions

Since this study is the first, as known by the authors, to examine how involvement in digital influencer following and perceived trust in digital influencer's brand related content affect customer's brand awareness on Instagram, it will deepen the general knowledge in the literature regarding influencer marketing. Furthermore, the study contributes to further understanding what drives brand awareness in the digital world, especially in one of the fastest growing social networks, nowadays, that is Instagram. This study is the first, as known by the authors, that examines the direct influence of involvement in digital influencer following and perceived trust in digital influencer's brand related content on customer's brand awareness, in contrast with the present literature (Lou and Yuan, 2019) that analyze those variables in their mediating role.

### 5.2. Practical implications

Companies are investing heavily in influencer marketing (Yodel, 2017). Therefore, any additional research that generates results and knowledge further contributes to companies future marketing activities so that they maximize the effects of their effort in reaching marketing goals. Accordingly, this research study is of a great value for present and future marketing managers since it provides them with insight into what affects brand awareness regarding influencer marketing on Instagram. In that direction, if companies want to affect customer's awareness of the existence of their brand on Instagram, it is necessary to cooperate with influencers whose content will correspond to the brand profile and will encourage activity and greater involvement by their base of followers.

## 6. LIMITATIONS AND FUTURE RESEARCH

There are several limitations regarding this research study. Firstly, one of the eliminatory questions that wouldn't allow for respondents to continue to next questions was whether the respondent was active or passive social media user.

If the respondents chose the passive option, then they wouldn't be allowed to continue with the questionnaire. Future research may include the option for respondents to choose whether they are active or passive users and either way to continue with the questionnaire so that an analysis to determine whether there are differences in perceptions regarding influence of involvement and perceived trust on customer's brand awareness based on the type of social media users i.e. active/passive can be conducted. This gives the opportunity for the future researcher to make comparison based on the type of social media usage. Secondly, although large enough to conduct statistical analysis, yet the sample size could be improved. Thirdly, since the results from this research indicate that perceived trust in Instagram influencer's brand related content doesn't affect customer's brand awareness future research may examine whether perceived trust actually affects customer's behavioral intention i.e. purchase intention and include additional factors that may affect customer's brand awareness.

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## THE EFFECTS AND PERSPECTIVES OF CREATIVE INDUSTRY ON TOURISM CONSUMPTION

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### ABSTRACT

*In modern tourism, much emphasis is placed on providing an authentic experience for the modern tourist. In response to this need, there is creative tourism, whose main purpose is to provide a new experience, participation and learning through creative activities to acquire new knowledge and skills specific to a certain area. Creative tourism is an extremely important form of tourism for the future, which, among other things, takes cultural tourism to a new level. The synergy between creative industry and tourism develops a platform and direct link with various industrial sectors, creating overlapping areas of economic activity that stimulate competitiveness, growth, and innovation. This additionally raises the question, "What is the actual tourism consumption in creative tourism?", which is also the subject of research in this paper. The purpose and aim of this research are to analyze and evaluate tourism consumption in creative tourism based on relevant available data and indicators for selected EU countries on a theoretical basis and on a practical example. In addition to the presented literature in the field of research, a cross-sectional and statistical analysis was conducted, employing the available data in the fields of tourism consumption and creative tourism. Creative tourism has considerable potential for development to achieve the goals of sustainable tourism development. The development of such innovative tourism products will lead to the introduction of tourism products with higher added value, which will have a positive impact on increasing tourism consumption, taking into account other sustainable development criteria (social and environmental). In order to have a more efficient and effective policy towards creative tourism, it is necessary to improve the methodology of monitoring, reporting and control of data in this area. The paper underlines the importance of creative tourism and creative industries for overall economic development and emphasizes the need for further theoretical and applied research in this area.*

**Keywords:** *creative industry, creative tourism, tourism consumption, economic development competitiveness*

### 1. INTRODUCTION

Tourism as one of the major drivers of economic development globally, is on its turning point. Over the past decade, tourism has proven to be a phenomenon resistant to economic changes year after year. The exceptions are the years 2021 and 2020, which point significant losses due to the economic crisis caused by the COVID 19 pandemic.

Based on the WTTO (2021) data, the total contribution of tourism and travel to GDP in 2020 was 5.5%, which is 4.9% less than in the previous year of 2019. In 2020, 272 million jobs were created, and every eleventh job was related to tourism. In the same year, 62 million fewer jobs were created than in the previous year of 2019, with one in ten jobs related to tourism. In 2019, one in four jobs was created by tourism and travel, while in 2020, there was an 18.5% decrease in jobs. When it comes to the impact of tourism on the movement of tourism consumption in the world for 2019 and 2020, tourism consumers in the world spent the most on travel for leisure and recreation in 2020 (82.6%), while business consumption is only 17.4%. A similar indicator was recorded in the previous year. The consumption of domestic tourists is higher than the consumption of foreign tourists in both observed years, which was expected given worldwide situation. In 2020, domestic tourist consumption accounted for 82% of the total consumption structure, 10.3% higher than in the previous year 2019, while foreign tourist consumption in the same year amounted to 18% of the total consumption structure, 10.3% lower than in the previous year. This shows a clear trend of increasing domestic tourism and tourism consumption of domestic tourists in the country. As mentioned above, the general question posed by the current pandemic calls for new solutions and sustainable development strategies that would quickly adapt to current market needs. The development of modern tourism is focused on an individual approach and meeting the specific needs of modern tourists. As pointed out by Ohridska – Olson & Ivanov (2010) one of the major issues in tourism consumptions, including creative tourism, is the authenticity of the experience. Today, tourism directly affects the creative sector as a source of innovation and transformation. It is also promoted as one of the major drivers of creative economy globally (UNWTO, 2015). Considering the direct impact that creative industries have on tourism and the economy by being a source of income and job creation, contributing to national GDP, and increasing opportunities for tourism, several economies in the world are striving to explore the potential that lies in the promising mutual harmony. Creative industries are directly contributing to jobs and growth in the tourism industry and becoming catalysts for local and regional development (Sandell & Skarveli, 2016; OECD 2014). Future models raised through creative tourism, as a tool and component of the creative economy, can promote further diversification and enhance the competitiveness of national economies. In line with the current global scene, creative tourism and the development of creative tourism models can be considered the new backbone for the development of sustainable tourism (Mikulić and Jelušić, 2021; Richards, 2018; Ohridska-Olson & Ivanov, 2010). It is a new tourism concept that can be considered as a form of consumption aimed at the individual development of human potential according to tourists' preferences. In literature, authors often consider creative tourism as an experiential aspect of cultural tourism. This actually means that they equate these two terms, i.e., consider them synonymous, precisely because they define cultural tourism itself according to the tourist base, experience, motivation and from the operational point of view. This is not entirely wrong, because the experiential definition of cultural tourism focuses on prioritizing experiences, connecting and interacting with the local community by learning some traditional knowledge and skills specific to a certain area, and cultural exchange. Creative tourism thus complements cultural tourism, thus considered complementary phenomena (Richards and Raymond, 2000; Ohridska-Olson, 2010). Encouraging the development of creative economy and thus creative tourism, diversifies and directs the tourism product into a high-value product. This orientation changes a product that creates regional diversification, reduces seasonality, and focuses on new modern tourism trends that aim to promote the quality of life of all stakeholders. Promoting creative economy and directing tourism spending towards the creative dimension has the primary effect of reducing seasonality and results in a higher value-added tourism product - one that could achieve a higher value and ultimate price.

*“The growing symbiosis between tourism and creativity means tourism benefits from added symbolic value generated by creativity, and the creative economy benefits from greater tourist activity”*

*(Richards, 2020;2)*

The paper provides a theoretical insight into the field of creative industry and within creative tourism and its contribution to tourism consumption and economic development. Considering the growing importance of the creative industry for the further development of tourism in each country, a review section of the article examines recent literature on this topic and attempts to identify some of the future trends in this field. The first part of this review focuses on different creative tourism perspectives and its importance for all stakeholders and the economy in general. The second part of the review focuses on tourism consumption of creative tourism by reflecting on creative industries as a key dimension of the future economy towards sustainable development and growth. Based on the above, the following question arises: what is the actual consumption of tourists in creative tourism? Since data on tourism consumption in general cannot be monitored accurately, and thus cannot be used to analyze the impact of creative tourism on tourism consumption, certain assumptions and estimates are made. This means that creative tourism as a phenomenon of the new age is not expressed in tourism consumption, but it is possible to observe it using data on tourism consumption in cultural tourism. Moreover, various authors in the field of creative tourism assume that the concept of creative tourism is much broader than the concept of cultural tourism and has a positive impact on increasing the competitiveness of destinations and countries. Further along this research, as an empirical element, tourism consumption in the framework of creative tourism will be analyzed based on the available data and indicators, focusing on tourism indicators, indicators of internal tourism consumption and tourism consumption of cultural tourism, as well as indicators of competitiveness in the cultural resources segment for the selected EU countries.

## **2. LITERATURE REVIEW**

The concept of creative economy is relatively new, but constantly evolving. The first definition of creative economy dates back to 1994, when it was defined as "industries that have their origin in the individual's creativity, skills and talent, and that show potential for wealth and job creation through the generation and exploitation of intellectual property" (DCMS, 2001:5). As the concept of creative industries is not a self-sufficient dimension, interaction with other sectors leads to an increase in competitiveness and local and regional development. Any modern economy has a high level of competitiveness in all dimensions, including tourism. The creative economy and tourism are two sectors that create new dimensions and influence creative tourism (OECD, 2014) as a specific form of tourism.

*“Creative tourism is a convergence of tourism and the creative economy generating “knowledge based creative activities that link producers, consumers and places by utilizing technology, talent or skill to generate meaningful intangible cultural products, creative content and experiences” OECD (2014;14)*

According to UNESCO (2006:2), creative tourism is one of the most important strategies for achieving sustainability in tourism, including local communities, and defines it as "a journey that focuses on an engaging and authentic experience, with participatory learning through art, heritage or special place features, and that allows you to connect with those who live in the place and shape its culture of life." Creative tourism is now seen as the ideal solution to the challenges of mass cultural tourism precisely because it responds innovatively to the needs of

cultural tourism destinations seeking to diversify, popularize and generate, using the existing resource base to enhance appeal and attract the attention of the mass of developed destinations (Richards & Wilson, 2006). One of the current trends in creative tourism today is certainly the unleashing of the potential of people and places (Richards, 2015). These are, of course, already identifiable features of creative tourism that lead to greater benefits for both tourists and local communities. Creative tourism becomes a way of life (Richards, 2018). For the modern tourist, the most attractive aspects of cultural and creative destinations are those that exude a positive atmosphere, focus on gastronomy and where multiculturalism prevails with an emphasis on linguistic diversity. Creative tourism focuses on the intangible part of cultural values, also called the intangible cultural heritage of a region. It focuses on experience, adventure and authenticity, from which its basic characteristics are derived. The characteristics of creative tourism are therefore the following (Richards, 2002; Richards and Wilson, 2007; Richards, 2013; OECD, 2014):

- transforms traditional cultural and artistic activities,
- transforms the cultural industries,
- transforms cultural-historical and natural heritage into an attractive tourist product,
- focuses on the personal development of creative tourists,
- focuses on the experience,
- involves tourists in creative activities (workshops, courses),
- a new perspective and approach to culture - the transition from static to dynamic,
- structure of clusters and networks to create a favorable environment for further development.

Creative tourism promotes sustainable development and sustainable use of space, focusing on a balance between the environmental, economic, and social aspects of the destination. In essence, it is about making a profit, preserving the environment, and ensuring a satisfactory level of life quality (Richards, 2020). Creative tourists are now considered a new generation of tourists and their characteristics compared to the conventional tourists (ones encountered so far) are the following: a) they are more qualified; b) polycentric (belong to a variety of social communities); c) prosumers (produce valuable content and experiences themselves); d) seek greater interactivity (Hanifl, 2015). Negative aspects and existing problems caused by the development of creative tourism in the destination mainly result from insufficient participation of the local community in the implementation of creative tourism, as well as from inadequate planning. Oversaturated destinations generally turn to the development of creative tourism as it primarily advocates economic, socio-cultural and environmental equality. To balance this phenomenon in the long run, time and proper destination management are needed.

### **3. TOURISM CONSUMPTION AND CREATIVE TOURISM**

Tourist expenditure is a dimension expressed and monitored in tourism by various models and indicators. The most used secondary data are tourism receipts and expenditures, which are derived from balance of payments data, domestic and inbound tourism expenditures. Tourism consumption according to the OECD and WTTC methodology Tourism Satellite Account (TSA) is expressed by the indicator Internal Tourism Consumption and consists of two components: domestic and inbound tourism consumption. The share of domestic tourism consumption is dominant and the average value in OECD countries is 75%. It is legal that large world tourism markets with a high standard of living (high GDP per capita) are above the average share of domestic tourism consumption, while in smaller and less developed tourism markets the share of domestic tourism consumption is significantly lower: Czech Republic (2017-42%), Estonia (2014-12%), Hungary (2017-31%), Iceland (2017-26%), Lithuania (2017-40%), Poland (2015-37%), Portugal (2017-31%), Slovenia 2017-30%) (OECD, 2020: 26).

In the structure of tourism consumption by product, other services account for the largest share in 2018 (33%), followed by passenger transport (21%), accommodation (19%) and food services (16%), while travel agencies account for the smallest share with only 4%. The phenomenon relevant to the insight into the importance of cultural and creative industries relates to the indicator of cultural, sports and leisure products with an overall share of 7% in the structure of tourism consumption by product. Although this is a relatively small share of total tourism consumption, the fact that culture appears as a separate component in the statistics is extremely important and shows the relevance of cultural tourism in tourism consumption as one of the crucial aspects to observe. The consumption of creative tourism is not expressed in tourism statistics, but it can be observed through the consumption of cultural tourism. Under the aspect of cultural tourism and thus creative tourism, cultural services stand out from the characteristics of tourism consumption products. Based on the above parameters, it is possible to observe the consumption of cultural and creative tourism, which is considered as an evolution of the familiar cultural tourism. According to the statistics of the OECD organization, the tourism consumption of cultural tourism and, consequently, of creative tourism can be estimated based on the following indicators (OECD, 2020):

- 1) the share of enterprises in the cultural industry in relation to the total number of tourism enterprises;
- 2) the share of employment in the cultural industry in relation to total tourism employment; and
- 3) the share of tourism consumption of cultural services in relation to total domestic, inbound and international tourism consumption.

### 3.1. Cultural and creative industry enterprises for selected EU countries

One of the most important indicators of tourism consumption and competitiveness of creative industries is the share of cultural enterprises in relation to the volume of tourism enterprises operating in the country.

Selected EU countries	Year	Number of establishments in tourism industries	Structure (%)	Number of establishments in cultural industry	Structure (%)	Share of cultural industry enterprises in tourism industries enterprises (%)
Austria	2017	87 973	5,16	21 589	10,00	24,54
Denmark	2017	22 755	1,33	1 034	0,48	4,54
Finland	2017	32 216	1,89	3 460	1,60	10,74
France	2017	298 414	17,49	780	0,36	0,26
Hungary	2018	185 963	10,90	44 056	20,40	23,69
Ireland	2017	46 132	2,70	10 292	4,77	22,31
Latvia	2017	15 890	0,93	1 944	0,90	12,23
Lithuania	2017	18 301	1,07	671	0,31	3,67
Malta	2017	6 828	0,40	1 296	0,60	18,98
Netherlands	2018	180 860	10,60	80 920	37,47	44,74
Romania	2017	46 112	2,70	1 401	0,65	3,04
Slovakia	2016	28 578	1,68	1 589	0,74	5,56
Slovenia	2018	28 092	1,65	6 128	2,84	21,81
Spain	2018	707 689	41,49	40 812	18,90	5,77
<b>TOTAL</b>		<b>1705803</b>	<b>100</b>	<b>215972</b>	<b>100</b>	

*Table 1: Share of enterprises in cultural and creative industries for selected EU countries (Source: authors elaboration; OECD. (2020). OECD Tourism Trends and Policies 2020. OECD Publishing, Paris.)*

According to the share of enterprises in cultural and creative industries for selected EU countries the following conclusions emerge:

- Spain has the most enterprises in the tourism sector among the observed countries, with a share of 41.49% in the total structure and it is the most developed country in terms of tourism. Malta has the least tourism enterprises with a share of only 0.40 in the observed OECD countries.
- When it comes to the structure of companies in cultural industries, the Netherlands has the largest number of companies related to culture and causally to the creative industries, with a share of 37.47%, followed by Hungary with a share of 20.40% and Spain with a share of 18.90% in the structure of cultural companies in the 14 observed OECD countries. These indicators confirm the fact that these are countries with a rich cultural heritage that continuously promote the development of cultural and creative tourism as one of the main selective forms of tourism in the country, which is reflected in the number of cultural enterprises.
- The largest share of cultural enterprises in the total number of tourism enterprises of selected countries is in the Netherlands with a share of 44.74%, followed by Austria with a share of 24.54%, Hungary with a share of 23.69%, Ireland with a share of 22.31% and Slovenia with a share of 21.81% of cultural enterprises in the total tourism enterprises of the country. It can be concluded that prominent countries are known for developing and implementing creative tourism models to enhance the attractiveness of the existing tangible and intangible cultural heritage, thus moving into a new concept of tourism of the future. Spain, for example, belongs to this group, although cultural and creative tourism is not yet the dominant form of tourism in this country. For this reason, the share of cultural enterprises in the total tourism enterprises in the structure is only 5.77%. France has the lowest share of cultural enterprises in tourism enterprises, with a share of only 0.26%, even though France is known as a country of cultural tourism. For many EU countries, including Croatia, there is a lack of data on the number of businesses in the cultural industries sector, which prevents comparability and inclusion in this analysis, as well as the possibility of benchmarking.

### **3.2. Employment in cultural and creative industries for selected EU countries**

The importance of tourism consumption of creative tourism can be assessed by the share of employment in cultural and thus creative industries. Employment data largely follows the trend in the number of establishments. According to the share of employees in cultural and creative industries for selected EU member countries, for 2018 or the last available year, the following conclusions emerge (OECD,2020):

- Spain has the largest number of employees in tourism in the observed countries in 2018, with a share of 31.26% of the total structure. Spain is followed by Italy with a share of 23.45% (2015 data) and France (2018 data) with a share of 16.41% in the structure of tourism employees in the observed EU countries. This data is to be expected as they are the most developed tourism countries in Europe and the world. Malta has the lowest number of employees in tourism in 2017, with a share of only 0.40% in the total structure, followed by Lithuania, Slovenia, and Latvia, each with a share of less than 1%.
- When it comes to the structure of employment in the cultural industries, the largest number of people employed in activities related to culture and causally to the creative industries in 2015 is Italy, with a share of 26.86%, followed by Spain, with a share of 24.92% in the structure. These indicators confirm the fact that we are talking about tourism-developed countries with a rich cultural heritage, which recognize the importance of their own resources and continuously develop cultural tourism as one of the important specific forms of tourism for the improvement of the country.

Among the observed countries, Finland has the lowest number of employees in cultural industries in 2017 with a share of 1.15%, followed by Slovenia in 2018 with a share of 1.81% and Malta according to the 2018 data with a share of 1.93% of employees in the structure of cultural industries in relation to the observed EU countries.

- Malta has the largest share of employees in culture in relation to total employment in tourism in 2018 with a share of 26.24%, followed by Latvia with a share of 14.92% and Slovenia with a share of 12.03% of employees in culture in relation to total employment in tourism in the country. The indicators identified are so high because, in this case, these are countries that have a relatively low total employment in tourism. France has the lowest share of cultural employment in relation to total tourism employment in 2017, with a share of only 0.95%. This indicator arises in response to the extremely high total employment in tourism, but also in other sectors and industries. As France is often associated with cultural tourism, it is reasonable to conclude that it has extremely low employment in businesses closely linked to culture and creativity.

### 3.3. Tourism consumption in the cultural and creative industries for selected EU countries

Cultural and creative tourism consumption can also be observed in terms of cultural services within tourism consumption of consumer products. It can be concluded that one of the key indicators for monitoring tourism consumption and competitiveness of creative industries is the share of tourism consumption of cultural services in relation to the volume of tourism consumption of consumer products in the country.

Selected EU countries	Year	Consumption products (million EUR)	Structure (%)	Cultural services (million EUR)	Structure (%)	Share of cultural services consumption in consumption products (%)
Austria	2017	40 147	8,91	1 919	18,18	4,78
Bulgaria	2016	4 483	1,00	392	3,71	8,74
Croatia	2016	10 441	2,32	751	7,11	7,19
Czech Republic	2017	11 347	2,52	437	4,14	3,85
Estonia	2014	2 007	0,45	55	0,52	2,74
Finland	2016	13 694	3,04	279	2,64	2,04
France	2018	165 070	36,65	2 625	24,87	1,59
Hungary	2017	5 642	1,25	177	1,68	3,13
Ireland	2007	6 779	1,51	406	3,85	5,99
Italy	2015	146 334	32,49	1 357	12,85	0,93
Lithuania	2017	2 165	0,48	59	0,56	2,73
Malta	2010	1 150	0,26	13	0,12	1,13
Romania	2017	3 860	0,86	40	0,38	1,04
Slovenia	2017	4 269	0,95	118	1,12	2,76
Sweden	2018	33 043	7,34	1 929	18,27	5,84
<b>TOTAL</b>		<b>450 431</b>	<b>100</b>	<b>10 557</b>	<b>100</b>	

Table 2: Share of cultural services consumption in consumption products for selected EU countries

(Source: authors elaboration; OECD. (2020). OECD Tourism Trends and Policies 2020. OECD Publishing, Paris.)

According to the share of internal tourism consumption of cultural and creative services, the following conclusions emerge:

- France has the highest tourism internal consumption of consumer goods relative to all observed countries in 2018 with a share of 36,65% in the total structure, followed by Italy according to the 2015 data, with a share of 32.49% in the structure of the 15 observed countries. According to the 2010 data, Malta has the lowest value of all observed countries with a share of only 0.26% in the total structure of internal tourism consumption of consumer products. Croatia ranks 7th with a share of 2.32% in the total structure of internal tourist consumption of consumer goods (2016 data).
- When it comes to the internal consumption of cultural services in the observed countries, it can be noted that according to the 2018 data, France has reached the highest value with a share of 24.87% in the total structure compared to the other observed countries. France is followed by Sweden with a share of 18.27% in the total structure in the same year and Austria with a share of 18.18% in the structure according to the 2017 data. The Scandinavian countries and Austria are already recognized as culturally and creatively developed countries in the tourism sector, while France is recognizable and competitive in the cultural tourism segment. These indicators therefore confirm the fact that these are countries that rely on their own cultural and creative resources to promote and develop tourism in this direction. According to the 2010 data, Malta has the lowest internal tourism consumption of cultural products among the observed countries, with only 0.12% of the total structure. Croatia, according to the 2016 data, ranks 5th with a share of 7.11% in the structure of internal tourism consumption of cultural products, which is a positive indicator that recognizes the importance of cultural tourism in the country, given the existing great potential for the concrete development of the concept of creative tourism. This indicator suggests that the of tourists' interests are changing and are directed towards other forms of tourism rather than traditional holidays. The share of tourist consumption of cultural services consumer goods is extremely low for all observed countries. This data suggests that other segments of internal tourism consumption such as accommodation, food and beverages, transportation, sports and recreation, are more represented.
- Bulgaria has the largest share of internal tourism consumption of cultural service consumer goods with 8.74% share according to the 2016 data, while Croatia is in second place with 7.19% share in the same year. This data is extremely favorable for the Republic of Croatia if we look at the overall picture in relation to the total 15 EU countries observed. According to the 2015 data, Italy has the lowest share of internal tourist spending on cultural services. This is only 0.93% of the share of tourist consumption in culture in total domestic tourist consumption of consumer goods. This indicates that other segments of internal tourist consumption in Italy are much more dominant in relation to culture, despite the strong development of cultural tourism in the country.

### **3.4. Tourism competitiveness and creative tourism**

Competitiveness in tourism is essentially one of the most important priorities of tourism policy and tourism development in all countries. A higher level of competitiveness causally leads to a higher attractiveness of an individual country and thus contributes to an increase in tourism spending. The Travel and Tourism Competitiveness Index (TTCI) is a composite index with 4 pillars. The 4th subindex Natural and cultural resources includes 2 pillars: I) Natural resources and II) Cultural resources and business travel each with 5 indicators (WEF, 2019). According to the WEF, TTCI Spain, France and Germany have the best performance in the tourism and travel index compared to the 140 countries monitored. Regarding the competitiveness of cultural resources and business travel index, China leads with the highest score, followed by France and Spain.



This is a good indicator, because it confirms the importance of cultural and creative industries for the overall competitiveness of tourism and travel. The countries that score best in the area of cultural resources tend also to be the most competitive in the area of the general tourism and travel index.

<b>T&amp;T Competitiveness Index 2019 (1-7)</b>			<b>Index Cultural Resources &amp; Business Travel (1-7)</b>		
1.	Spain	5,4	1.	China	7,0
2.	France	5,4	2.	France	6,8
3.	Germany	5,4	3.	Spain	6,7
4.	Japan	5,4	4.	Italy	6,5
5.	United States	5,3	5.	Japan	6,5
6.	United Kingdom	5,2	6.	Germany	6,5
7.	Australia	5,1	7.	United Kingdom	5,6
8.	Italy	5,1	8.	India	5,5
9.	Canada	5,1	9.	Brazil	5,4
10.	Switzerland	5,0	10.	Mexico	5,3
27.	Croatia	4,5	32.	Croatia	2,8

*Table 3: Top 10 Travel & Tourism Competitiveness Index 2019 Rankings  
(Source: WEF. (2019.) Travel & Tourism Competitiveness Report 2019.)*

### 3.5. Correlation between tourism consumption and creative tourism

Competitiveness in cultural resources and business travel for selected countries of the world can be analyzed by determining the correlation, i.e., the relationship between the cultural resources and certain tourism indicators. The assumption is that a higher level of competitiveness of cultural resources consequently influences the attraction of larger tourist flows, i.e., a larger number of arrivals of cultural and creative tourists and an increase in total internal tourism consumption of both cultural and creative tourism and tourism in general. The interdependence of these phenomena can be determined by correlation analysis.

	<b>Countries</b>	<b>Internal tourism consumption (in billions US \$)</b>	<b>Cultural Resources and Business Travel Index</b>
1.	USA	<b>1 105,2</b>	4,7
2.	China	955,6	<b>7,0</b>
3.	Germany	382,6	6,5
4.	Japan	261,0	6,5
5.	India	253,1	5,5
6.	UK	246,0	5,6
7.	Italy	215,5	6,5
8.	France	211,7	6,8
9.	Mexico	167,2	5,3
10.	Spain	156,0	6,7

*Table 4: Top 10 destinations in the world according to the internal tourism consumption and the Cultural resources and business travel Index for 2019  
(Source: authors elaboration (Data: Knoema. (2021). International tourism number of arrivals. WEF. (2019.) Travel & Tourism Competitiveness Report 2019.))*

Based on the data, it can be concluded that China has the highest Cultural resources and business travel competitiveness index, followed by Spain, Italy, Japan and Germany.

In the last place, according to the competitiveness of cultural resources and business travel with an index of 4.7 is held by the United States, while the performance of other countries has a score above 5, which is a very favorable indicator. Based on the attached data, the correlation analysis of the observed coefficients is presented below to provide insight into the relationship and interdependence of the observed phenomena.

Variance Inflation Factors				
Minimum possible value = 1.0				
Values > 10.0 may indicate a collinearity problem				
Unutarnja_tur_potrosnja			1,057	
Indeks_kult_resursa_i_posl_puto			1,057	
VIF(j) = 1/(1 - R(j)^2), where R(j) is the multiple correlation coefficient between variable j and the other independent variables				
Belsley-Kuh-Welsch collinearity diagnostics:				
variance proportions				
lambda	cond	const	Unutarnj~	Indeks_k~
2,682	1,000	0,002	0,041	0,002
0,311	2,935	0,005	0,866	0,007
0,006	20,399	0,994	0,092	0,991

Figure 1: Correlation analysis of the dependence of internal tourism consumption and Cultural resources and business travel index for the top 10 destinations by realized internal tourism consumption for 2019.  
(Source: authors elaboration)

Using the data from the Gretl computer support, it can be determined that the VIF, the variance factor, is 1.057. The coefficient given is less than 10, from which it is concluded that there is no collinearity, that is, there is no problem of multicollinearity. The correlation analysis confirmed the existence of a moderate or moderately strong relationship between realized domestic tourist consumption and the index of cultural resources and business travel for the top 10 tourism countries in the world by realized domestic tourist consumption. From the analysis of the data, it can be concluded that the competitiveness of cultural and creative tourism is influenced by domestic tourism consumption. Therefore, such a positive medium-strong correlation between tourism consumption and culture can greatly promote the competitive development of creative tourism as a new form of cultural tourism for the observed countries.

#### 4. CONCLUSIVE REMARKS

Creative tourism as a new aspect of cultural tourism is attracting the interest of countries and organizations in the field of tourism around the world. It is also referred to as tourism of the future and it is one of the modern tourism trends of today. When it comes to tourism consumption, the focus in this case is on internal tourism consumption, which is the sum of domestic and inbound tourism consumption in a country. Considering the recognized problem of monitoring tourism consumption in the field of creative tourism, a set of indicators based on consumption in the field of cultural tourism was created, from which certain conclusions were drawn. The research conducted on the basis of the selected indicators confirmed the assumptions made. Through the analysis of available secondary data and the application of statistical analysis methods, the set objectives were achieved, and new knowledge was gained from the observation of tourism consumption in creative tourism. Based on the conducted research, it can be confirmed that the selected indicators share of enterprises and share of employment in cultural and creative industries, as well as the share of tourism consumption of

cultural services consumer goods influence the overall tourism consumption of the observed EU countries. The analysis shows that the share of cultural and creative tourism enterprises in the total structure of enterprises does not depend on the number of total tourism enterprises in the country, but on the market segment targeted by each country – in this case, culture and creativity. The same was found for the employment indicators in the total cultural and creative industries in relation to the total number of tourism employees in the countries. As for the indicator of the share of internal tourism consumption of cultural services in total internal tourism consumption, it is extremely low for all observed countries, which means that other segments of tourism consumption are more represented than cultural services. This is a realistic result considering that accommodation, food, drink and transport always account for the largest share of tourism expenditure in the structure. Thus, it is concluded that there is a need to develop a plan and strategy to increase the competitiveness of cultural and creative tourism in the country and attract segments of cultural and creative tourists, which would have a positive impact on increasing the overall tourism expenditure in the future. The development of creative tourism is of great importance for the Republic of Croatia to reduce the pressure on the saturation of the coastal area and the impact of seasonality with the recognized potential of the interior for the development of this selective form of tourism. If the concept of creative tourism is implemented with proper branding and a diverse creative offer, there is a high probability of attracting a larger number of cultural tourists, but also creative tourists as a new market segment. This research points out research gaps and raises some new questions and aspects of research related to the concept of creative economy and creative tourism and their impact on tourism consumption.

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## UTILIZING NARRATIVE DESIGN IN E-COMMERCE CAMPAIGNS

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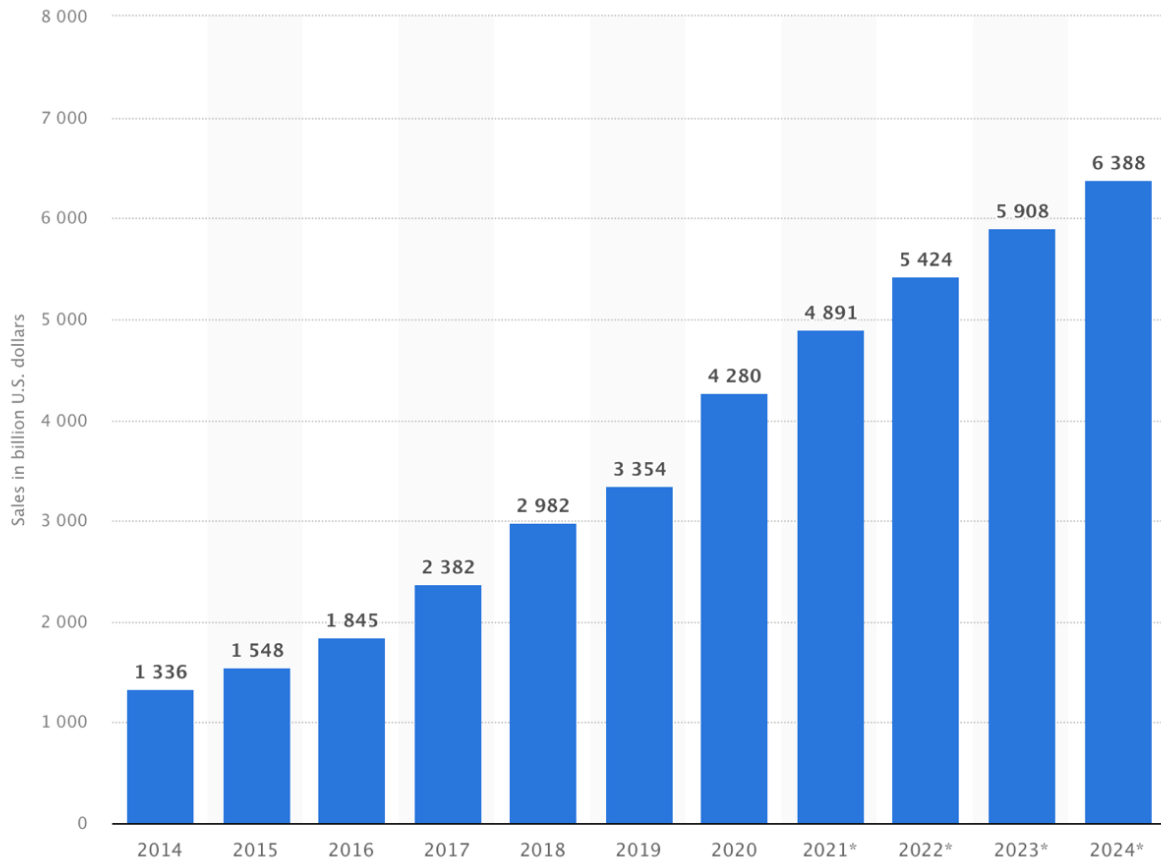
### ABSTRACT

*The paper reseaches new and innovative methods for improving existing e-commerce and marketing strategies. As more businesses start their digital transformation during pandemic times, most efforts begin with the focus on marketing and e-commerce processes. This accelerated movement has created the opportunity to reach new potential consumers through new channels, so companies are focused on differentiating their offers on the market. Throughout the past years, there is extensive research on modeling an e-commerce and marketing strategy around product positioning (with the goal of giving the viewer context on how the product/service works and its intended benefits) versus modeling around narrative design (based around the creation of story-driven ads, placing the viewers in the middle and driving them through the sales funnel). The paper focuses on researching the effectiveness of product positioning, narrative design and interactive narrative design, as potential methods for the e-commerce landscape, through empirical research, secondary data and existing case studies on the topic. Data from the research shows that narrative design is dependent on a proper implementation to ensure its maximum potential, which can be followed as a model by companies.*

**Keywords:** *interactive narative design, product positioning, e-commerce, digital marketing transformation*

### 1. INTRODUCTION

With the emergence of e-commerce as an additional channel, companies are trying to innovate and improve their approach to target customers. Digital marketing can be defined as a set of profile processes that embrace the digital channels available to promote a product or service, or to build a digital brand (Minculete and Olar, 2018). Modern businesses utilize the benefits of digital marketing, which became even more apparent during the COVID-19 pandemic. Some of the main benefits of digital marketing include: geographical independence and global reach; lower costs; targeted ad campaigns and real-time feedback and statistics (Suleiman et al., 2020). As companies strive to integrate social media in the marketing mix, it becomes clear that due to digital presence on different types of channels, an integrated approach must be made for the communication strategy on a specific product or service to increase the e-commerce potential. Figure 1 shows the steady growth of e-commerce sales on a worldwide scales, with an expected increase of 10% on a year-to-year level, up until 2024, reaching 6.388 billion dollars.



*Figure 1: Retail e-commerce sales worldwide  
(Source: Statista, 2020)*

As companies evaluate their digital presence, they are introducing strategies to advertise online as either a secondary, primary or even sole channel in the integrated marketing communication mix. Trends in advertising demonstrate several factors that there is an ever-growing sense that traditional communication strategies such as product positioning are insufficient and inadequate for the new digital channels. Recent statistics show resistance to traditional digital advertising, with 70% of users ignoring paid search results, 72% of shopping cart abandonment and ad blocker usage rising more than 550% in the span of a single year on a global scale (Statista, 2021). Furthermore, as the most popular social network, Facebook has over 80 million business pages (focused on either organic or paid advertising) with a yearly increase of over 23% (eMarketer, 2018). In this sense, traditional product positioning is saturated as there is too much competition in the digital space. However, the changing digital landscape offers companies new types of interactions with consumers, as well as longer exposure times and multiple interactions. This enables companies to reimagine their core marketing communication strategies, based on specific campaigns targeted to different demographic groups. If past (traditional) marketing campaigns included billboards and TV ads with broad targeting, new digital campaigns can have personalized ads with variations in text/images/videos based on the demographic characteristics of the targeted consumer. Narrative design represents a relatively new concept in marketing communication strategies, with the goal of either being a complementary or replacement solution for product positioning. While the product position concept works on traditional media due to high buy-in costs, in the digital marketing space with lower entry costs, there is an oversaturation of the same marketing message that each product/service will serve the customer needs in the best way possible – making it repetitive and with minimal effect on the purchasing decision.

By introducing narrative design in e-commerce marketing campaigns, companies are able to utilizing existing ICT technologies and consumer data to deliver personalized experiences which are focused on the user, and not the product. This shift in focus enables. The paper is researching the use of both narrative design and interactive narrative design as a marketing communication strategy for generating e-commerce sales. The study is conducted by analyzing case studies on the topic at hand, with the main goal being to provide findings on the usefulness of these models both for the B2C and B2B sectors.

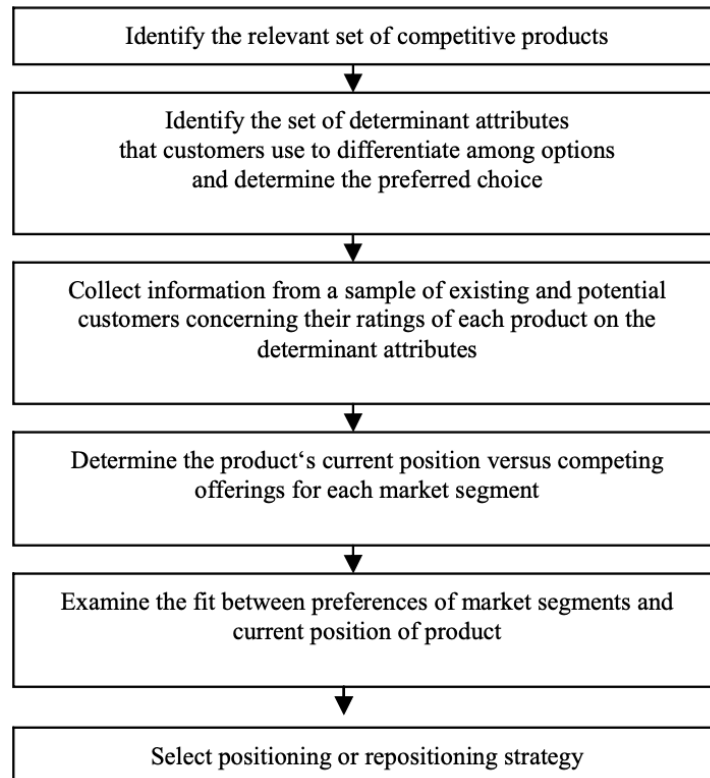
## **2. METHODOLOGY**

For the purposes of the paper, secondary data was used the research the topic. Literature review was used as the main method for obtaining secondary data, including theoretical and background data through books, scientific papers and articles. Empirical research was conducted using the exploratory method, which produced significant secondary data and a basis for establishing the research. Additional data in the paper is collected through the case study method on companies that have successfully implemented narrative design in the marketing communication strategy and IMC. The paper also uses the two basic methods, inductive and deductive, in formulating conclusions and recommendations. Furthermore, basic analytical methods are used, such as the method of analysis, the method of specialization (creating own views based on the read literature) and the method of deduction.

## **3. LITERATURE OVERVIEW**

Product positioning can be viewed as making a unique and favorable image in the minds of target consumers for the product or service (Bhat and Reddy, 1998). It involves several marketing activities (or steps) that compose the core of the promotion strategy, aimed to influence the customer decision process. Positioning is focused on a set of general areas, including: attributes, price/quality; competitors; application; product user and product class. The goal of product positioning is to establish the benefits of the product/service and position it as the best choice in the shortest amount of time, mostly due to the limitations (and non-interactivity) of traditional marketing channels. Specific product positioning steps can be seen in Figure 2 on the next page. As demonstrated in the figure, there are 6 steps involved in product positioning, of which the first 3 are focused on collecting data and relevant information, while the last 3 are focused on the strategy and activities to position the product on the market.

*Figure following on the next page*



*Figure 2: Product positioning steps*  
(Source: Hutt, 2004)

In the last step of product positioning, strategies are formed around the product features, price/quality balance, product class dissociation, user, competitors, benefits and heritage model (Kotler & Keller, 2007; Doyle & Stern 2006). The product positioning message is crafted after choosing one or more segments to feature in the communication mix, and then translated into ads in traditional and digital media. Ads are straightforward, focusing on the specific benefits that the product/service offers related to the chosen segments that are relevant for consumers. Narrative design represents an evolution of the concept, fully utilizing the benefits of digital marketing channels. From the marketing aspect there are several evolutions that led to the introduction of narrative design (Bonnin and Rodriguez, 2019). In the first evolution, brands transcended from being conveyor of benefits to purveyors of meaning and identity. This entails that product/service benefits are not isolated and there is higher meaning for consumers based on other related factors. The product can communicate a specific message outside the specific product positioning strategy that is chosen and communicated to consumers. In the second evolution, it was recognized that brand meaning is constructed by and negotiated by several stakeholders, meaning that consumers are only part of the decision-making in the purchasing process. Other relevant stakeholders have to be identified and made part of the foundation of market research, so messages can be also crafted to include them as well. The final evolution led to implementing a narrative approach to branding, though the usage of integrated marketing communication (IMC), with more specific focus on digital channels and especially social media (Diamond et al., 2009). Additional research shows that the introduction of a micronarrative construction is displaying promising results (Davis and Francis, 2014). This concept introduces different narrative stories under the same marketing strategy, in an advanced sales funnel which guide the consumer towards the purchasing decision. Instead of starting with the product, narrative design starts with the user and their wants, needs and challenges. The shift in focus enables companies to deviate from the established path of advertising for all their competitors



and have a more personal approach to consumers. In this manner, narrative design provides a framework for communication with the target consumer, which can be personalized based on the stage in the purchasing process/sales funnel, something that isn't available through traditional media, as well as only being partially present through product positioning strategies. The final stage of narrative design in marketing is based on interactive elements through IT tools. Interactive narrative design is based on a digital platform, where participation (interactivity) is required from the user to move the story forward (Koenitz et al., 2019). This new format is in experimental phases, with limited data available on its usability. However, the potential to involve users in crafting their own stories and personalize their experience has functioned well in other segments of ICT, leading researchers and business to believe in its untapped potential.

#### 4. DISCUSSION

The structure of Narrative design should be established to ensure efficiency of its implementation. Narrative design is introducing five elements that must be present to move the story forward and achieve the goals of IMC:

- **Character** – Depicted as the roles the users take. A single user typically takes up a single role, although through the narrative they can be transformed or asked to take up multiple roles to progress the story.
- **Setting** – The journey of the customer with specific focus on the stage they are in, based on the research done before designing the narrative. The setting is as narrow or expansive as needed for the purposes of the story, and is the environment that the character is already inhabiting.
- **Plot** – Introducing values, viewpoints and experiences of the user, as well as their wants and needs. This is based on the setting and characters involved, with the main goal being to create the rules of the narrative and its intended path, ultimately resulting in introducing the goal that the user wants to achieve.
- **Conflict** – The source of resistance to achieve the goal, i.e. the starting point of the narrative. Typically narratives begin defining the type of conflict/challenges/resistance the user is facing, where the foundation is laid to introduce the product in later phases.
- **Resolution** – how the product or service will overcome the resistance to achieve the goal. The user is the hero of the story up until this point, where the product/service is transformed into the hero that will solve the conflict and help the user to achieve their goals.

The structure of the elements is hierarchial, and if an element is missing, the user cannot completely finish the underlying path of the narrative design. Extensive market research should be present to provide the basis for the first two parts of the narrative design, involving the character and the setting. This is based on data available for the typical target user, which should be personalized so that the users can identify themselves. What differs from product positioning in this approach is the beginning segment. In product positioning, the focus is placed from the beginning on the product, conveying its benefits and finally what they would mean to the user. Narrative design takes a reverse approach, starting with the user and their wants and needs, working its way up to how the product finds its place in this specific settings. While production positioning focuses on the product, benefits and user, narrative design can function only with two of these elements – the product and the user. The benefits are transformed into goals that can be achieved with the product, giving it a sense of purpose (whether business or personal) for the end-user. In this manner, narrative design can escape from listing benefits in an oversaturated market space and ad placements, indirectly communicating them through the goals of the user that can be achieved.

#### 4.1. Hubspot case study

In the case of Hubspot (Andrews, 2020), there are two main reasons to move from product positioning to narrative design: innovative solutions and market saturation. Hubspot represents a B2B marketing service provider (focused on inbound marketing), founded in 2004 with the goal of offering different types of platforms and tools, based on newly available technologies<sup>1</sup>. The company has been successfully using narrative design strategies for over a decade (from 2011 through 2021). As shown in Figure 3, when first introduced on the market, the need that the Hubspot services fulfilled were very specific in the B2B sector, so classic product positioning can communicate the benefit, but not the problem it solves. This is due to the service and technologies being new on the market, creating the problem of understanding its true value and potential.



Figure 3: Product positioning steps  
(Source: Andrews, 2020)

The new approach to narrative design enabled the company to guide potential customers through several phases of the purchasing decision, while describing the setting for its' services. This approach started with defining the user of their services, and the challenges they faced on a daily bases. Only after the initial phases of the campaign, the solution was provided as a service from Hubspot. After the initial breakthrough, the competitor solutions to Hubspot services increased from 15 to 321 (growth of over 4500%) in the past ten years, which led to significant market saturation. This created the second problem in utilizing classic product positioning, as each of the competitors was focusing on the benefits of these types of services to a small set of B2B consumers, as it is a very targeted niche. This again required a new approach on IMC, which again focused on the benefits of narrative design. Through conveying the message through a micronarrative design, Hubspot has managed to stay relevant in a competitive marketplace for over 10 years.

<sup>1</sup> <https://www.hubspot.com/our-story>

## 5. CONCLUSION

Narrative design has a fundamentally different approach than product positioning, which can offer a unique benefit for companies in both B2B and B2C sectors. Figure 4 on shows the importance of cohesive narrative design, which should begin with the Brand story, implement elements from the Customer Story and drive through a consistent micronarrative messaging for the proposed solutions. These are the types of solutions which have been successfully implemented in narrative design models, including Hubspot as well with great success rates.

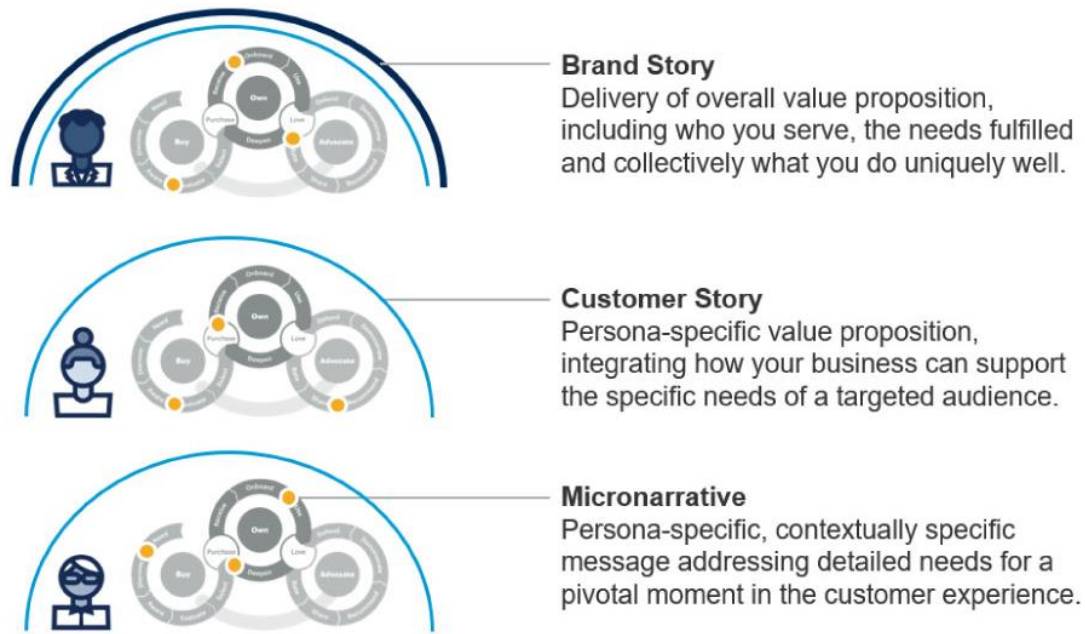


Figure 4: A nested view of Micronarratives  
(Source: Gartner; 2019)

This approach encompasses two different views in creating the story – the brand on one side and the customer on the other side. Both views have to be accounted during the creation of narrative design to ensure its proper implementation and effect. Customers wants and needs are crucial to begin crafting the story, while brand elements and product benefits are needed to make the selling point and influence the purchase decision.

The proposed benefits of narrative design in over product positioning include:

- A unique voice on the market that differentiate the company and products from the competitors. This includes creating a very specific backstory which isn't shared with alternatives on the market, making the company product offering unique
- Greater engagement with consumers through ad campaigns, as well as guidance through the sales funnel
- Real-time feedback on success rate of elements, as well as possibilities for split testing to craft the best stories
- Interactive elements, which can result in personalized experiences

The research shows the preliminary benefits in utilizing narrative design in the integrated marketing mix. It can be expanded through primary research on the topic in selected B2C and B2B channels, which can provide information also on potential drawback on the method. As limited data is available for Interactive narrative design, research can also be performed in this direction to provide preliminary findings on its usefulness in digital marketing channels.

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## RENEWABLE ENERGY POTENTIALS IN WESTERN BALKAN COUNTRIES: THE CASE OF SERBIA

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### ABSTRACT

*The main aim of this paper is to explore the renewable energy potentials and future development in Serbia as one of Western Balkan countries. Along with infrastructure and development of small and medium enterprises, the clean energy is a strategic goal for all Western Balkans. This study contributes to existing literature by exploring renewable energy in one transition environment, such as Western Balkans. Based on the previous studies focused on Western Balkans, the authors pointed Serbia as a case in point of this paper. The results showed the three alternative scenaria for Serbia 2030 regarding renewable energy share in total energy production. Limitations and future research agenda will be presented, too.*

**Keywords:** *strategy, renewable energy, scenario planning, Western Balkans, Serbia*

### 1. INTRODUCTION

In this paper, authors will analyzed the renewable energy potentials and investment strategies in Western Balkan countries. Western Balkan region includes following countries: Serbia, Montenegro, Bosnia and Hercegovina, Albania, and North Macedonia. Western Balkan region is chosen for three main reasons. First, Western Balkans have the highest energy intensities comparing with other European countries. Second, high potential for renewable energy production from water, wind, biomass, as well as geothermal energy. Third, the energy sector in Western Balkan region facing dual transition process. One is a transition to market economy, the other is the transition towards decarbonization. The key challenge in a region is achieving energy efficiency. In the process of region becoming green, the main investors are: Green for Growth Fund, Regional Energy Efficiency Programme, European Bank for Reconstruction and Development, European Investment Bank, and World Bank Group. In this paper main investment opportunities will be analyzed. It is important to emphase the role of China and Turkey in the Western Balkan energy market. In October 2020 European Comission adopted IPA III Financial Framework in amount of EUR 9 billion for the period 2021-2027 for Western Balkans. The Investment Plan in domain of renewable energy includes following projects: the expansuon of HPP Piva and the construction of HPP Komarnica in Montenegro, the rehabilitation of HPP Fierza and construction of HPP Skavica in Albania, wind park and solar power plant investments in North Macedonia. This Plan embodies transition from coal throught bulding gas pipeline and the Trans-Balkan Electricity Transmission Corridor in Serbia. The Energy Policy Survey, the first comprehensive review of energy policies and strategies in the Western Balkan region has published in 2008. The strategic priority in all Western Balkans is energy saving. The significant potentials in long term renewable energy in the region are the wind power and hydro investment. The positive and negative effects of both renewable energy sources will be presented in this chapter. Several barriers to development of renewable energy sources have been identified such as perception of high cost of renewable energy, slow and

unpredictable planning processes, and lack of experiences. This paper is structured as follows. Next section is devoted to review of previous studies in Europe, especial in Western Balkan countries. In third section, the authors will analyze previous state in Serbia regarding renewable energy potentials as well as strategies in the past. Then key factors in domain renewables will be presented, along with alternative scenaria for Serbia 2030. Final part is devoted to conclusions.

## 2. REVIEW OF PREVIOUS STUDIES IN EUROPE

The sustainable development is vision for decades for come. Mission is achieving energy efficiency. The main strategic goal are: pursuing CO<sub>2</sub> emission reduction by 4.6 gigatonnes in 2035 and scaled-up energy efficiency financing (from 177 billion USD in 2020 to 290 billion USD in 2035). To achieve energy efficiency, the behaviors of a milliard energy consumers i.e. households and enterprises have to change. In this process, following three groups of barriers have been identified (Resch et al., 2017):

- Financial and Economic Barriers i.e. Energy prices, Unfavorable or mal-functioning market structures, Insufficient finance available, Lack of financial Incentives/ Split incentives,
- Knowledge and Information Barriers i.e. Low awareness of the value of energy efficiency, Lack of information, education and training, Lack of energy efficiency technologies available, Lack of infrastructure, and
- Institutional and Organizational barrier, such as lack of policies, legal and regulatory frameworks and enforcement, Limited institutional capacity (both in public and private), Fragmentation in energy consumption (e.g. split among a diverse range of end-users and users), business models (i.e. focusing on either supply or demand side), and supply chains.

Regarding those barriers, transition and developing economies have their specific challenges such as weak Government structure, lack of legislation, lack of effective institutional arrangements and co-ordination mechanisms among relevant stakeholders, reconciling energy efficiency and other important political missions such as providing energy necessary for economic growth. Other significant factors include: lack of data that enables right decision-making, limited market attractiveness to investors due to smaller transaction scales, high transaction costs, and uncertain investment risks and returns. To implement the EU's key climate and energy policy objectives, a transition to a new energy system, where renewable energy sources are pushed and where new technologies need to be developed and adopted, becomes a priority. According to Soeiro and Dias (2020), the energy transition may result in deeper participation of citizens in community-based initiatives which may operate collectively in the energy market producing renewable energy. Their study revealed that the development of energy communities is not the same in all member state i.e. European Union members. Since 2008, various studies which focused on commnity renewable energy have been published (e.g. Walker & Devine-Wright, 2008; Yamamoto, 2016; Carlisle et al., 2009; Cejka et al., 2020; Denis & Parker, 2009; Kim et al., 2019; Carlisle et al., 2008; Young & Brans, 2017; McCabe et al., 2018; Bhattacharjee & Nandi, 2021). The authors of this study focus on Western Balkan countries.

### 2.1. Previous Western Balkans` studies

Since 2007, region of Western Balkan has been analyzed in various studies (Dunjic et al., 2016; Schneider et al., 2007; Lalic et al., 2011; Topalovic et al., 2021; Ralchev, 2012; Pavicevic et al., 2020; Karakosta et al., 2012; Golusin et al., 2013; Papapostolou et al., 2017). To strengthen regional cooperation and initiating sustainable growth, in 2014 Governments of aforementioned Western Balkan countries have been signed Contract entitled *Western Balkan 6 Initiative*, i.e. also known as the Berlin Process.

*Under the auspices of the Grant Contract “TA to Connectivity in the Western Balkans - Component 2: Regional Energy Market” between the European Commission and the Energy Community Secretariat, the Secretariat was defined as one of the implementing organisations of the ‘WB6’ initiative. The overall objective of the 24 months technical assistance project, CONNECTA, was to assist the Western Balkan governments to achieve their goal of a regional energy market. It was the Secretariat's task to facilitate the implementation of so-called “soft measures” that will remove existing legislative and regulatory barriers and enhance the institutional structures necessary for the functioning of this market in line with the Energy Community Treaty and relevant EU acquis <sup>1</sup>.*

In November 2015, the Secretariat began to publish annual monitoring reports regarding the progress made by Western Balkan countries. According the aforementioned source, until June 2021, 52 studies have been conducted, but the following studies explored renewable energy in Western Balkan countries:

- Study on biomass consumption for energy purposes in the Energy Community - February 2012
- Final report on sustainability criteria for biofuels - February 2015
- Assessing the implementation of Renewable Energy Action Plan - October 2015
- February 2017: Study on extending the Energy Community Treaty to include the rules on public procurement
- Assessment of the Progress in the Promotion and Use of Renewable Energy in the Energy Community - July 2017,
- August 2017: Study on examining the implementation of EU acquis on Value Added Tax in the Energy Community legal order,
- November 2017: Final Report on technical assistance to develop policy guidelines for the distribution network tariffs,
- June 2019: Study on 2030 overall targets for the Energy Community, and
- December 2019: Study on cybersecurity in the energy sector of the Energy Community.

The authors of a study "Assessing the implementation of Renewable Energy Action Plan" were predicted two distinct scenarios concerning the future development of energy demand in Western Balkans. In first scenario, Bosnia and Herzegovina, and Montenegro have been expected to reach the given 2020 target if energy demand will develop as planned according to the low demand case. Despite the expected increase in absolute terms, the second scenario has been assumed that Albania, FYR of Macedonia, Serbia and Ukraine would fail to achieve their 2020 RES targets. The main aim of the study entitled *Study on 2030 overall targets for the Energy Community* was to improve methodology as well as to assess the pathways for achieving calculated 2030 energy efficiency, RES and GHG emissions reduction targets (Resch, G. et al., 2019).

### 3. CASE STUDY-SERBIA

In domain of renewable strategy, two main perspectives have been identified by the authors of this study:

- 1) First, as a potential member of the European Union, Serbian Government needs to harmonized national legislative with Directive 2009/28/EC of the European Union. Then to propose and to implement measures that will enable to reach target such as more sustainable energy consumption. From this perspective, the goal or target is proposed by European Commission.

<sup>1</sup> Source: <https://www.energy-community.org/regionalinitiatives/WB6.html>



Strategy can be formulized by Serbian Government with assistance of EU authorities. It is worth to mention that the article 4 of Directive 2009/28/EC requires the adoption of a national renewable action plan (NREAP). This plan embodies national targets for the share of energy from renewable sources consumed in transport, electricity and heating and cooling in 2020 and adequate measures to be taken to achieve those national overall targets. In 2013, Ministry of Energy, Development and Environmental Protection of the Republic of Serbia proposed National Renewable Energy Action Plan of the Republic of Serbia, in accordance with the template foreseen in the Directive 2008/29/EC- Decision 2009/548/EC (See <https://www.energy-community.org/implementation/Serbia/reporting.html>). So far, four Progress Reports have been published in the year 2015, 2016, 2019, and 2020.

- 2) Second, thought Energy Community - Western Balkans 6 initiative also known as Berlin process. In 2014, the main purpose of the Summit was to support Governments of the Western Balkan to meet the conditions for EU accession. In order to implement the agreed agenda, the countries decided to meet each year in the same format. So far, the following meetings have been organized: 2015 Vienna Summit, 2016 Paris Summit, 2017 Trieste Summit, London Summit in 2018, and in 2019 Poznań Western Balkan Summit. The Leaders of the Western Balkan countries endorsed the joint “Statement on Clean Energy Transition in the Western Balkans” signed by the Western Balkans Ministers of Energy and of Environment in Podgorica on 21<sup>st</sup> February 2019.

In November 10<sup>th</sup> 2020, the leaders from Western Balkans assigned the Green Agenda that embodies five pillars (see <https://www.energy-community.org/regionalinitiatives/WB6.html>):

- 1) Climate, energy, mobility;
- 2) Circular economy;
- 3) Depollution;
- 4) Sustainable agriculture and food production;
- 5) Biodiversity.

In January 1<sup>st</sup> 2020, Renewable Energy Coordination Group established Work Programme 2019-2020 (see <https://www.energy-community.org/documents/WP.html>). In 2015, based on Eurostata data, key facts have been the followed (see [https://ec.europa.eu/energy/sites/default/files/documents/renewable\\_energy\\_in\\_the\\_western\\_balkans\\_6\\_ipf\\_interim\\_observations.pdf](https://ec.europa.eu/energy/sites/default/files/documents/renewable_energy_in_the_western_balkans_6_ipf_interim_observations.pdf)):

- " The current share of renewable energy of gross final energy consumption in the Western Balkans is 28%.
- The renewable energy mix almost exclusively consists of biomass and hydropower. Besides further increased use of biomass, significant growth is also expected in wind and solar power.
- There is a limited variance in the fundamental costs of renewable power generation across the Western Balkans. However, significant variations in resource availability exist within each country, and cost of capital is strongly influenced by differences in renewable energy support schemes and the overall political and economic situation in each country.
- An increased uptake of renewable energies is aggravated by regulated electricity prices for final consumers, which are substantially lower than current costs of electricity generation.
- Integration of renewable energies into the grid in the region will benefit from stronger interconnectivity. Recent and ongoing investments into national transmission networks and interconnectors will facilitate this development. Despite significant hydropower capacity in Albania and Bosnia and Herzegovina, integration may be limited by the continued use of old thermal plants with low efficiency and limited flexibility.



- Energy poverty and the widespread use of inefficient individual biomass installations for residential heating represents key barriers for increasing the efficiency of biomass usage in the heating sector. Throughout the region, more than 50% of current biomass use takes places in the building sector, often using traditional stoves. The transition to district heating plants or efficient biomass boilers in the buildings sector could lead to major savings, but still hampered by energy poverty and a limited availability of district heating in most countries.
- The renewable energy share in the transport sector in the Western Balkans Six is still rather small at present. With mobility expected to grow by 30%, biofuels and electrification."

### 3.1. Previous results from Serbia

Despite the fact that International Energy Agency published reports on annual base, only one study focused on Western Balkan countries (OECD/IEA, 2008). The results has been revealed that in domain of energy sector in Serbia, key issues have been the following (OECD/IEA, 2008):

- Lignite as Serbia's largest primary energy source,
- Crude oil and oil products,
- Natural gas,
- Electricity with the followed key challenges that is identified: Prices below costs; Insufficient maintenance, and Non-compliance to environmental performance standards at lignite plants,
- Heat with theathy areas ownership and regulatory responsibilities, low capacity utilisation as well as low efficiency and high costs, and
- Key challenges in domain of renewable energy was: statistics on fuelwood use, efficiency of wood heating stoves, energy poverty, deforestation, and low electricity prices.

The authors of the same study suggested to policy-makers in Serbia, the following measures in renewable energy exploitation (OECD/IEA, 2008):

- To adopt a comprehensive action plan for renewable energy;
- To identify market potential for renewable energy uses;
- To provide temporary, targeted support to industries that manufacture renewable energy equipment, particularly those manufacturing efficient solid fuel stoves;
- To reinforce actions against illegal logging;
- To develop a national reforestation programme, and
- To support efforts to improve statistics on fuelwood consumption.

In renewables and waste, International Energy Agency was analyzed followed key factors: electricity generation from biofuels, heat generation from renewables, hydroelectric, renewable share in finall energy consupction, solar electricity generation, and wind eletricity generation (*See* <https://www.iea.org/data-and-statistics/data-tables?country=SERBIA&en>).

Next part is devoted to analysis of these factors in the case of Serbia.

### 3.2. Key factors of renewables in Serbia

Data from International Energy Agency about the key factors of renewables in Serbia will be presented. Regarding renewables, data were gathering in followed categories: primary solid biofuels, biogases, liquid biofuels, geothermal, solar geothermal, hydro, solar PV, tide, wave ocean as well as energy generating from wind in GWh.

From these categories, following are presented in Serbian market:

- Primary solid biofuels,
- Biogases,
- Geothermal,
- Hydro,
- Solar PV, and
- Wind.

Also, metadata were gathering about gross electricity generation, gross heat production, production, imports, exports, stock changes, and domestic supply. In this paper, the authors briefly analyzed only primary solid biofuels in Serbia in the period 2015-2020 (*See* <https://www.iea.org/data-and-statistics/data-tables?country=SERBIA> ). It can be concluded the following:

- The gross electricity generation started in 2019;
- In the period 2015 to 2018, gross heat production slowly raise, until 2019 when reached 303 TJ;
- In the observed period, production of primary solid biofuels slowly raise as well as domestic supply;
- The large imports have been in 2017 (1.503 TJ-net comparing to 351 in 2015);
- Negative stock change evidenced in period 2018-2020 due to world pandemic situation.

### 3.3. Renewable energy scenaria for Serbia 2030

Based on meta-data from EUROSTAT and International Energy Agency i.e. results from 2018 when renewable energy propotion was 27%, the three alternative scenaria can be proposed (Resch, G. et al., 2019, p. 156-157).

#### SCENARIO I

Renewable energy share will be 36.8%, regarding realization the following propositions:

- If Gross domestic product per capita will be 3.5%;
- If Flat rate component will be 2.3%;
- If Potential component will be 2.0%, and
- If Interconnector component will be 2.1%.

#### SCENARIO II

Renewable energy share will be 37.9%, regarding realization the following propositions:

- If Gross domestic product per capita will be 3.5%;
- If Flat rate component will be 5.3%, and
- If Interconnector component will be 2.1%.

#### SCENARIO III

Renewable energy share will be 39%, if the main proposition is 12% Flat rate.

## 4. CONCLUSIONS

To achieve a vision - sustainable development, the mission is realized energy efficiency.

The main aim of this paper was to explore the renewable energy potentials and investment strategies in Serbia as one of Western Balkan countries. Along with infrastructure and development of small and medium enterprises, the clean energy is a strategic goal for all Western Balkans, including Serbia. This study contributes to existing literature by exploring renewable energy strategy in transition environment, expecially in Serbia.

The results based on previous studies showed that key challenges in domain of renewable energy have been: statistics on fuelwood use, efficiency of wood heating stoves, energy poverty, deforestation, and low electricity prices. Data from about the key factors of renewables in Serbia have been presented. Regarding renewables, International Energy Agency categorize data into following: primary solid biofuels, biogases, liquid biofuels, geothermal, solar geothermal, hydro, solar PV, tide, wave ocean as well as energy generating from wind in GWh. Also, metadata were gathering about gross electricity generation, gross heat production, production, imports, exports, stock changes, and domestic supply. Based on meta-data from EUROSTAT and International Energy Agency, i.e. results from 2018 when renewable energy propotion was 27%, the three alternative scenaria have been proposed for Serbia 2030 regarding renewable energy share in total energy production. First scenario embodied four components, and suggests renewable energy share of 36.8%. In second scenario renewable energy share will be 37.9%, regarding realization of three propositions. Third scenario is based on Flat rate, predicts 39% of renewable energy share. This case study has been embodied one country i.e. Serbia. Another limitation is qualitative method of research. Third limitation is available data for renewables in Serbian environment. Future study will compare results about renewables in other Western Balkan countries in order to formulize development strategy for this region.

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# ANALYSIS OF ACQUISITION SUCCESS IN TELECOMMUNICATIONS INDUSTRY OF THE REPUBLIC OF CROATIA

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## **ABSTRACT**

*M&A deals are complex transactions that represent the most significant investment a company can undertake. It is common to observe the acquisition success through the analysis of financial statements of the acquirer. This paper is utilizing horizontal analysis of the acquirer's financial statements, as well as analysis of individual financial indicators. The analysis shows the impact of the transaction on acquirer's business performance. Accounting approach is relevant when doing M&A research and it is used in this paper to examine the success of acquisition of Metronet telekomunikacije d.d. by company A1 Hrvatska d.o.o. After the analysis of key business indicators it has been concluded that business performance of the acquirer A1 Hrvatska d.o.o. was improving after the successful acquisition of Metronet telekomunikacije d.d.*

**Keywords:** *acquisition, telecommunications industry, financial statement analysis*

## **1. INTRODUCTION**

Mergers and acquisitions are a vital part of both healthy and weak economies and are often the primary way in which companies are able to provide returns to their owners and investors (Sherman, 2017). Mergers and acquisitions have become inevitable phenomena in the modern corporate environment. Whether in times of boom or bust, M&As have emerged as a compelling strategy for growth that has been adopted by most of the world's largest companies (Kumar, 2012). M&A is a century-old activity which happened in waves. The value of the M&A deal rose from \$200 billion in 1992 to about \$4,74 trillion by 2017 (Kumar, 2019). The reason to acquire or merge a firm may range from industry consolidation, customer acquisition, forward or backward integration, or synergy with existing businesses (Kumar, 2019). Realizing the business benefits and creating wealth in an integration process is not a straightforward procedure. Integrations, in various forms, have been happening for decades, but with all that experience to draw on, two out of every three deals still don't achieve anywhere near the benefits that were initially anticipated (Trompenaars, Asser, 2011). Strategic transactions are the events that fundamentally alter a company. They usually change not only who controls the company but also the strategic direction the business will take (Frankel, Forman, 2017). An important question in finance is whether managerial actions create market value or shareholder wealth. Neoclassical economic theory assumes that corporate management acts to maximize shareholder wealth (Baker, Kiymaz, 2011). In the case of mergers and acquisitions, the formerly independent companies form a new legal entity. We speak of a merger when the companies are more or less equal. In an acquisition the larger or stronger company buys the smaller one (Uljin, Duysters, Meijer, 2010). In terms of access to finance, there are broadly five growth stages in a company's lifespan: inception, organic growth, purchased, lifestyle, and beyond IPO. Each has its own characteristics, risks, potential financial sources and success criteria (Reuvid, 2007). Theoretically, companies should pursue an acquisition only if it creates value – that is, if the value of the acquirer and the target is greater if they operate as a single entity rather than as separate ones. Mergers and acquisition is justified if synergies are associated with the transaction (Petitt, Ferris, 2013). Synergy is the value realized from the incremental cash flow generated by combining two businesses (DePamphilis, 2018).

The synergies could come from economies of scale or scope or from combining different technologies. Practitioners typically refer to two categories of synergies: cost synergies and revenue synergies (Baker, Kiymaz, 2011). Revenue synergies are one of the most common reasons for acquiring a company. While cost synergies through acquisition improve margin, revenue synergies grow the business overall, and this is often more attractive to an acquirer and its shareholders (Frankel, Forman, 2017). Thus, the main purpose of this paper is to analyse acquisition success of Metronet Telekomunikacije d.d. by company A1 Hrvatska d.o.o.

## **2. ACQUISITIONS IN TELECOMMUNICATIONS INDUSTRY**

The telecommunications industry is a competitive market where lower pricing, higher quality, and increased innovation have removed many barriers to entry into new markets. Strategically, firms in this sector have used mergers, acquisitions, or alliances to enter new markets. There were two waves of M&A in the telecommunication sector. The first wave was observed during the technology bubble of 1999-2000 which led to building of scale in the sector. The second wave during the period 2005-2007 led to consolidation in the US mobile market and European broadband sector (Kumar, 2019). Telecommunication sector is facing the challenges of growth, convergence, business transformation, technological change, and regulatory pressures. The industry has witnessed the removal of many barriers of entry on account of factors like lower prices, higher quality, and higher degree of innovation. The aftereffects had been that now telecom firms are pursuing the strategy of M&A or alliance with firms which already have a presence in that market. Costly investments in the sector are another driving force behind M&A activity in the sector (Kumar, 2019). The consolidation in the telecom sector can be categorized into three forms: cross-market consolidation, in-market consolidation, and consolidation of ownership for control. Cross-market form of consolidation involves cross-market deals in which major telecom operator groups acquire controlling stakes in other that have a presence in multiple markets. "In-market" involves merging operations within the same market. In the last form of consolidation, operators seek ownership consolidation for greater control of operations (Kumar, 2012). In a scenario of mobile telephony stepping into its next phase of development of next-generation technology and mobile broadband data, consolidation was expected to position the global operators to capitalize on the new growth in the telecom industry (Kumar, 2019). Compared to other European Union countries, Croatia is usually mentioned by lagging behind in the use of information and communication technology. Progress has been made in 2016, but at a slower pace than in other countries of the European Union, which is why Croatia still lags behind. In 2016, 77% of households in Croatia had access to internet, same as in 2015.<sup>1</sup> This is a significant improvement in the last ten years, if we take into account the fact that in 2007 it was only 41% households with internet access.<sup>2</sup> For comparison, the EU-28 average was 55% in 2007.<sup>3</sup> In 2016, the EU-28 average reached 85% of households.<sup>4</sup> We are witnessing the rapid expansion of broadband internet access connections in the last ten years. Until 2010, Croatia lagged behind the EU-27 average when it comes to the share of broadband connections internet in the total number of households that had internet access.

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<sup>1</sup> Available at: [https://www.eizg.hr/userdocsimages/publikacije/serijske-publikacije/sektorske-analize/SA\\_telekomunikacije\\_lipanj-2017.pdf](https://www.eizg.hr/userdocsimages/publikacije/serijske-publikacije/sektorske-analize/SA_telekomunikacije_lipanj-2017.pdf) [05.10.2021.]

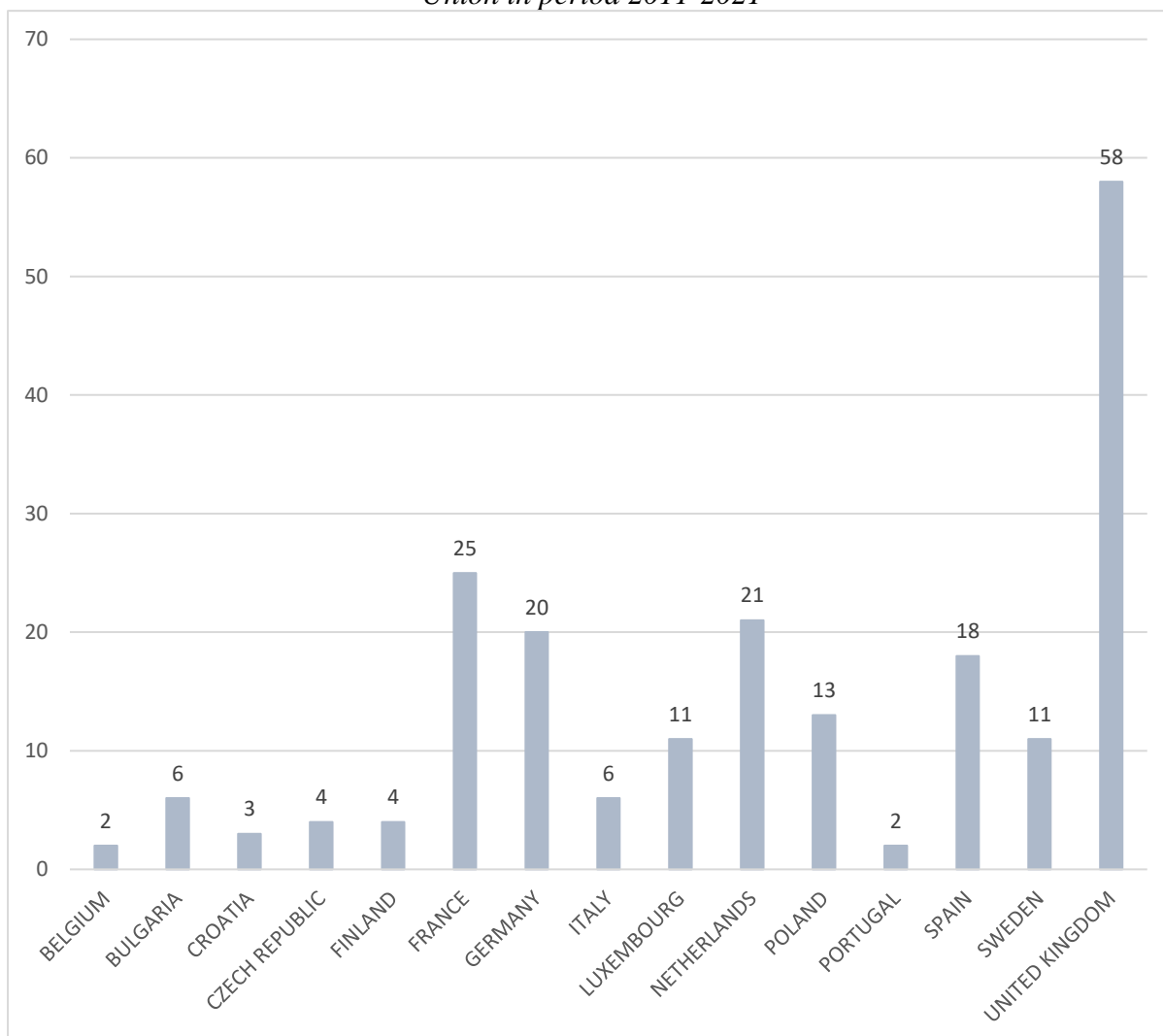
<sup>2</sup> Available at: [https://www.eizg.hr/userdocsimages/publikacije/serijske-publikacije/sektorske-analize/SA\\_telekomunikacije\\_lipanj-2017.pdf](https://www.eizg.hr/userdocsimages/publikacije/serijske-publikacije/sektorske-analize/SA_telekomunikacije_lipanj-2017.pdf) [05.10.2021.]

<sup>3</sup> Available at: [https://www.eizg.hr/userdocsimages/publikacije/serijske-publikacije/sektorske-analize/SA\\_telekomunikacije\\_lipanj-2017.pdf](https://www.eizg.hr/userdocsimages/publikacije/serijske-publikacije/sektorske-analize/SA_telekomunikacije_lipanj-2017.pdf) [05.10.2021.]

<sup>4</sup> Available at: [https://www.eizg.hr/userdocsimages/publikacije/serijske-publikacije/sektorske-analize/SA\\_telekomunikacije\\_lipanj-2017.pdf](https://www.eizg.hr/userdocsimages/publikacije/serijske-publikacije/sektorske-analize/SA_telekomunikacije_lipanj-2017.pdf) [05.10.2021.]

However, in 2010, Croatia reached the EU-28 average which then was 87%, and a year later Croatia was at the level of the EU-28 average in terms of the share of households with broadband access to the internet.<sup>5</sup>

*Figure 1: Acquisition in telecommunications industry in selected countries of the European Union in period 2011-2021*



Source: [www.mergermarket.com](http://www.mergermarket.com) [03.10.2021.]

Data in figure 1 was gathered from Mergermarket database that records transactions with deal value of more than 5 million Euros. It can be seen from the Figure 1, that the largest number of transactions has been concluded in United Kingdom, which is followed by France, Netherlands and Germany. United Kingdom experienced 58 transactions, and it doesn't come as a surprise since the size of the United Kingdom telecommunications market was 37,5 billion Pounds in 2017.<sup>6</sup> The telecommunications industry in the United Kingdom is responsible for keeping the UK's 67 million inhabitants connected with each other, and the world.<sup>7</sup> After the United Kingdom, the second largest number of transactions happened in France.

<sup>5</sup> Available at: [https://www.eizg.hr/userdocsimages/publikacije/serijske-publikacije/sektorske-analize/SA\\_telekomunikacije\\_lipanj-2017.pdf](https://www.eizg.hr/userdocsimages/publikacije/serijske-publikacije/sektorske-analize/SA_telekomunikacije_lipanj-2017.pdf) [05.10.2021.]

<sup>6</sup> Available at: <https://www.ofcom.org.uk/research-and-data/multi-sector-research/cmr/cmr-2020> [05.10.2021.]

<sup>7</sup> Available at: [https://www.statista.com/topics/7198/telecommunications-industry-in-the-united-kingdom/#dossierSummary\\_\\_chapter6](https://www.statista.com/topics/7198/telecommunications-industry-in-the-united-kingdom/#dossierSummary__chapter6) [05.10.2021.]



There was a total of 25 M&A transactions in France in the period from 2011 to 2021. France has the third largest telecoms market in Europe, worth about 31 billion EUR annually.<sup>8</sup> France also has one of the largest broadband subscriber bases in Europe. Growth in recent years has been bolstered by demand for high bandwidth services, which has prompted considerable investment in fibre infrastructure among telecommunication companies.<sup>9</sup> In the analysed period, Netherlands experienced 21 M&A transactions in telecommunications industry. Netherlands has one of the strongest broadband sectors in the world, a top performer in terms of connectivity and is also a very competitive one, especially in mobile sector.<sup>10</sup> Germany stands at the fourth place regarding the number of M&A transactions in telecommunications industry, with 20 transactions concluded in the period from 2011 to 2021. The total revenue of the telecommunications industry in Germany amounted to over 57,6 billion EUR in 2019.<sup>11</sup> That same year, in terms of revenue by segment, mobile communications were predicted to bring in almost 26,5 billion EUR, followed by 21,6 billion EUR from landline connections and 5,8 billion EUR from cable television.<sup>12</sup> The leading German telecommunication companies based on revenue are Deutsche Telekom, Vodafone Germany and Telefonica Germany. In 2019, a total of around 171 thousand employees worked in the telecommunications industry.<sup>13</sup> The European telecommunications industry has seen, and is still undergoing a mergers and acquisitions consolidation wave that began in the industry in 2000s, particularly at a national level, but is expected to become increasingly cross-border in nature. There are several causes which are driving this consolidation, including regulatory changes, and the extreme fragmentation of the European telecommunications industry. M&A transactions in European telecommunications industry enabled companies to maintain high levels of profitability by taking advantage of M&A activities such as geographic expansion, infrastructure sharing, and a better ability to meet rising investment needs to keep up with technological advancements and increased competition from other telecommunications companies. Based on these considerations, M&A consolidation looks to be advantageous to telecoms from an operational standpoint. Apart from the M&A activity in telecommunications industry measured with number of transactions it is also important to analyse the value of some of the most significant transactions. Table 1 presents highest value transactions in the period 2011-2021 for the selected EU countries.

*Table following on the next page*

<sup>8</sup> Available at: <https://www.businesswire.com/news/home/20191105005756/en/France-Telecoms-Mobile-and-Broadband-Statistics-and-Analyses-2019---ResearchAndMarkets.com> [05.10.2021.]

<sup>9</sup> Available at: <https://www.businesswire.com/news/home/20191105005756/en/France-Telecoms-Mobile-and-Broadband-Statistics-and-Analyses-2019---ResearchAndMarkets.com> [05.10.2021.]

<sup>10</sup> Available at: <https://www.statista.com/topics/4793/telecommunications-market-in-the-netherlands/> [05.10.2021.]

<sup>11</sup> Available at: <https://www.statista.com/topics/5057/telecommunications-industry-in-germany/> [05.10.2021.]

<sup>12</sup> Available at: <https://www.statista.com/topics/5057/telecommunications-industry-in-germany/> [05.10.2021.]

<sup>13</sup> Available at: <https://www.statista.com/topics/5057/telecommunications-industry-in-germany/> [05.10.2021.]

*Table 1: Highest value transactions in telecommunications industry in selected countries of the European Union in period 2011-2021*

Country	Completed date	Target Company	Bidder Company	Transaction value, EUR (million)
Germany	01.10.2014.	E-Plus Mobilfunk GmbH & Co. KG	Telefonica Deutschland Holding AG	8550
Austria	31.07.2018.	UPC Austria GmbH	T-Mobile Austria GmbH	1900
Luxembourg	13.12.2018.	Cable Onda, SA (80% Stake)	Millicom International Cellular S.A.	869,94
Italy	20.12.2016.	Metroweb Italia S.p.A.	Open Fiber S.p.A.	814
Bulgaria	05.07.2016.	Bulgarian Telecommunications Company	Viva Telecom	690,22
Luxembourg	29.08.2019.	Telefonica Moviles Panama, S.A.	Millicom International Cellular S.A.	573
France	05.12.2014.	Virgin Mobile France	Altice France SA	325
Croatia	15.02.2017.	Metronet telekomunikacije d.d. (97,68% Stake)	VIPnet d.o.o.	71
Italy	25.11.2013.	Retelit (WiMax unite)	Linkem SpA	33
Poland	24.12.2015.	Sferia S.A. (51% Stake)	Aero 2 Sp z.o.o.	28,7
Netherlands	13.11.2013.	Cogas Kabeltelevisie BV	CAIW Holding B.V.	12,9

*Source: www.mergermarket.com [03.10.2021.]*

It can be seen from the table that the majority of highest value transactions were concluded in the period from 2014-2019. Majority of the highest value transactions happened in Germany, Austria, Luxembourg and Italy, which can be explained by the strength of their economies and the size of their telecommunications markets. The highest value acquisition in telecommunications industry in Croatia was concluded by VIPnet d.o.o. (A1 Hrvatska d.o.o.) when they acquired B.net Hrvatska d.o.o. in 2011 for 93 million EUR. The second highest value transaction in the period 2011-2021 was VIPnet d.o.o. acquiring Metronet telekomunikacije d.d. in 2017 for 71 million EUR, which will be analysed in the next section of this paper.

### **3. ANALYSIS OF ACQUISITION OF METRONET TELEKOMUNIKACIJE D.D. BY VIPNET D.O.O. (A1 HRVATSKA D.O.O.)**

A1 Hrvatska d.o.o. was founded in 1998 and is registered as a limited liability company at the Commercial Court in Zagreb.<sup>14</sup> The share capital of the company amounts to 454.211.000 HRK.<sup>15</sup> A1 Hrvatska d.o.o. acts as a subsidiary full owned by A1 Telekom Austria Group. A1 Hrvatska d.o.o. employed 1972 people in 2020 and provides services to 2 million users.<sup>16</sup> A1 Telekom Austria Group is listed on Vienna Stock Exchange and is a leading provider of digital services and communications solutions in Central and Eastern Europe with around 25 million

<sup>14</sup> Available at: [https://sudreg.pravosudje.hr/registar/f?p=150:28:0::NO:28:P28\\_SBT\\_MBS:080253268](https://sudreg.pravosudje.hr/registar/f?p=150:28:0::NO:28:P28_SBT_MBS:080253268) [05.10.2021.]

<sup>15</sup> Available at: [https://sudreg.pravosudje.hr/registar/f?p=150:28:0::NO:28:P28\\_SBT\\_MBS:080253268](https://sudreg.pravosudje.hr/registar/f?p=150:28:0::NO:28:P28_SBT_MBS:080253268) [05.10.2021.]

<sup>16</sup> Available at: [https://sudreg.pravosudje.hr/registar/f?p=150:28:0::NO:28:P28\\_SBT\\_MBS:080253268](https://sudreg.pravosudje.hr/registar/f?p=150:28:0::NO:28:P28_SBT_MBS:080253268) [05.10.2021.]

customers, currently operating in seven countries: Austria, Bulgaria, Croatia, Belarus, Slovenia, the Republic of North Macedonia and the Republic of Serbia.<sup>17</sup> A1 Telekom Austria Group offers communications, payment and entertainment services as well as integrated business solutions. A1 Telekom Austria Group achieved revenues of 4,55 billion EUR by year end 2020.<sup>18</sup> The Group employs almost 18.000 employees.<sup>19</sup> A1 Telekom Austria Group is a European unit of America Movil (51% ownership), one of the largest wireless services provider in the world, A1 Telekom Austria Group is headquartered in Vienna and gives access to global solutions.<sup>20</sup> A1 Telekom Austria Group has agreed to acquire a majority stake in Metronet telekomunikacije d.d., through its subsidiary, A1 Hrvatska d.o.o. from Quaestus Private Equity d.o.o. and other investors. Quaestus Private Equity d.o.o. is a Croatia-based venture capital and private equity firm, headquartered in Zagreb. Metronet telekomunikacije d.d. offers data, voice, managed IT and cloud services to its approximately 4.300 corporate customers, who generated approximately 90% of total revenues in 2015.<sup>21</sup> Metronet is present in 66 cities, thereby reaching approximately 85% of all corporate customers in Croatia and operates on a fibre network. In 2015 Metronet telekomunikacije d.d. generated a revenue of 28.000.000 EUR and EBITDA of 12.000.000 EUR.<sup>22</sup> In August 2007, Metronet telekomunikacije d.d. acquired Vodatel d.o.o. for a total consideration of 10,5 million EUR.<sup>23</sup> On 15 February 2017 A1 Telekom Austria Group has completed the acquisition of 95,43% stake in Metronet telekomunikacije d.d.<sup>24</sup> Through this acquisition, A1 Hrvatska d.o.o. will be able to strengthen its business in Croatia. A1 Hrvatska and Metronet will together create a competitive and powerful B2b convergent operator. A1 Hrvatska will be able to become more competitive in the segment of commercial telecommunications and ICT. In order to access the acquisition success of Metronet telekomunikacije d.d. by accounting approach, comparative income statement of A1 Hrvatska d.o.o. (Table 2) was analysed in period after the acquisition till 2020.

*Table 2: Comparative income statement of A1 Hrvatska d.o.o. in period 2017-2020*

(000's of HRK)	2017	%	2018	%	2019	%	2020
Revenue	3.055.133	5%	3.208.316	5%	3.381.393	-3%	3.268.787
Expenses	2.449.280	23%	3.022.537	2%	3.070.006	-4%	2.934.773
Financial revenues	89.596	-32%	61.204	-61%	24.024	-67%	7.861
Financial expenses	73.831	2%	75.256	-14%	64.724	43%	92.818
Total revenues	3.144.729	4%	3.269.819	4%	3.045.417	-4%	3.276.649
Total expenses	3.092.463	0%	3.097.793	1%	3.134.730	-3%	3.027.591
Gross profit	52.266	229%	172.027	57%	270.687	-8%	249.058
Taxes	5.719	1.107%	69.017	-26%	51.047	-4%	48.915
Net income/loss	46.548	121%	103.010	113%	219.640	-9%	200.142

*Source: Author's calculations based on Annual Financial Statements of A1 Hrvatska d.o.o., available at: <http://rgfi.fina.hr/JavnaObjava-web/izbornik.do> [03.10.2021.]*

<sup>17</sup> Available at: <https://www.a1.group/en/group/about-us> [05.10.2021.]

<sup>18</sup> Available at: <https://www.a1.group/en/group/about-us> [05.10.2021.]

<sup>19</sup> Available at: <https://www.a1.group/en/group/about-us> [05.10.2021.]

<sup>20</sup> Available at: <https://www.a1.group/en/group/about-us> [05.10.2021.]

<sup>21</sup> Available at: [www.mergermarket.com](http://www.mergermarket.com) [03.10.2021.]

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<sup>24</sup> Available at: [www.mergermarket.com](http://www.mergermarket.com) [03.10.2021.]

In the period 2017-2020 we can observe an overall positive trend in revenue growth, which can be attributed to the acquisition of Metronet telekomunikacije d.d. due to the expanded offerings and larger customer base. Revenue increased from 3.055.133.000 HRK in 2017 to 3.268.787.000 HRK in 2020. It can be concluded that A1 Hrvatska d.o.o. is continuously strengthening its business in Croatia and is becoming more competitive. In the period from 2017-2018 there was a large increase in net income from 46.548.000 HRK to 103.010.000 HRK, which represents an increase of 121%. Furthermore, net income continued to increase in the period 2018-2019, from 103.010.000 HRK to 219.640.000 HRK, which represents an increase of 113%. When revenue growth, which is relatively steady, is compared to net income growth, it can be observed there has been an improvement in margins which signifies operational efficiency. The financial ratios used to assess the safety of business performance are the liquidity and debt ratios which are shown in Table 3 for the period after the acquisition of Metronet telekomunikacije d.d.

*Table 3: Selected financial ratios of A1 Hrvatska d.o.o. after the acquisition of Metronet telekomunikacije d.d.*

FINANCIAL RATIOS	2017	2018	2019	2020
CURRENT LIQUIDITY RATIO	0,48	0,53	0,50	0,45
FINANCIAL STABILITY RATIO	0,43	0,47	0,44	0,40
DEBT RATIO	5,03	4,66	3,39	3,41
SELF-FINANCING RATIO	0,20	0,24	0,21	0,28
FINANCING RATIO	3,75	2,84	3,33	2,28
COVERAGE RATIO I.	0,27	0,32	0,27	0,35
COVERAGE RATIO II.	0,72	0,83	0,84	0,81

*Source: Author's calculations based on Annual Financial Statements of A1 Hrvatska d.o.o., available at: <http://rgfi.fina.hr/JavnaObjava-web/izbornik.do> [03.10.2021.]*

Throughout the years covered in the analysis, current liquidity ratio was improving in year 2018, after which it fell to 0,45 in 2020, possibly because of COVID pandemic which affected all companies systematically and had negative impact on their liquidity. However, current liquidity ratio was below the industry average in 2020 which was 1,56. Debt ratio was decreasing from 5,03 in 2017 to 3,41 in 2020 which is a positive sign since the credit risk has been lower and lower throughout the years covered in the analysis. Self financing was slightly lower than the industry average, which was 0,37, which signifies company is more dependent on external provider of capital than the average company in the industry. This is, however, not surprising, when taking into account the size of the company and the market power it has. The higher and improving Coverage ratio I indicates that the company is financing larger part of its long term assets with its own sources, and thus reducing risk, but however the ratio is still lower than the industry average, which was 0,87 in 2020. It can be concluded that company has overall good financial stability. Ratios for evaluating business performance are activity ratios, economy ratios, profitability ratios and investment ratios. Table 4 is highlighting some of the most important ratios which are used to evaluate the success of the acquirer's business performance after the acquisition of Metronet telekomunikacije d.d.

*Table following on the next page*

*Table 4: Selected business performance ratios of A1 Hrvatska d.o.o. after the acquisition of Metronet telekomunikacije d.d.*

FINANCIAL RATIOS	2017	2018	2019	2020
TOTAL ASSETS TURNOVER RATIO	0,73	0,71	0,71	0,69
SHORT-TERM ASSETS TURNOVER RATIO	3,65	3,94	5,06	5,65
EBITDA MARGIN	21,12%	24,34%	31,94%	33,08%
EBIT MARGIN	2,64%	5,80%	9,21%	10,22%
NET PROFIT MARGIN	1,80%	3,21%	6,50%	6,12%
RETURN ON ASSETS	1,31%	2,27%	4,59%	4,20%
RETURN ON EQUITY	6,44%	10,31%	20,22%	17,06%
RETURN ON INVESTED CAPITAL	2,52%	5,37%	8,54%	9,04%

*Source: Author's calculations based on Annual Financial Statements of A1 Hrvatska d.o.o., available at: <http://rgfi.fina.hr/JavnaObjava-web/izbornik.do> [03.10.2021.]*

Total assets turnover ratio decreased from 0,73 in 2017 to 0,69 in 2020, and was below industry average which was 0,90 in 2020. However, short-term assets turnover ratio increased throughout the years covered in the analysis from 3,65 in 2017 to 5,65 in 2020, and was above the industry average which was 1,92 in 2020, which indicates more efficient short-term asset management. Net profit margin experienced a large increase from 1,80% to 6,12% in 2020, which indicates that the company was able to efficiently manage operating costs while increasing sales. Return on assets and return on equity were both improving in the period 2017-2020 and were both significantly above the industry average which was 1,90% and 10,65% in 2020 respectively. Higher return on assets signifies greater efficiency in utilising company's resources, and higher return on equity represents greater power of generating results on the capital invested by owner. It can be stated that the acquisition of Metronet telekomunikacije d.d. did have a positive effect for the business of A1 Hrvatska d.o.o., which managed its resources as effectively as possible. Operational efficiency is observable, and therefore, the acquisition of Metronet telekomunikacije d.d. can be considered as a successful acquisition from acquirer's perspective.

#### 4. CONCLUSIONS

European telecommunications industry is undergoing a mergers and acquisitions consolidation wave that began in the industry in 2000s at a national level but became increasingly cross-border in nature. Main drivers of consolidation include regulatory changes, and the extreme fragmentation of the European telecommunications industry. Those transactions enabled companies to maintain high levels of profitability by taking advantage of M&A activities. M&A consolidation is advantageous to telecoms from an operational standpoint. When compared to other European Union countries, Croatia is usually mentioned by lagging behind in the use of information and communication technology. However, progress has been made and Croatia mostly converged to those parameters of EU average when it comes to the use of information and communication technology. The acquisition of Metronet telekomunikacije d.d. by A1 Hrvatska d.o.o. enabled A1 Hrvatska to strengthen its business in Croatia and create a competitive B2B operator. A1 Hrvatska was able to become more competitive in the segment of commercial telecommunications and ICT. Comparative income statement shows a positive trend in revenue, and financial ratios showed operational efficiency and overall profitability. After the analysis of acquisition using the accounting approach it can be concluded that this was successful acquisition from acquirer's perspective. Suggestions for future research may be to show how the consolidation wave in European telecommunications sector is influencing business performance across major European telecommunications companies and to gain insight into fundamental drivers which are shaping the European telecommunications market.

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# INDUSTRIAL MANAGEMENT IN THE FOCUS OF QUALITY SYSTEM AND ECONOMY

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## ABSTRACT

*The success of industrial management is measured by the achieved results on the world and national market. Globally, modern access to high quality in industrial production in the field of technology, organization, management, economy, ecology etc. as key factors for the development of companies, determine the implementation of the necessary conditions for the development of modern. The quality system implies a strategy that management should organize and implement in order to meet the strict requirements of consumers - buyers in the modern market. The goal is to integrate all the analyzes, tests, opportunities and results into one homogeneous whole and to define management as a modern option of quality industrial production. Bearing in mind the fact that traditional technology has become insufficiently high in time, it can respond to contemporary challenges. Management was strategically and professionally insufficiently prepared to accept changes from the economy, i.e. from the market. Imperative is today, good organization from an economic, quality, ecological aspect etc. The goal is to meet the quality standards of products and services in terms of customers and society as a whole. The successful business management strategy today includes relevant analysis, strategy of business forms and content, viewed through the prism of the development of quality systems in continuity. Results measured in the organization of management, company's capabilities, forces, threats and chances in business in economics will contribute to a realistic assessment of the state of affairs and development of the industrial, social and economic future. Industrial management should base joint efforts on success and measure performance. The purpose of the work is to point out the effects of key factors in industrial management, its quality technology, organization and strategy focused on business excellence - TQM.*

**Keywords:** *Efficient management, organization, strategy, quality system in industry, economy, team work*

## 1. INTRODUCTION

The successful operation of industrial companies basically results in the success of managers. The success of managers can be measured by a correct approach to work, communication and understanding of employees viewed through the prism of extremely good human resource management. There are two categories of these business characteristics, namely:

### 1.1. Joint effort

Bearing in mind that the definition of teamwork is a broad term, first of all, the joint effort refers to groups of people in order for everyone in the company to achieve a common goal. The achieved success or efficiency of managers is usually measured by some form of task execution,



a kind of indicator that can be customer satisfaction or sales growth. The goal of teamwork is to create an atmosphere that will allow employees to better perform their work tasks.

### **1.2. Performance team work**

Improvement occurs when a group changes its behavior, and the result is reflected in improved work performance. The tighter the joint work, the better the work performance. The modern business of INDUSTRIAL companies is characterized by complex business conditions and burdened by the rapid pace of organizational, technical, technological, economic, cultural, social, IT, systemic and other changes. Excellent quality in all economic and industrial activities has become a global phenomenon without which human society can not imagine a new phase of its business and life development. The research, analysis and application of the quality system development process to Total Quality Management - TQM, in production for management and organization means, the obligations that start from: analyzing the basic characteristics of the quality system evolution, starting from the traditional, through the international quality system ISO 9000 all the way to ensuring the overall quality concept - TQM. Development and improvement of the quality system not only in one area, but also in all business production and industrial companies, is the basis for the realization of the concept of high quality of the world class. Efficient management can achieve high product quality if it is implemented in all business processes measured through: organization, product, service, operation, sector, etc. in order to ensure the safety of all production and industrial enterprises in the world markets in the long run. The consciousness of the management focused on the development of high quality of business, as an immediate change that is imposed daily on the market, has won not only in the traditional spheres and ways of business of developed market-oriented companies, but also today is an important process and imperative of modern economic development. It is of particular importance that this awareness is rapidly expanding in all business and manufacturing companies of a country, in the image of successful global companies of developed countries. The American scientist of successful business and managerial philosophy, in the practice of developed companies in the world (Joseph M. Juran, 1970), predicted that the quality strategy in the industry will represent the latest dynamic achievements through a new approach of total quality in business-production systems [1, pp.159.]. The formula of success observed evolutively, in managerial business philosophy, did not rely solely on the control of process and product dimensions, but on the quality that is obligatory and should always be viewed through a specification of the overall quality of the product. For the 21<sup>st</sup> century, in industries "Dependence on quality technologies will become a part of life", where efficient structuring of the quality function should serve to improve customer satisfaction. In this way, the company connects with its users, and within the company itself, communication between different organizational units is improved. This means that the new product has realistic prospects to meet the harsh requirements and needs of the users. Since the method of structuring the quality function for input data takes users' requests, This industrial company helps to better understand the users and their understanding of the quality of the real product. Thus, at the planning stage, management develops awareness of what needs to be done to increase the level of customer satisfaction. With the development of scientific and pragmatic approaches to management, the quality of the quality improvement method is continually increasing. Today is, the goal of industrial entities is to fully meet the demands of the market and competition. The high quality of "products and services" is the basis for the competitiveness of the 21<sup>st</sup> century. Namely, the success of entrepreneurial management is the basic link between production and the market that is incorporated into the movement's practice for high quality products, services, processes, organizational culture, motivation.



## 2. INDUSTRIAL MANAGEMENT BASIS OF QUALITY DEVELOPMENT AND ECONOMY

The goal is continuous learning from successful companies in the world, in order to fully realize and develop quality business. The development and implementation of new processes, products, methods, measures and techniques of modern business today are the most important factors for the development of the overall quality of production (Figure 1) [2].



*Figure 1: Management in the function of making decisions for change improvements*

"Quality Revolution" has evolved in Japan since the Second World War. Progress of organizations has a sustainable level on the world stage, thanks to research and new ventures and ways in thinking of employees about a high level of the quality system of products. The question arises: How to strategically develop efficient industrial management? The answer is reflected in the development of a quality circle to improve the key performance of transport and total business in order to achieve a prominent place in the market and a successful economy of one industry [3]. For successful industrial management in the economy and in the market, several items that management needs to fulfill are important. Figure 2. suffers five key factors are presented for achieving efficient management for quality in the function of important quality performances achieved by the cycle of improving the quality of these performances [4].

For the applied research of high quality characteristics in the quality circle - Cycle Quality, starts from the following recommendations, events and process activities:

- 1) Communication, vision, strategies and plans, from company to team - Communicate vision, strategy and plans from company to team.
- 2) Defining individuals, goals, necessary resources and development - Define individual, goals, necessary resources and development.
- 3) Support and information through training, team process and other learning - Support and inform through coaching, team processes and other learning.
- 4) Reflection, review and repetition periodically, formally and informally - Reflect, review and ferr back periodically, formally and informally.
- 5) Evaluation, and (mutual) recognition - then linking to future performance management

Quality development of a business with a quality circle has the purpose if it is carried out by teamwork. It is a total improvement of quality in continuity.

## 2.1. Teamwork, managerial processes, efficient economy and production

The team of employees rounds up the efficiency of the business economy with their activities. Teams or so-called small groups (circles) are formed to conduct more efficient business analysis. The aim is to propose measures for effective improvement, each in the field as a whole. The quality circle as well as many quality tools have a specific role focused on production and engineering organization of work as well as on other technical departments. Quality performance management, given the management cycle, has a strategic goal, improvement and quality development in continuity. This goal is achieved successfully if the attention of managers and managers focuses on 3 categories of important issues for progress, which are viewed within the closed loop quality or circle of quality in transport companies, as follows. Quality performance management, given the management cycle, has a strategic goal, improvement and quality development in continuity. This goal is achieved successfully if the attention of managers and managers focuses on 3 categories of important issues for progress, which are viewed within the closed loop quality or circle of quality in transport companies, as follows [5].

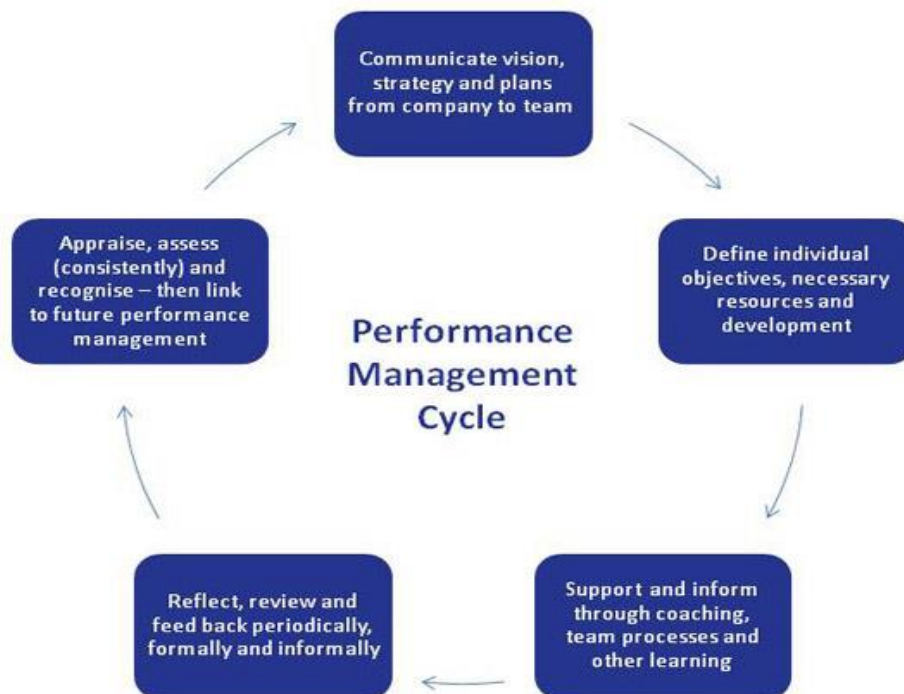


Figure 2: Cycle of performance management of industrial quality [6]

### I - PLANNING

- What has been achieved so far?
- What is the standard?
- Which competencies are needed?
- What development is needed?

### II – REVIEW

- How are you doing now?
- Can it be better?
- Should something change?

### III - EVOLUTION (VALUES)

- How did it work?
- How can it be better?
- What has been learned so far?

### 3. QUALITY PRODUCTION THE SUCCESS OF INDUSTRIAL MANAGEMENT IN ECONOMICS

In such an organized production function (the most important part of the business system), it starts from the basic idea of maximizing value for the customer and minimizing errors and waste. The goal is to create greater value for customers with less invested costs in the production process. Each business system tends to respond to the set requirements and values that the customer wants in his business plan. This is realized through efficient organizational processes that form the key to the successful development of the quality of the business of the organizations involved in the production industrial, with the aim of their continuous development in continuity. From an organizational point of view, attention is focused on the high level of quality of the process - the TQM being provided to the customer. The economy, determined by the high quality of the process, creates and incorporates into practice all the necessary values without error or waste in all production and business processes. The main tasks of the management in the organization process are focused on the optimization of quality technologies, equipment, the flow of finished products, etc. The quality concept of production in the line implies 100% elimination of waste and errors through the entire realistic in practice flow of creation, business and production values for the customer.

The projection of such production flows includes: [7, str. 124]

- 1) Realization of the necessary processes that require less human effort, less space, less capital and less time for production and services.
- 2) Lower costs with minor shortcomings compared to traditional business systems. In this case, the organized companies for the production of industrial products in the Lean system are able to respond to all wishes of today's and future customers focused on high diversity or changes related to the appearance and performance of the products that the customer wants.
- 3) High quality, low cost and very fast and organized flow of information, relationships and relationships, i.e. efficient distribution system.
- 4) Easy and precise information and communications management.

The general basics of liner production are built on a way of thinking that is not a tactic or a cost reduction program, but an action on the whole organization in the sense that it becomes effective not only for the production of products, but also for services. There are three factors: purpose – goal - processes - people. Organisation of the development of a system of measuring quality performance means ensuring continuous improvement and measurement of its own productivity. An important process of ensuring the quality of the environment is quality measurement.

The essence of the measurement method is reflected in:[8]

- Successful leadership measured through achieved effective performance and achievement which are important for the environment.
- Secure economic trade and green assets.
- Managing required by a team of motivated professionals.
- Management responsibility is the basis for the application of modern principles and quality management of technologies and production processes.

#### 4. CONCLUSION

Developing efficient management in the field of industrial production involves complex tasks that management should implement in business processes. One of the important industries is the industry that strategically makes an important segment in the chain of important industries. Improvement of the quality system of the process of production, products, organization of work, services, etc. is the basis for a successful development that needs to take place continuously. This process involves achieving a high level of business quality - the TQM concept. The essence of quality management is the development of quality PDCA cycle that never stops. Motivation of employees has the primary role in achieving the strategic plan of the transport company observed globally. Namely, the realization of a quality loop through strategically important stages of development, such as: planning, review, evolution creates a good basis for safe competitiveness in the field of industrial branches of the economy. Today, lean production should be used as a modern approach to successful production. It runs through a well-established production plan that brings processes to the highest level of qualities. The development of quality with regard to the implementation of managerial initiatives is aimed at reducing costs through savings that largely depend on the size of the organization and the steps taken to reduce such energy consumption by 20% or more. The data shows that rational initiatives in economics, initiatives can stimulate innovation. In practice there are companies that have discovered completely new products - after the launch of sustainable effort.

It was also found that economic initiatives helped:

- effective risk management,
- entering new markets,
- more efficient use of resources,
- improving the competitive position,
- creating in managerial office, and plants
- implementation of modern technologies etc.

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## ANTITRUST PRACTICES OF COMPANIES IN THE REPUBLIC OF SERBIA

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### ABSTRACT

*The paper analyzes the antitrust practice of companies in the territory of the Republic of Serbia. The structure of the work is set that it includes all forms of antitrust risks that are daily faced by companies in our country. The emphasis will be on explaining two important concepts such as abuse of a dominant position and restrictive agreements. Using the latest literature in this field and different scientific methods, we score the main goal of this paper, which is conceptual explanation of the forms of abuse of a dominant position such as predatory behavior, product tying, rebate policy, refusal and restriction of cooperation, renting business premises, price discrimination. The specific goal of the paper is to clarify ambiguities and confusions about the abuse of restrictive agreements (horizontal and vertical). The last part of the paper concerns the antitrust behavior of companies in the Republic of Serbia through practical examples. This part of the paper will also discuss the provisions of criminal law and criminal law practice related to the conclusion of a restrictive agreement.*

**Keywords:** *antitrust risks, antitrust practices, restrictive agreements, companies, abuse of dominant position, criminal offense of concluding a restrictive agreement*

### 1. INTRODUCTION

Considering the antitrust risks that exist in the theory of competition law is a particularly interesting topic if viewed through their impact on the business of trading companies. In the legislation of the Republic of Serbia, the regulations governing the field of competition law are relatively new. This means that there is no fully developed awareness of all economic entities about the legal restrictions that they must respect, in order not to be exposed to sanctions. With the first Antimonopoly Law, which was passed in 1996, began with the systematic regulation and institutional care of the policy that protects competition in the Republic of Serbia. The Commission for Protection of Competition was established fifteen years ago, in 2006, and the precondition for its creation was the Law on Protection of Competition, which was first adopted in 2005. Until the establishment of the Commission, the competent body dealing with the protection of competition was the Department for Antitrust Affairs within the Ministry of Trade, Tourism and Services (Maksimović & Radosavljević, 2012). The Law on Protection of Competition, passed in 2005, had many shortcomings in implementation. The inefficiency of the authorities in the implementation of competition policy, the investigation of violations of competition by market participants and the implementation of punitive measures, forced the legislator to make certain changes to make the work of the Commission efficient and visible. For these reasons, a new Law in this area was passed in 2009, following the example of regulations from the European Union (Begović & Pavić, 2009).

The new legislative in this area has been in force since 1 November 2009 and the main changes relate to a set of measures available to the Commission to establish competition in the market. The new Law in the competence of the Commission included the determination of the violation of competition and introduced measures by which they would be eliminated. The Law on Protection of Competition from 2009 is still in force, with the adoption of the Law on Amendments to the Law on Protection of Competition in 2013. At that moment, decentralization measures, behavioral measures and structural measures were new activities by which the Commission could react in order to establish a competitive situation on the market. Adoption of the new legislation and harmonization with the similar law procedures of the most developed countries is an important, but not the only condition for the creation of competitive markets in the Republic of Serbia. A very important element in the process of creating a competitive market is the implementation of the adopted law and the responsible work of the Commission for Protection of Competition (CPC). The application of competition protection policy is important for the functioning of a market economy, but efficient functioning is a basic precondition for establishing the economic and political stability of a country. Market competition can be distorted by market participants, but it can also be distorted by the state. Restriction of competition by market participants can occur through illegal agreements and concentrations, and which activities can lead to the prevention, restriction and distortion of competition. Abuse of a dominant position is another form of distortion of competition. Distortion of competition by the state occurs through the monopolies of state-owned enterprises, exclusive rights, state aid policy and many forms of restrictions introduced by the state, which are the basis for the creation of institutionalized cartels. All forms of restriction of competition are potentially dangerous for any market for a short period, and especially for a long period.

## **2. LEGAL REGULATIONS OF COMPETITION IN THE REPUBLIC OF SERBIA**

In a modern market economy, as the Republic of Serbia strives for, economic entities must adhere to and operate within the framework prescribed by law. As economic entities must comply with the law under the threat of certain punitive measures, such as VAT law, labor law, profit tax law, etc., economic entities must be aware of the existence of competition law. A huge number of economic entities ignore the existence of this law or are not even aware that its provisions affect their business and behavior on the market, it happens that certain economic entities have in some way violated the law on protection of competition. The law clearly prohibits three ways of behaviors of market participants:

- 1) Abuse of a dominant position;
- 2) Restrictive agreements and
- 3) Excessive concentration.

### **2.1. Abuse of a dominant position**

A dominant position in the market can be held by a company which, due to its strength in the market, can operate independently of the competition, suppliers or consumers. The market strength of a company is based on relevant economic and other indicators. Some of these indicators are: the structure of the relevant market, the market share of the company that is assumed to have a dominant position in the market, especially if it amounts to over 40% of the share in the relevant market; existing and potential competition; economic and financial strength of the enterprise; existence of vertical integration; accessibility to distribution and supply markets; barriers to market entry; the existence of technological advantages over other market participants, the strength of customers. Dominant position can also be defined for two or more companies that are connected by economic ties, i.e. that have a common presence in the relevant market (figure as one participant), which is considered like collective domination.

(Faull & Nikpay, 2014). Based on the experience of competition commissions around the world, we can list a few common abuses of a dominant position: predatory behavior<sup>1</sup>; product binding<sup>2</sup>; uncoordinated rebate policy<sup>3</sup>; refusal and restriction of cooperation<sup>4</sup>; renting retail space<sup>5</sup> and price discrimination<sup>6</sup>.

## 2.2. Restrictive agreements

For the first time, the Law on Protection of Competition uses the term "restrictive agreements", instead of the term "prohibited agreements" used in the previous law. According to the CPC, restrictive agreements are agreements concluded by market participants, which aim to restrict, distort or prevent competition. The appearance of restrictive agreements can be a contract or only some parts of the contract, agreements that can be tacit or explicit, agreed practices. All these activities in particular include the direct or indirect determination of purchase or selling prices, as well as other conditions of trade; activities restricting or controlling production, restricting markets, technical development, and even investment; applying different business conditions to different market participants and putting some market participants at a disadvantage compared to others; blackmail to accept conditions in the contract that do not coincide with the subject matter; division of markets or sources of procurement (CPC, 2013). Not all agreements between market participants have negative effects on competition. A distinction should be made between horizontal and vertical agreements.

<sup>1</sup> Predatory behavior is a practice that can be applied by a dominant firm in the market, which sells products at very lower prices than it would in a situation of full competitiveness in the market, but with the aim of ousting competitors from the market and preventing new competitors from entering the industry in which it operates. This is a strategy that is implemented by lowering prices in a certain time interval, which leads the company to a loss, but with the ultimate goal that after the departure of other competitors from the market, the company permanently and significantly increases prices. In this situation, consumers can have a short-term benefit by buying products at lower prices, but in the long period they would be in a worse position, because the dominant market participant would increase the price and probably reduce the quality of the product. For more information see: (Aron, 2010).

<sup>2</sup> Binding is the phenomenon that the seller requires the buyer to buy a product that the buyer does not want to buy, so that he can buy the product that he really wants to buy (Nalebuff, 2003).

<sup>3</sup> For large market participants, the rebate policy is unacceptable in the following cases: if it is not transparent (if all customers do not have insight into the rebate policy of their supplier); if not justified (no economic justification); if rebates create customer loyalty. Transparency is achieved in such a way that all customers are informed and that they know the sales policy or rebate policy, so that customers know in advance what amount of rebate they will receive under what conditions. Dominant players must have an economic justification for rebates. The amount of the rebate granted to customers must be clear and determinable, such as the amount of the rebate being determined on the basis of the quantity of goods purchased. In this case, the rebate approval is caused by pure economies of scale. Offering rebates to customers individually, based on an assessment or otherwise is not permitted (Lovreta et al, 2009)

<sup>4</sup> Refusal and restriction of cooperation is manifested through unjustified refusal by the dominant market participant to enter into cooperation with some competitors or the customer. We have a lot of examples in European practice where there has been distortion of competition in this regard. Many companies that have a dominant position in the market, due to maintaining it and destroying the competition, were ready not to enter into some kind of cooperation with other competing companies and refuse to cooperate with them, in order to maintain a dominant position. In cases when such refusal to cooperate is unfounded and without economic justifications, such a market participant abuses its position and distorts competition. The phenomenon is treated in the same way if the dominant market participant without justification terminates the cooperation with some of the existing suppliers or customers. The apparent form of refusal to cooperate may be such that a firm wishing to terminate cooperation or not to cooperate with a potential buyer, the same to make an offer that is significantly less favorable than the offer given by the seller in the market to other participants (GCLC, 2005).

<sup>5</sup> Renting sales space, ie renting space on shelves, has become a common practice nowadays, and for retailers, this type of rent is also one of the sources of income. However, this practice can be very controversial in situations where there is a company in the market with a dominant position. This is especially problematic when the dominant retailer is vertically integrated. In such cases, the dominant player who also has more power can knock the competition off the shelves of retail chains to a greater extent, and sometimes completely. As a final result, in most retail chains you can find a small number of products offered to consumers, whose price may rise. For these reasons, there is a certain restriction that dominant companies in the market can rent space on the shelves only up to a percentage not higher than their official market share, but not more than 80% (Lovreta et al, 2009).

<sup>6</sup> Price discrimination is the practice of selling the same product to different customers at different prices, under conditions where there is no justification due to different costs. Selling the same product to different customers at the same price without a difference in costs (e.g. transport costs differ) is also subject to price discrimination (Faull & Nikpay, 2014. Str.523).

Horizontal agreements are created by agreements between two or more companies that are part of the same level of the production chain itself. These are agreements between companies that directly compete with each other in the market, and such agreements can have serious consequences for competition in the market. Vertical agreements represent cooperation between companies located at different levels of the production and trade chain. These agreements are considered to be less important for opportunities to abuse competitiveness. However, many times it has happened that vertical agreements can seriously distort competitive competition in the market (Marković, 2009). There are different opinions that these types of agreements should be treated differently. Some of the reasons for the different treatment of these agreements are that there is a more efficient control and focus on agreements that can significantly affect competition, that the competent control body relieves the number of proceedings... As a disadvantage can be determined by the complicated content of regulations this area. The benefits of this approach outweigh its disadvantages. This approach provides more efficient legal treatment of agreements, because practice shows that certain groups of agreements have more or less negative effects on competition. For this reason, it is possible to group them based on the effects they have on competition in practice (Begović & Mijatović, 2003.).

### **2.3. Concentration control**

Nowadays, large companies are conditioned by constant growth and development. Organic growth is very often slow, and very often companies are forced to provide growth in other ways as well. Companies very often decide to buy another or more other companies or to merge with another or more other companies, which together represent a concentration. Depending on the backbone of the business of the companies whose concentration is performed, we distinguish three types of concentrations: horizontal, vertical and conglomerate (Erzachi, 2012.). It is interesting to observe the control of concentrations and attitudes of the authorities in several examples on the territory of the Republic of Serbia. As the first, we will single out the C market by Delta maxi, for which a negative decision was issued by the Commission for Protection of Competition. The applicant and the Commission had diametrically opposed views on the basic point of departure in the decision-making process on the notification of a concentration, which is the definition of the relevant market. The Commission was of the opinion that the relevant market includes modern sales formats (hypermarkets, supermarkets, etc.), while smaller stores, better known in our country as neighboring stores, do not enter the relevant market. The position of the applicant was that these trade formats must enter the relevant market, because there is a large turnover in them, and the reason was that the retail market in the Republic of Serbia was not yet as developed as in Western countries. This is evidenced by the fact that in 2006, 59% of retail trade turnover was realized in modern trade, while a large number of 41% was still realized in traditional trade (Labus & Cullen, 2008). Another interesting case of concentration in 2013 is the takeover of Mercator by Agrokor, which operated in several countries in the region, including the Republic of Serbia. The Commission conditionally approved this takeover, ie that the concentration can be implemented with the application of appropriate structural measures, which include disinvestment, ie that part of the stores try to sell to competition in the relevant market, and if that is not possible to cancel lease agreements, then to reduce the sales area in stores and eventually change the purpose of the sales facility. These measures referred to twenty-one points of sale in fifteen cities on the territory of Serbia. In this procedure, two relevant markets have been defined. The first relevant market includes retail activity, and the second wholesale. In wholesale trade, it has been established that the relevant product market is defined as the wholesale market of food products and consumer goods.



The territory of the Republic of Serbia has been determined as the geographical dimension of this market. The research of the wholesale market concluded that there is strong competition in that market (Decision CPC, 2013).

### 3. CASE STADY AND DISCUSSION

In March 2017, the Commission for Protection of Competition passed a Decision (CPC Decision, 2017) in which it determined a violation of competition by two producers of refined oil, namely Viktoriaoil and Vital. In the Commission's view, they have concluded a restrictive agreement that limits and controls production and the market. By this Decision, the participants in the agreement were ordered to terminate the contract and were fined. In the procedure that it has been conducting since the beginning of 2015, the commission found out that Viktoriaoil produces oil on behalf of Vital, which was confirmed to be true during the procedure. The market of sunflower oil production on the territory of the Republic of Serbia was determined as the starting point in the procedure for the relevant market. The share that these two companies had in oil production was extremely high and stable until 2015 (an agreement was signed in 2014) and ranged between 50% - 60%. During 2015, the production decreased, and on the other hand, the cost price increased by 11.7%, while the selling price of the product in question increased by 24.4%. The preconditions provided by the agreement, which refer to the possibility of increasing the price, have been used. The selling price grew much faster than the objective need for growth, that is, much faster than the growth of the price. The procedure defines all significant producers on the relevant market and they are: Viktoriaoil, Dijamant, Banat, Vital and Sunce. The last two are owned by the Inway Group. The HH index in this market for 2013 was 3097, which indicates that this market is highly concentrated. The HH index calculated after the signing of this agreement, where the participants in the agreement are counted as one player in the market, was 3982, which significantly violates the degree of concentration. From all the above indicators and criteria, it was concluded that this horizontal agreement between direct competitors on the sunflower oil market threatens competition and for these reasons this agreement is prohibited. By the Decision (CPC Decision, 2012) from November 2012, the Commission for Protection of Competition established that the company Frikom has a dominant position in the relevant wholesale market of industrial ice cream in Serbia. The Commission defined the relevant market as the starting point in the procedure, and the territory of the Republic of Serbia was determined for the relevant geographic market, and the wholesale market of industrial ice cream was defined as the relevant product market. The analysis of the relevant market established that Frikom has a very dominant position in the time interval from 2008 to 2010, ranging between 80% and 90%. During the procedure conducted by the Commission, the existence of abuse of a dominant position was established. The abuse of a dominant position was reflected in the fact that Frikom, in its contracts signed with customers in the period between 2008 and 2010, introduced clauses that represented a violation of competition, and the violations are:

- that Frikom, as an important element of the contract, introduced provisions imposing an obligation on buyers to respect the retail prices determined by Frikom in its price list in further sales. It was established in the procedure that the same practice was continued when the provision on recommended prices in resale was introduced in the contracts;
- that provisions were included in the contracts by which he imposed on his customers the obligation to purchase products exclusively from Frikom, while prohibiting the sale of competitors' products;
- developed system of incentives and stimulation of customers, by which Frikom significantly contributed to customers opting for the purchase of its products;
- that the contracts provide penalties if the customers do not comply with any of the above obligations, which in themselves were prohibited by the provisions of the contract.

As part of this procedure, it was stated that Frikom, as a dominant player in the market, significantly distorted competition with the intention to suppress existing competitors, raise barriers to entry for potential competitors and strengthen its dominant position in the market. For these reasons, Frikom was banned from applying this provision of the contract and fined. During the proceedings conducted in the case of the provisions of the sales contract between Grand Prom as the seller and Idea as the buyer, the CPC established the existence of prohibited contract provisions, which characterized this contract as a prohibited restrictive agreement (CPC Decision, 2012). Given that these are companies that do not operate at the same level of the retail chain and are not direct competitors in the market, we can characterize this agreement as a vertical agreement. The products from "Grand", "Argeta" and "Stark" are determined as the relevant product market in this case, while the territory of the Republic of Serbia is determined for the relevant geographic market. The disputed provision of this agreement is in the part of granting rebates, where the seller undertook to grant the buyer an additional rebate of 2% to comply with the seller's recommended prices, and within the basic rebate of 10% on invoices, for products from the sales program „Grand“, „Argeta“ and „Stark“. In this case, there is an obvious violation of competition, the provisions of this contract have been declared null and void, while the seller has been fined. As part of the proceedings conducted by the Commission for Protection of Competition (CPC Decision 2012) on suspicions of violation of competition in the operations of Swisslion Takovo doo and Idea doo, it was established that the purchase agreements concluded between these two companies contain provisions that are considered prohibited. These two companies concluded a restrictive agreement, in this case a vertical agreement, which defined sales prices in resale, and it was stated that this significantly distorted competition in the retail market of food products from the Swisslion program. Although in the case of horizontal or vertical restrictive agreements the determination of the relevant market is not as important as in the case of other distortions of competition, in the present case the following relevant market is determined. In the procedure conducted by the Commission, the retail market of Swisslion products was determined as the relevant product market, while the territory of the Republic of Serbia was determined as the relevant geographic market. Swisslion products have substitutes according to the Regulation on Criteria for Determining the Relevant Market, but in this case only Swisslion products are considered, because only these products are subject to a vertical relationship of the contracting parties, in which there is a distortion of competition. The application of a fixed or minimum retail price prescribed by the contract is prohibited as an agreement that always leads to significant restrictions of competition, based on which it is concluded that the provision of the Agreement aimed at significantly distorting competition in the Swisslion retail market. The decision of the Commission stated that the restrictive agreement concluded was null and void. This Decision does not impose a measure of protection of competition (fine), because according to the law that was valid until 2009, and at the time when the procedure was initiated, there was a possibility not to impose a fine, if the participant of the prohibited agreement reports the agreement to the Commission reaching a conclusion on initiating the procedure, which these companies did.

#### **4. REGULATION OF UNFAIR COMPETITION IN THE CRIMINAL LAW OF THE REPUBLIC OF SERBIA**

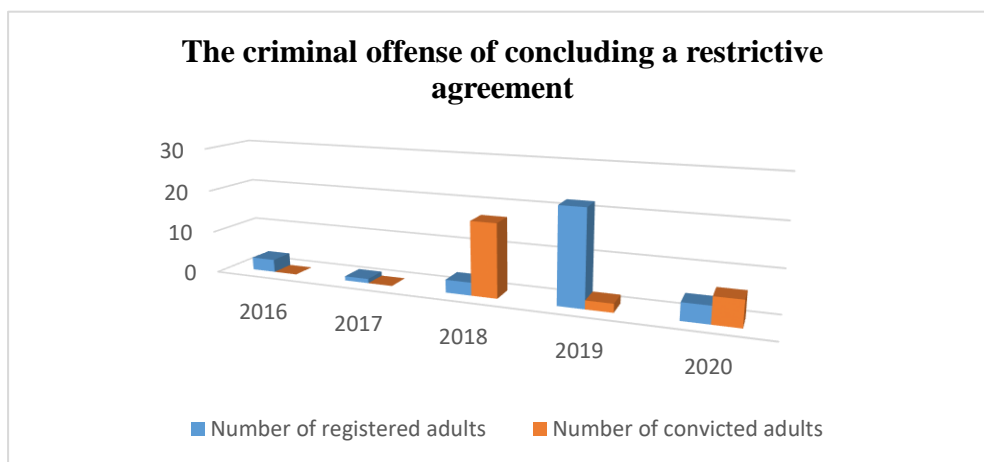
The Criminal Code of the Republic of Serbia (2020) regulates the conclusion of restrictive agreements. In the part that regulates criminal offenses against the economy, article No. 229 defines the criminal offense of concluding a restrictive agreement. The law stipulates "whoever concludes a restrictive agreement in a company that is not exempted from the prohibition of the law governing the protection of competition, which determines prices, restricts production or sales, or divides the market, will be punished by imprisonment for six months to five years and

a fine." The same article of the law also regulates the possibility of release from punishment if the perpetrator fulfills the conditions for release from the obligation determined by the measure of protection of competition in the sense of the law which regulates the protection of competition. Regarding the legal regulation of this criminal behavior, the Republic of Serbia does not lag behind the more developed countries of the near and far environment, but we should also look at how this crime is realized through the practice of judicial bodies in the period from 2016 to 2020.

<b>The criminal offense of concluding a restrictive agreement</b>			
<b>No.</b>	<b>Year</b>	<b>Number of registered adults</b>	<b>Number of convicted adults</b>
1.	2016.	3	0
2.	2017.	1	0
3.	2018.	3	17
4.	2019.	22	2
5.	2020.	4	6
$\Sigma$		33	25

*Table 1: Number of adults reported and convicted for the criminal offense of concluding a restrictive agreement on the territory of the Republic of Serbia in the period from 2016 to 2020*

*(Source: Republic Statistical Office)*



*Figure 1: Number of adults reported and convicted for the criminal offense of concluding a restrictive agreement on the territory of the Republic of Serbia in the period from 2016 to 2020*

*(Source: Republic Statistical Office)*

The difference between the number of reported and the number of convicted persons in theory and practice is called "loss of crime". In the observed five-year period, the total number of reported adults for this crime was 33, on average 7 people per year, while the total number of convicted persons was 25, on average 5 people per year. In the first year of the observed period, the number of reported persons was very small, only three persons, so it can be concluded that this crime does not have a high frequency of execution, but when it consider the value of damage that a restrictive agreement can cause, it is clear that the occurrence of this crime is alarming for society.

This year, no person has been convicted of the criminal offense of concluding a restrictive agreement. In 2017, one person was reported, while there were no convicts. This state of statistics can be justified by the fact that this criminal behavior was marked as an abuse of monopolistic position and was regulated differently. Therefore, the problem should not be sought in the implementation of criminal law regulations, but precisely in the quality of defining this behavior. In 2018, three adults were reported for the criminal offense of concluding a restrictive agreement, and 17 of them, in the observed year, were convicted. The change in regulations has led to the change and amendment of the indictment, and all criminal cases that have been at a standstill for years have received their epilogue. Five prison sentences were imposed (one from 2 to 3 years in prison and four sentences lasting from 3 to 6 months), one fine in the amount of 100,000 to 200,000 RSD was imposed and nine suspended sentences were imposed, while this year and two house arrest sentences. The largest number of reported adults for this crime was in 2019, 22 of them, while in the same year only two people were convicted for this crime. The sentences imposed on them are a prison sentence of 3 to 6 months and a suspended sentence. In the last year of the observed period, in 2020, six persons were convicted for the criminal offense of concluding a restrictive agreement on the territory of the Republic of Serbia, and all six received a suspended sentence. This year, four adults were registered. The loss of crimes in this type of crime is not large, because of the total number of reported adults for the observed five-year period, 75% were convicted.

## 5. CONCLUSION

Based on all the data presented in the paper, it is concluded that the Republic of Serbia has made a great effort on the issue of harmonization and implementation of legal regulations related to the protection of competition and that it is going in a very good direction. In the legislation of the Republic of Serbia, the regulations governing the area of competition law are relatively new. This means that there is no fully developed awareness of all companies about the legal restrictions that they must comply with, so as not to be exposed to the sanctions prescribed for such behaviors. This is because, on the one hand, there is insufficient education of citizens about the importance of the existence and implementation of the basic principles of "healthy" competition, and, on the other hand, due to insufficient activity of state bodies to bring citizens closer to their activities and explain the necessity of their existence. The Commission for Protection of Competition should be a completely independent and autonomous body, which should not suffer political or any other influences, and its membership should not be based on political suitability but on expertise. A serious progress towards its independence is that it is excluded from the competence of the Ministry of Trade, Tourism and Services, of which it was once an integral part. According to the current legal solution, the Commission for Protection of Competition is now an independent and autonomous legal entity responsible for its work to the National Assembly. And that's how it should be. In particular, it should be borne in mind that the Commission for Protection of Competition cannot perform its work alone, without the assistance of other state bodies, specifically the courts. That is why in the last part of the paper we researched the activity of judicial bodies on the issue of suppression of unfair competition. We observed the crimes committed on the territory of the entire Republic of Serbia in the period from 2016 to 2021 and came to the conclusion that this type of crime is not the most dominant and does not have a high frequency of commission, but that it can cause great damage to society. Corruption crimes, especially trading in influence, but also giving and receiving bribes, are a big problem when trying crimes with this nature, because as one side of the court process some large retail chains are involved, which can greatly affect the way of doing business and that is why they are ready to do everything to make the verdict in their favor. What is easy to notice and immediately criticizes the work of the court is that most court proceedings end with a suspended sentence.

Practice has shown that this criminal sanction is very abused (although there are many useful sides) and that it is usually imposed in the case of judicial uncertainty as a good compromise solution. With the imposition of this criminal sanction, the procedure is over, a sentence has been imposed, but whether the purpose of punishment has been achieved remains questionable. It should be noted that imprisonment is rarely imposed, but even in cases when it is imposed, it is short-term, usually lasting about 6 months, although the law provides for up to five years in prison for this crime. Therefore, in order for this criminal act to be suppressed, it is still necessary to change the previous court practice.

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## COMPANY MANAGEMENT USING MANAGERIAL DASHBOARDS AND ANALYTICAL SOFTWARE

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### **ABSTRACT**

*In order to achieve their set goals, companies purposefully use managerial dashboards, software that provide them with adequate information necessary for business at all times. Top management includes these technologies in the processes of improved and more efficient management of human resources and financial aspects. Company management performs analysis, more easily controls the business environment, and makes decisions at the right time. These dashboards are used in all areas of management to increase business speed and make more profit, using charts, displays, and lists. The aim of the research is to improve the theoretical model by clarifying the characteristics and possibilities of promoting the increase of positive results of organizations. The indicators speak about the coherence of strategy and interactive management control, which are key factors influencing the degree of use of these technologies and the perception of managerial performance.*

**Keywords:** *company management, managerial dashboards, analytical software, economy, Excel, BI*

### **1. INTRODUCTION**

In the current time interval of the global world where the economy is based on the philosophy of the modern age, business strategies alone are not enough to achieve the goals of companies (Todorović & Ristić, 2019). By striving to implement the best strategies to achieve greater value for their services, they rely on new data connectivity platforms with an innovative approach. This software helps them to achieve the planned solutions and perform the necessary analysis of business processes through the application of optimization and various fine-tuning, review, launching various advanced discourses. This approach creates a free, necessary space for defining the performance of supervision and recognizing the level of business activities on which the most important performance indicators will be studied. Quantitative monitoring and analysis of business activities have proven to be an effective method, but their presence in today's business segments does not represent a new concept. The whole form of business can be explained by the formation of managerial control panels. The great interest and trust in them are based on the fact that the obtained data have never produced wrong conclusions. The research in the paper is based on the use of human resources intelligence through business, by increasing the efficiency of management controls. The degree of difference in the purpose of dashboards depends on the level of involvement of managers through the tasks they receive, for example, focusing on a specific area of the organization in marketing (Dakić, et al., 2016).

The connection between management and dashboards is studied by providing a theoretical understanding of the phenomenon of strategy surrogacy, which occurs in situations of implementation of limited measures through a simplified reporting system. There are opinions that surrogacy is a mechanism by which the management of companies connects the ultimate goals and measures for the performance of operational managers with the investment of financial resources at the local level. It is assumed that strategy substitution affects outcomes at the strategic level, it is suggested that this practice may be useful for managers at the operational level (Reinking, et al., 2020; Teplická, et al., 2020; Rahman, et al., 2017)

## **2. THEORETICAL FOUNDATION**

Increasing the demand for dashboards raises the level of their development making them more complex. There is a growing need to study the activities and characteristics of business on screen. Their purpose is to store information related to given levels of management. Integrated goals of employed human resources and managers, relying on these technologies presuppose achieving higher productivity. The daily activities of the manager are related to:

- 1) Analysis and business management is done by reading dozens of different reports
- 2) A lot of time is wasted on collecting and organizing data
- 3) Critical decisions are based on outdated information

The application of innovative technologies eliminates shortcomings in business. In just thirty seconds, executives can get photos of different values of the most important management indicators in the company.

## **3. MANAGERIAL CONTROL DASHBOARDS**

Providing a “vital sign” and other necessary information by managerial dashboards, as a clear and positive signal to management, is an aid on the targeted path. By presenting real values, they represent perceptions of the company's comprehensive blood counts. In cases of deviations in the monitoring of activity, the boards are automatically updated so that there is room for reaction, which enables the preservation of business stability. On the basis of better visibility, an environment of positive business cooperation with other economic entities is achieved. It enables the analysis of key performances and successfully performs monitoring, as a necessary systematic assessment of process improvement in relation to the planned material investments, activities, and results. Based on information processing, the software presents them to users in visual formats such as text, tables, and graphs. Based on the visualization, data processing becomes clearer and more attractive to the end-users of control panels, which are components of the BI system. The four key parts of a BI system are infrastructure, data management, analysis, and information delivery. The fourth component, which is usually presented as a digital control panel, plays a vital role in the managerial decision-making process at the operational level. These systems, with their characteristics, provide a focus on the goals of organizations and at the same time simplify learning and the possibility of vertical and horizontal development of the company. The integration of perceptions is a process that involves establishing a common understanding between different people, which is achieved by preserving measures and a common language. BI is a key element of the dashboard that enables the establishment of consistent, understandable dialogues at all levels of the organization.

### **3.1. Company management using management cockpit and war room**

The essential use of the control panel, which supports the information and communication needs of the executors, is concentrated in the machine of the management control cabinet. Essentially and in terms of value, it represents a space for the application of strategic management and consists of an impressive set of control panels that enable top managers to better coordinate

business. The idea is to create an environment that will connect the creators of business activities by strengthening the creative interaction between teams, in order to create business success. To achieve this goal, indicators of key performance indicators and information related to critical success factors are displayed graphically on the walls of meeting and conference rooms, management booths. The instrumental panels and screens are decorated with visual effects, reminiscent of the control, pilot cabin of an airplane with the idea of easier perception of various business factors. This is reflected in the formal assignment of various colors to the cabin walls, which allows better observations by observers. The black wall shows success factors and financial indicators. On the red wall are measures of marketing performance. The blue wall demonstrates the performance of internal processes and employees. While the white wall is reserved for reviewing the status of strategic projects. Current business questions are answered on the basis of valuable creative meetings of management in the created control booths, and various "What if" scenarios can be applied for that purpose. By supporting the translation of corporate strategy into concrete activities, performance indicators are studied and the foundation for information and communication is provided, as key factors for further innovative progress (Anon., 2021; Thorhallsdottir, 2016; Singularity, 2021; Singularity, 2021). Managing an organized society requires constant attention and immediate reactions, given the rapid flow of necessary data in business processes. A meeting place is reserved for a dedicated control cockpit, where dashboards are displayed on each wall providing simplified monitoring and understanding of the ongoing development of companies' online activities. The video wall allows easy communication at any time. It provides a view of key company figures at any time and tracks business development in real-time, using a simple and intuitive interface. The war room is a business room intended for the realization of daily training with the aim of developing team spirit in companies. Its concept is to draw inspiration from the strategies used by governments during the wars to involve strategic players as a team, in order to achieve victory. Controlling is the realization of managerial control over organizations, private and public. The main goal is to achieve economic transparency and management control in the business activities of corporations. It enables better and easier management, providing complete information about their finances, customers, and suppliers. Employees can use dashboards through operational control, displaying advanced tasks, while professional managers use them to manage at a strategic level by displaying the overall performance of projects. The control panel displays the task progress of each sub-project. Graphs and vertical progress bars are displayed, with an emphasis on the percentage of completed tasks (Kerzner, 2017; Brahim, et al., 2019).

### **3.2. Dashboard analysis processes**

Management dashboard analysis is performed using performance indicators. They represent a way of periodically analyzing and assessing the characteristics of firms, business units, their departments, and human resources. Accordingly, they are defined in an understandable, measurable, and meaningful way. Performance indicators are commonly used to analyze and report on various aspects of a company. They provide a way to measure and improve the efficiency of different departments and human resources. Performance indicators are used to measure different aspects of a company.

There are different strategies that can be used to evaluate these components and they are made up of the following divisions:

- 1) Quantitative indicators
- 2) Practical indicators
- 3) Directional indicators
- 4) Action indicators



For financial indicators, it has been empirically confirmed that key performance indicators (KPIs) are strategies that encourage the development and implementation of business plans instead of operational managers. The theoretical model of surrogacy, which is a process of connecting goals and strategy, is studied. Interactive management control increases organizational attention and facilitates horizontal and vertical communication. The European Union plans to increase the use of the digital economy towards the parallel development of the sharing economy and the accompanying standards of information sharing technologies (Dubolazov, et al., 2020; Tagara, et al., 2020). Increasing the profitability of the economy is related to the development of business processes through their implementation and identification. The significance of this can be realized due to the different possibilities of using software in practice. Economic transparency of the market and its management control is performed through digital platforms used by 60% of companies, including mainly family companies and public companies (Tagara, et al., 2020).

### **3.3. Design manner of using control dashboards**

Manager dashboards can be based on different platforms. They currently integrate PowerBI, Excel, and the Web environment. They provide business users with graphical representations of all current events in the company or organization, where at any time employees can see the current state of key performance indicators (KPIs), monitoring and analysis of the progress of defined organizational goals. These technologies are tools that enable companies to manage more easily and increase productivity. Their development is related to the degree of risk, so in certain research, they are presented as internal and external control panels with different data displays (Kitchin, et al., 2015; Quattrone, 2017; Sturm & Fischer, 2019). The use of the Internet, Intranet, and Extranet made it possible to display data regardless of location. By summarizing innovative components, ie by adequately combining managerial control panels, performance indicators, and business methodologies, organizations can work on training practices.

### **3.4. Analytical software for creating control dashboards**

Possession of certain knowledge and experience can be applied to the construction of managerial control panels. They represent a set of different charts, tables, numbers, balance sheets. For their programming, it is necessary to use the entry of appropriate data, which depends on the needs of the management corps of companies. Based on the information gathered, these tools facilitate business decisions. Controlling is an important part of the management information system. It helps to better understand the various processes within companies and improves efficiency. Its concept is based on the management's realistically set goals by the management. Software such as: Excel and Microsoft Office, PowerBI, MS Access are present in the markets, which now offer various control systems.

### **3.5. Microsoft PowerBI**

Power BI is a business process tool for visual data analysis that works great on a variety of operating systems. Other tools such as IBM InfoSphere, R, Statistica, SSPS, MatLab, or Python can also be used to analyze data (Popović, et al., 2016). However, it is the only technology that can be paired with other Microsoft products, such as Excel, and can be used as an online platform through which users can search, visualize, and share their data. By downloading this tool as a desktop application for Windows it can be done for free from the site (Microsoft, 2021). Using these tools, we can create a custom data set and get the ability to create reports on the user side. This feature is important because it gives users access to store data and reports offline that we can later publish and make publicly available on the Power BI platform.

An essential feature of this software is the Quick Insights feature, which provides users with quick analysis and visualization of various control panels regardless of the complexity of the data itself. Creating reports based on data but without direct human intervention, makes Power BI the most desirable tool because it allows a greater degree of accuracy when choosing the appropriate chart or visualization (Noonpakdee, et al., 2018; Microsoft, 2021; Microsoft, 2021; Microsoft, 2021). The business of small and medium enterprises can be easily adapted to the application of the concept of templates contained within this software, in order to develop their own control panels by including their own reports and relevant data from the previous period.

### **3.6. Microsoft Excel**

The program that is necessary for working with tables enables the entered data that are in rows and columns to be converted into calculations, statistical analyzes, graphs, pivot tables. Excel can be a useful artificial language for organizing, storing, and manipulating data. From it comes "Excel-based dashboard reporting to improve business decisions", which could be a dashboard that translates as "using Excel-based dashboards to improve and make business decisions." It's also a great tool. to create reports without coding or knowledge. His add-on "Dashboard Designer" allows users to merge their spreadsheets and move them to one common business dashboard. Various templates that look like control panels show the state of the so-called Modular Design. This allows top management the freedom to change the source of information, without changing the look of the presentation itself. Managers and decision-makers will receive data as soon as possible, which will help them maximize opportunities and reduce crises. Striking dashboards provide snapshots of key performance indicators (KPIs) for fast and efficient action and better cognitive processes. Combinations of tables, scales, and graphs provide key details in the ability to respond effectively in any situation. By supporting daily reports, many individuals have access to information at the same time, participating in decision-making processes and using different perspectives that support their areas of responsibility. Excel reports enhance decision-making because the data is often directly available. Decision makers can pinpoint specific situations and respond quickly by managing crisis situations before they spiral out of control. Comprehensive traffic lights for financial data for marketing analysis, so-called guides for development decisions and marketing strategies are provided. Sales information is collected, such as product sales inventories, product distribution transactions, internal departments, and regional sales departments. Launching the "Turnkey" strategy allows you to create access in accordance with the appropriate permissions, ownership, and private data within one control panel. The unification of the created report for each employee in the company triggers the pursuit of efficiency by the employee and the company itself. Finding a great business reporting tool that allows for fast, flexible and cost-effective, reviewing can be a very challenging task for people who are not narrowly specialized in IT.

## **4. REAL EXAMPLE FROM BUSINESS PRACTICE**

The digital economy and the sharing economy have special rules that have been improved by the European Commission. In order for the decision-making process to be successful, reports consisting of various elements are used. They provide relevant estimates of firm assets and their management based on the various data provided by (Dubolazov, et al., 2020). Utilities without which populated areas such as cities would not be able to function are controlled through the use of head-up displays. These activities are updated to detect deviations in the dynamics of a given process. This is a very important detail that allows managers to recognize the profitability of investing in new technologies (Dakić & Todorović, 2021). All of this makes it possible to avoid economic anomalies such as tax evasion. Halliburton engineers use the visual representations of the data to be able to notice anomalies in the data. In practice, dashboards help companies increase productivity and make a profit. For example, Halliburton Co., one of

the largest global companies in North America that provide oil services. The energy industry has avoided natural gas production by encouraging oil field exploration, providing the company with record revenues (Previously, et al., 2012). Management noticed high fuel consumption within the company, on the basis of which it punished those responsible for poor performance and unsuccessful coordination with various suppliers. Data from 2021 show an increase in Halliburton's profit in the third quarter based on higher oil prices and higher demand for drilling oil fields. Brent Oil is traded on the energy markets for about \$ 85 per barrel, an increase of 64% this year. Brent crude oil, also referred to as a blend, is one of the three leading benchmarks for oil serving in options trading, derivatives and oil contracts (IG, 2021). The current price of American oil is around \$ 83.5 per barrel (Reuters, 2021). The most common reference value of oil in the world is related to the crude form of this natural resource. Brent crude oil is used as the third main oil reference value by investors and traders. Managerial dashboards make it easier for company executives to analyze comprehensive business sectors, keeping in mind the productivity on which employees are stimulated and punished. Necessary coordination between a large number of construction sites has been improved by controlling the use of transport vehicles, enabling large fuel savings. This is seen in annual reports and business sustainability reports (Halliburton, 2020; Halliburton, 2021; Liz Hampton, 2021). Based on all this, it can be concluded that Halliburton is tracing a new direction despite the global crisis of the falling energy market and the impact of the covid pandemic during 2020 and 2021 (WETHE, 2021).

## **5. ANALYSIS AND DISCUSSION**

Different features and purposes of using dashboards in relation to management levels in organizations have been observed. Through research in the work, users are provided with a better understanding of the various functions of the same. The results revealed that the control panel is most often used by managers at lower levels of corporate governance. What has been said so far is related to the dilemma related to the question of when control panels have an impact on the performance of management with the aim of managing companies? In which situations will they be more involved in order to improve their business and thus more easily achieve the set goals? Using these tools creates an environment in which companies create business success through the easier achievement of higher goals. As the human resources intellect of every company says, "Doing business using management is becoming the highest spiral, providing companies with the safe and predictable achievement of realistic goals.

## **6. CONCLUSION**

Companies should ensure the desired goals by optimizing, understanding, and harmonizing business elements. If more of them decide to implement a tactically oriented initiative, it will mean that the management will more efficiently harmonize the business with the strategy of the tasks themselves. Organizations interested in the implementation of management dashboards will be able to manage key factors with all the necessary requirements of one or more companies. By influencing the performance of management with the goal of management, it will be easier to coordinate with the set goals and will strengthen the competition through a greater interest in improving the business. With the advent of new analytical techniques and sources of information for business management, constant research is necessary. The presence of a wide range of opportunities points to further research with the aim of providing more complete support in making important decisions. Personalizing services within different companies requires optimization, understanding, and compatibility with complex market requirements. By harmonizing analyzes and data, the set goals will be achieved. Business steps related to company tactical initiatives lead management to effectively coordinate task execution strategies. Dashboards help operational managers align objectives and implement adequate strategies, by publishing key performance indicators (KPIs).

They are becoming increasingly important in the assessment of qualitative data, focusing on systems based on data processing and aggregation. The complexity of the control system and the design are the reasons for further research on the implementation of advanced control panels. With their appearance, there is a possibility of applying artificial intelligence. The aim of this paper is to comprehensively look at different aspects of quality in order to understand the necessity of using control panels.

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## DEPRIVATION OF PARENTAL RIGHTS IN SERBIAN LAW

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### ABSTRACT

*The subject of constitutional regulation in our legal system is also the matter of restrictions on parental rights. The Constitution of the Republic of Serbia, first of all, generally stipulates that the human and minority rights guaranteed by it may be limited or even completely disabled. One of the most difficult measures envisaged by this highest legal act and the Family Law of the Republic of Serbia envisages the sanction of restricting the exercise of parental rights until the complete deprivation of this right. In this paper, we will try to pay attention to this most severe sanction that a parent can invoke in relation to their children. We will look at the causes and consequences of gross neglect of parental duties as well as their unscrupulous realization in the holiest and brightest role that parents should play in relation to their offspring. Since parental rights belong to the corpus of human rights, this means that general principles for the restriction of human rights also apply to restrictions on the exercise of parental rights. Any interference by the state in family relations must be lawful and justified. The greater the interference of the state in family life, the greater the justification for such actions must be. The general principles for the restriction of parental rights are concretized by the law determining the reasons for which a parent may be completely or only partially deprived of parental rights. The reasons why most modern legislation allows the imposition of such a strict civil sanction on parents are related to the behavior of parents and the need to protect the personality, rights and interests of the child. Starting from the general conditions for restricting parents in exercising parental rights, established in confirmed international agreements, in our family legislation these reasons are defined as: abuse of parental rights, gross neglect of parental duties and negligent performance of rights and duties from the content of parental rights.*

**Keywords:** *Human rights, parental rights, children's rights, abuse of parental rights, deprivation of parental rights*

### 1. INTRODUCTORY CONSIDERATIONS

Since parental rights belong to the corpus of human rights, the subject of constitutional regulation in the domestic legal system is also the matter of restrictions on parental rights. The Constitution of the Republic of Serbia, first of all, generally stipulates that the human and minority rights guaranteed by it may be restricted if the Constitution allows it, and only to the extent necessary to satisfy the purpose for which the restriction is allowed in a democratic society. Public authorities must take into account the essence of the right being restricted, the importance of the purpose of the restriction, the nature and extent of the restriction, the relationship between the restriction and its purpose and whether there is a way to achieve that purpose by less restricting the right. It must not interfere with the essence of the guaranteed right.

The Constitution of the Republic of Serbia does not contain the wording that is common in international legal documents on the restriction of human rights, and according to which the restriction of rights must have legitimacy. In our law, any purpose of restriction allowed by the Constitution itself is allowed. In addition to the general rules relating to the restriction of human rights, the Constitution also contains special provisions on the restriction of parental rights. Namely, the Constitution allows for the possibility of depriving or restricting all or some of the rights of parents. According to the Constitution, such a decision can be made only by a court, and only if it is in the best interest of the child and only under the conditions determined by law. According to the Family Code of the Republic of Serbia, the child's right to parental care expressed through the duty of parents to actively exercise parental rights "so that they will personally take care of his life and health" and not in any way, but by providing "the best possible living and health conditions for proper and complete development ", is protected through the author's authority to ensure the exercise of that right through the intervention of the state government as well as any other subjective civil right. The specificity of this relationship is, however, that the parent can not be forced by any means of legal coercion to care for the child, nor to care in accordance with the assumed standards of child welfare that apply in a society, but the protection of this child's right is realized various forms of intervention by the competent state authorities, starting with measures of preventive and corrective supervision over the exercise of parental rights, such as pointing out to parents the shortcomings in the exercise of parental rights and referring, that is, providing assistance and support to parents to raise and improve the quality of child care, to provide alternative family care for the child and sanctioning parents for not exercising or negligently exercising parental rights. Awareness that a certain behavior is prescribed by law and that it is provided by a sanction, as a rule, preventively affects the one to whom it refers, so that it is mostly realized without special state intervention. Only when there is a deviation from the prescribed behavior, so that the protected subjective right is violated or endangered, the details of legal protection are opened. Legal protection in the form of radical state interference in family relations can follow only after unsuccessful attempts to provide help and support to parents, unless it is clear from the circumstances of the case that the degree of endangerment of the child is such that the most extreme measures of state intervention must be applied immediately. However, deprivation of parental rights does not occur by force of law, but on the basis of a final court decision. As this is a judicial denial of the exercise of parental rights indefinitely (and this often means permanently), the court cannot deprive a parent of his parental rights, except in the most serious cases of parental negligence or abuse established as such by law. In addition, a decision denying parents, for reasons prescribed by law, the possibility of exercising parental rights at the same time restricts the child in exercising the right to live with his parents. The Family Code prescribes identical conditions for restricting this right of the child: "The right of the child to live with the parents may be limited only by a court decision when it is in the best interest of the child", and "the court may decide to separate the child from the parents if there are reasons to the parent is completely or partially deprived of parental rights or in the case of domestic violence". The same rules apply when it comes to the reasons for restricting the child's right to maintain personal relations with parents with whom he does not live: "The court may decide to limit the child's right to maintain personal relations with parents with whom he does not live if there are reasons completely or partially deprived of parental rights or in case of domestic violence".

## **2. EXERCISING PARENTAL RIGHTS**

Like other subjective civil rights, the right of the child arising from the child-parent relationship can be violated in several ways: when the obligated person (parent) fails to perform a certain action that he is obliged to do; when he performed an action from which he should have

refrained; when he prevents the performance of an action which, otherwise, he should have suffered. As a rule, in all the above situations, legal protection is repressive - aimed at preventing legal actions of parents and eliminating harmful consequences for the child. If the state's efforts to eliminate parental omissions and mistakes, the symptoms of parental dysfunction, do not bear fruit, the ultimate measure, which cannot be truly viewed as the best interest of the child, but as a necessary evil, is deprivation of parental rights. Namely, in the competition of two rights of the child - the right to parental care and the right to life, survival and development, one right must be violated, and the primacy, undoubtedly, has life, is the state must protect the life, health and development of the child. In this context, deprivation of parental rights should be seen as the least harmful alternative. In addition, when determining the scope of deprivation, strict care must be taken to respect the principle of proportionality, ie that the scope of restrictions on parents in exercising parental rights be proportionate to the risk and danger to the child. This is also due to the need to preserve, as far as possible, the relationship between the child and the parents in order to create conditions for eliminating the causes that led to the deprivation of parental rights, so that the family reintegrates in the future and re-establishes the child's right to parental care. Finally, the reasons why a parent may be deprived of parental rights must be prescribed by law. Reasons that dictate the reaction of the state in situations when the behavior of the parents towards the child is such that it requires the deprivation of the parental rights. Family law defines them through the use of legal standards: "abuse of rights", "gross neglect of duty". It is, in fact, about certain value assumptions and ethical attitudes that are valid in a society. Depending on whether it is an abuse of parental rights or gross neglect of parental duties or negligent performance of rights and duties from the content of parental rights, the consequences of deprivation of parental rights for parents can be different - complete deprivation of parental rights or partial deprivation of parental rights. What can be said in general when it comes to the concretization of legal standards in court proceedings, applies to the standards used by the legislator in defining the grounds for release of parental rights: The court is the one who, using an objective criterion subjective circumstances of a specific case, take a position on whether the specific action or behavior of the parents is such that it can be considered "abuse of rights", "gross neglect of duty" or "negligent performance of rights or duties".

### **2.1. Complete deprivation of parental rights - concept and reasons**

Complete deprivation of parental rights is the most severe civil sanction that can be imposed on one parent, with the aim of protecting the personality, rights and interests of the child. This measure most radically encroaches on the status of parents, and, therefore, it has been placed under the jurisdiction of the court. In order to determine the notion of complete deprivation of parental rights, it is necessary to first refer to the terminology used in our legal system, which, as already mentioned, is not balanced. According to the Constitution of the Republic of Serbia, all or some rights can be taken away or limited to one or both parents. Family law, however, uses the term "deprivation" to "deprive" parental rights, while measures of "restrictions" on parental rights are not standardized under this name, but are recognized in several different institutes (measures of supervision over the exercise of the parental rights, measures of temporary custody, measures of protection from domestic violence, etc.). Apart from linguistic inequality, the terminological question also refers to the insufficiently clear formulation of the terms "deprivation of parental rights", "restriction of parental rights" and "deprivation of parental rights". In other words, the question arises as to what is "taken away" from parents when a civil legal sanction is imposed "complete deprivation of parental rights" - parental rights as such or only the authority to exercise rights and duties from the content of parental rights? There are different views on this issue in legal doctrine. According to one point of view, complete deprivation of parental rights deprives parents of parental rights as such, that is,



complete deprivation of parental rights terminates that right. According to another point of view, parental rights, since they represent an element of the legal relationship between a child and a parent, can terminate only when the duties and rights of parents towards children cease by force of law, and while this legal relationship lasts, parental rights cannot be revoked by suspension, restriction or deprivation. It may already cease to be practiced. Law exists but cannot be exercised. According to this view, parental right is a complex set of rights and duties of parents towards children, so by depriving the parental right, the parent is deprived only of the possibility of exercising the right, but not of the duty. Family law explicitly stipulates that parental rights cease when the parent is completely deprived of parental rights. However, the provision of the Family Code according to which the court decision on complete deprivation of parental rights, except for the duty to support the child, as well as the provision stipulating that the parent's parental rights can be returned when the reasons for which he was completely or partially deprived of parental rights cease, that the parent, even after the complete deprivation of parental rights, continues to perform certain parental duties that are part of the content of parental rights. Since the parental right is derived from the duties of the parent and includes: custody, upbringing, education, representation, maintenance and disposal of the child's property, the question arises whether it is possible to terminate it completely if part of its content remains after the complete deprivation of parents' parental rights or is it still a matter of judicial denial of the right of a parent who has abused parental rights or grossly neglected parental duties, to perform those rights and duties in the future? Part of the answer to this question should be sought in the fact that the deprivation of parental rights does not end the rights of the child. The child has the right to have his parents, although completely deprived of parental rights, provide all the necessary conditions for proper and complete development, has the right to parental support, and has the right to maintain personal relations with a parent who is deprived of parental rights. The Family Law determines two reasons for complete deprivation of parental rights: 1) Abuse of parental rights; 2) Gross neglect of parental duties. In both cases, it is a matter of misconduct of the parents for whom this family legal sanction is envisaged, regardless of whether harmful consequences have occurred. The only corrective is the best interest of the child.

### **3. ABUSE OF PARENTAL RIGHTS**

In legal theory, the abuse of parental rights is defined as the exercise of rights contrary to the purpose for which the law established and recognized (objective definition) or with the intention to harm the child. Since parental rights are derived from the duties of parents and exist only to the extent necessary to protect the person, rights and interests of the child, abuse of parental rights exists when the right or duty is exercised in a way that does not protect the person, rights and interests of the child. It is done to the detriment of the child, where it is necessary to have the objective ability of the parent to exercise parental rights, but also a certain subjective attitude of the parents to the rights and duties - his misbehavior, his conscious and voluntary behavior of abuse, his intention to parental rights and duties use contrary to the rights and interests of the child. In legal theory, there is a view according to which it is sufficient for deprivation of parental rights that the parent, exercising his parental right, violated or endangered the rights and interests of the child, where the circumstances and reasons for such parental behavior are not affected. And a parent who, due to a mental illness or disorder in psycho-physical development, is not capable of normal reasoning and therefore is not able to take care of himself and protect his rights and interests in an appropriate way, not even the interests of the child. According to this view, the reasons that can lead to deprivation of parents of legal capacity may be relevant for deprivation of parental rights, and the only criterion is the interest of the minor child, all criteria must be linked to the existence of consequences for the child. The position is similar, according to which the right of the child determines the limits of the authority of the

parents, so exceeding it represents an abuse of the right of the parents. Since the obligation of the state is to take all necessary measures to protect the child from abuse and neglect, fulfilling this obligation includes taking measures to prevent the injury of the child, so the measure of deprivation of parental rights can be taken when there is a risk of injury and child harmful consequences. Namely, the child's right to life and health and to protection from all forms of abuse, abuse and exploitation is broader than the duty and right of parents to take immediate care of it. Therefore, the state has an obligation to provide protection of the child's rights, and that protection certainly includes prevention measures and is provided, among other things, by the norms of family law. The normative substrate that regulates this matter is extremely modest. Family law cites some forms of the most gross violation of the rights of the child, incompatible with the role of the parent and with the usual expectations of the social community, as examples when there is an abuse of parental rights.

According to the family law, the parent abuses the rights from the content of the parental right:

- if he physically, sexually or emotionally abuses a child;
- if he exploits a child by forcing him to excessive work or to work that endangers the morals, health or education of the child, or to work that is prohibited by law;
- if he encourages a child to commit criminal offenses;
- if the child gets used to giving in to bad inclinations;
- if he otherwise abuses the rights from the content of the parental right.

The law did not close the list of illegal actions of parents that can be characterized as abuse of parental rights, because life is always more inventive than the legislator, so it is difficult to list all possible forms of abuse of parental rights, and whether a specific action or behavior of parents can be considered abuse of parental rights is assessed by the court. Although the Family Law does not regulate in detail the content of the terms physical, sexual and emotional abuse of a child, the definitions of these terms are contained in various documents, among which the most common are those established by World Health Organization at the Consultation on the Prevention of Child Abuse held in Geneva 21-31. March 1999, which were accepted in the General Protocol for the Protection of Children from Abuse and Neglect adopted in 2005 by the Government of the Republic of Serbia. This protocol is a kind of guide for all actors involved in the process of protecting children from abuse and neglect, including the court, so the definitions it contains are valuable for court practice. Numerous examples of child abuse that have led to deprivation of parental rights have been reported in court practice. Thus, the mother who did not protect the child when her extramarital partner committed lewd acts against the child was completely deprived of parental rights, but "she herself participated in the abuse of the child by filming the event with a mobile phone with incitement to illegal sexual acts." The court completely deprived the father of parental rights, who committed psychological violence against the children during the marriage, saying that the mother would leave them, which greatly upset the children, and then, after the divorce and entrusting all six children to the mother, "aggressive by behavior, beatings and verbal violence-threats, he forced all children to steal in shops and markets." He was completely deprived of parental rights and the father who killed the child's mother in the presence of a three-year-old girl in front of the Center for Social Work, which according to experts caused the child "accumulation of tension, restlessness, fear and other negative emotions development, with the danger of transgenerational transmission of trauma". The terms "child exploitation", "overwork", "work that endangers the morals, health or education of the child" are also not specifically regulated in the Family Law. Therefore, in order to determine the content of these terms as well as to determine which child labor is "prohibited by law", it is necessary to rely on other regulations.

In Serbian law, the matter that regulates the position of children in connection with work and labor exploitation in addition to the labor law (which prescribes conditions for employment of persons under 18 years of age, length of working hours and prohibition to work on particularly difficult jobs that would, on based on the findings of the competent health authority, could adversely and with increased risk affect his health and life with regard to his psychophysical abilities), is regulated by the Law on Safety and Health at Work, the Criminal Code, the Law on Public Order and Peace, the Law on sports and others. In addition, our country has ratified several documents adopted under the auspices of the ILO that relate to child labor, among which the ILO Convention No. 182 on the Worst Forms of Child Labor is particularly significant. This convention applies to all children under the age of 18 and for the first time defines the worst forms of child labor. For the purposes of this Convention, in accordance with Article 3, the term "worst forms of child labor" includes:

- all forms of slavery or practices similar to slavery, such as the sale and smuggling of children, debt slavery and serfdom and forced or compulsory labor, including the forced recruitment or compulsory recruitment of children to take part in armed conflict;
- using, procuring or offering a child for prostitution, production of pornography or for pornographic performances;
- using, procuring or offering a child for illicit activities, in particular for the production and smuggling of drugs as defined by the relevant international agreements;
- work which, by its nature or the circumstances in which it is performed, is likely to be detrimental to the health, safety or morals of children.

ILO Convention No. 182 obliges all member states to establish and periodically revise the list of dangerous jobs, processes and activities in which child labor is by its nature or circumstances in which it is performed is likely to be harmful to children's health, safety or morals.

### **3.1. Gross neglect of parental duties**

Gross neglect of parental duties is a violation of the child's right to development. The stated reason for deprivation of parental rights exists when the parent does not take care of his child, does not meet his basic existential and social needs and this violates or endangers the child's right to proper and complete development. As a child's development has a physical, mental, social and cultural component, neglect has several aspects. Gross neglect is primarily manifested as psychophysical neglect because it directly endangers the child's personality: basic living needs (food, water, heating), health (not taking to a doctor's examination, vaccinations), education and others are neglected. Our family legislation lists, *exempli causa*, typical cases of gross neglect of parental duties. Thus, according to the Family Code, the parent grossly neglects the duties from the content of parental rights:

- If he left the child;
- If she does not take care of the child she lives with in general;
- If he avoids supporting the child or maintaining personal relations with the child with whom he does not live, ie if he prevents the maintenance of personal relations between the child and the parent with whom the child does not live;
- If he intentionally and unjustifiably avoids creating conditions for living together with a child who is in a social protection institution for the accommodation of users;
- If in another way he grossly neglects the duties from the content of parental rights.

In essence, gross neglect of parental duties is illegal parental behavior expressed through inaction. The acts of omission can also be a criminal offense, so, in parallel with this family law, a criminal sanction can be imposed.

### *3.1.1. Partial deprivation of parental rights - concept and reasons*

Partial deprivation of parental rights is a civil sanction imposed on a parent for negligent performance of rights and duties from the content of parental rights. Partial deprivation of parental rights as a civil sanction is manifested through the abolition of the right possibility for a parent to perform one or more rights or duties from the content of parental rights. It manifests itself differently depending on whether it is a parent who exercises parental rights (together with the other parent or independently) or it is a parent who has parental rights, but does not exercise them. A parent exercising the right may be deprived of the right and duty to care for, raise and educate the child, to educate or represent the child, or to manage and dispose of the child's property. A parent who does not exercise parental rights may be deprived of the right to maintain personal relations with the child and the right to decide on issues that significantly affect the child's life. Parents cannot be deprived of the rights and duties of child support, since the relationship between the child and the parents is strictly personal. Manner of exercising parental rights does not have to be the same in relation to all children, so the measure of deprivation of parental rights does not have to include the rights of parents towards their children. A parent can be deprived of parental rights only in relation to the child whom he / she treated unscrupulously, and if he / she acted unscrupulously towards his / her children - he / she can be deprived of parental rights in relation to all children. The decision on the scope of deprivation as well as on the relation to which the child is made (if the unscrupulous parent has several children) will always depend on whether the parent acted unscrupulously with regard to several rights and duties from the content of parental rights or only with some of them, in relation to all their children or in relation to some of them. Only one of the parents can be affected by this sanction, and both can be affected in the same or in a different way, to a different extent, depending on the circumstances of each specific case. Defining the reason for complete deprivation of parental rights, the legislator used the legal standard: "negligent performance of rights and duties from the content of parental rights". Since there is no closer definition, the content of this legal standard is filled in by the court with its judicial values. The position of the courts is that "conscientious exercise of parental rights is valued in each specific situation, that it implies behavior that in a certain environment is assessed as socially positive and acceptable, and is primarily in the best interests of the child." It is generally accepted that "negligence" implies a lower degree of responsibility than "abuse of rights", from "gross neglect of duty", which requires a lighter sanction, less encroachment on parental rights and the integrity of the parent-child relationship. According to court practice, unscrupulous exercise of parental rights exists when a parent "does not have insight into his / her parenting abilities as well as the child's real health condition", "cannot cope with the child's aggression", and "did not accept hospitalization or placement in an appropriate institution". social protection ", he did not adhere to the prescribed therapy ", refuses to give the child a certain medicine, and" he is unable to respond to the special needs of the child and does not take care of the child in an adequate way". Unscrupulous exercise of parental rights also exists when a parent, in contact with a child in a foster family, negatively influences the child by his own example, sending the child "wrong messages", "giving unrealistic promises", "encouraging negative behavior", which in certain childrengage causes the wrong impression and affects the adoption of wrong values, the "manifestation of aggression, hyperactivity and erotic behavior." When a parent during the contacts "shows a superficial interest in the children", he himself does nothing to improve the bad living conditions of his family and provide an opportunity for the children to return to the family. The research of court practice showed that among the court decisions on partial deprivation of parental rights, a large number of those whose parents are deprived of all rights and duties from the content of parental rights (custody, upbringing, education, representation, management and disposal of the child's property) except the duty of maintenance.

The analysis of the verdicts shows that the courts make such decisions mainly in the situation when in the procedure they determine that the behavior of the parents is such that it could be subsumed under the term "abuse" or under the term "neglect" of the child, but such a way of exercising parental rights qualifies as "negligent exercise of parental rights"

#### 4. CONCLUSION REMARKS

Like other subjective civil rights, the right of the child arising from the child-parent relationship can be violated in several ways: when the obligated person (parent) fails to perform a certain action that he is obliged to do; when he performed an action from which he should have refrained; when he prevents the performance of an action which, otherwise, he should have suffered. As a rule, in all the above situations, legal protection is repressive - aimed at preventing legal actions of parents and eliminating harmful consequences for the child. If the state's efforts to eliminate parental omissions and mistakes, ie symptoms of parental dysfunction, do not bear fruit, the ultimate measure, which cannot be truly viewed as the best interest of the child, but as a necessary evil, is deprivation of parental rights. Complete deprivation of parental rights is the most severe civil sanction that can be imposed on one parent, with the aim of protecting the personality, rights and interests of the child. This measure most radically encroaches on the status of parents, and, therefore, it has been placed under the jurisdiction of the court. Since parental rights are derived from the duties of parents and exist only to the extent necessary to protect the person, rights and interests of the child, abuse of parental rights exist when that right or duty is exercised in a way that does not provide protection of the person, rights and interests of the child but is exercised to the detriment of the child, where it is necessary to have objective parental rights to exercise parental rights, but also a certain subjective attitude of parents. And duties - his misbehavior, his conscious and voluntary behavior that is being abused, his intention to use parental rights and duties contrary to the rights and interests of the child. The law did not close the list of illegal actions of parents that can be characterized as abuse of parental rights, because life is always more inventive than the legislator, so it is difficult to list all possible forms of abuse of parental rights, and whether a specific action or behavior of parents can be considered abuse of parental rights is assessed by the court.

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## **BIG DATA MANAGEMENT PROCESSES IN BUSINESS INTELLIGENCE SYSTEMS**

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### **ABSTRACT**

*In this paper, we describe the processes in the development of Business Intelligence (BI) business reports that offers the company a precise insight into their operations, monitoring trends and timely (just in time) to assist to management in making important strategic decisions for the further development of the business. Each organizational management decision requires a comprehensive review of all the aspects of one company, therefore many companies provide for consolidated big data storages which contain and pull data from multiple distributed databases, which are maintained by the various dislocated business units. The trend of this kind of big data storage in the last few years has been growing exponentially, supported by powerful tools for analytical data processing. This paper describes such tools: big data warehousing (Data Warehousing), OLAP data processing (On-line Analytical Processing), OLTP (Online Transactional Processing) and data mining (Data Mining), tools for managers decisions support.*

**Keywords:** *BI, DSS, ETL, DW, OLAP, OLTP, DM*

### **1. INTRODUCTION**

Business intelligence brings the idea of actively finding and offering information to the manager, necessary in the decision-making process. These decisions are made on the basis of information obtained from information systems that enable the storage of huge amounts of data, ie. data warehouses. In-depth data analysis methods have been developed to solve many of the problems that arise when using them. Based on these analyzes, reports are created on the basis of which managers can make the right business decisions. Since each company has a specific area and way of doing business, there can be no universal systems, but there are universal concepts in their implementation. DBMS (Data Base Management System) is a collection of programs that allows users to create, use and maintain a database. It is a general purpose software system that supports the definition, construction and manipulation of databases for various applications. Defining a database means specifying the types of data to be stored in the database and a detailed description of each data type. Constructing a database is the process of storing data on a memory medium that can be accessed. Manipulating databases involves querying the database to find certain data, updating the database to make changes in the mini-world and generating reports based on data stored in the database, according to the request of one of the users.

With the growing demand for real-time data processing, traditional on-disk database management systems are under tremendous pressure to improve their performance. With the increase in the amount of data, which is expected to reach 40ZB (1ZB = 1 billion terabytes) by 2020, Fig.1. with the traditional DBMS architecture, the processing of such data becomes more and more an almost insurmountable challenge - because for such a large number of data, their processing and obtaining analytical results, conventional databases and can not give satisfactory results.

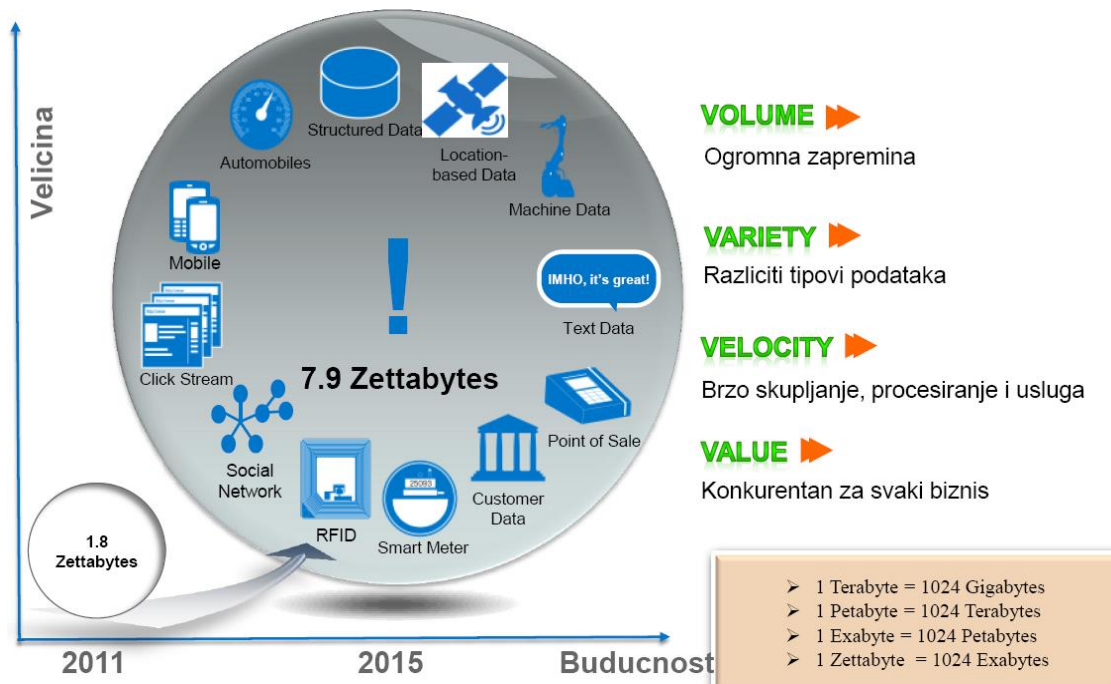


Figure 1: Display of the big data growth that will be in circulation in the future

## 2. THE CONCEPT OF BUSINESS INTELLIGENCE

In today's globalized market, there is increasing competition. At the same time, customers are becoming more demanding and picky. Firms must constantly check their competitiveness in the market and find a successful business strategy. They can gain an advantage over competitors only by market planning, product innovation, correct relations with customers, ie clients. Therefore, managers must have timely and relevant information on all aspects of business and market situation. The concept of BI (Business intelligence), Fig. 2, a quality decision support system, has been developing intensively in recent years. BI represents an upgrade of the business information system [1], [2]. It relies on the existing business information solution, but only in the field of collecting the necessary data to build its own independent architecture. Business intelligence combines methodologies, technologies and platforms for data warehousing (Data Warehousing), OLAP data processing (On-line Analytical Processing) and data mining (Data Mining), which enable institutions to create useful management information from business data, which are widespread on different transaction systems and come from different internal and external databases and sources.

The three main areas of BI solutions are:

- 1) Integration services
- 2) Analysis services
- 3) Reporting services

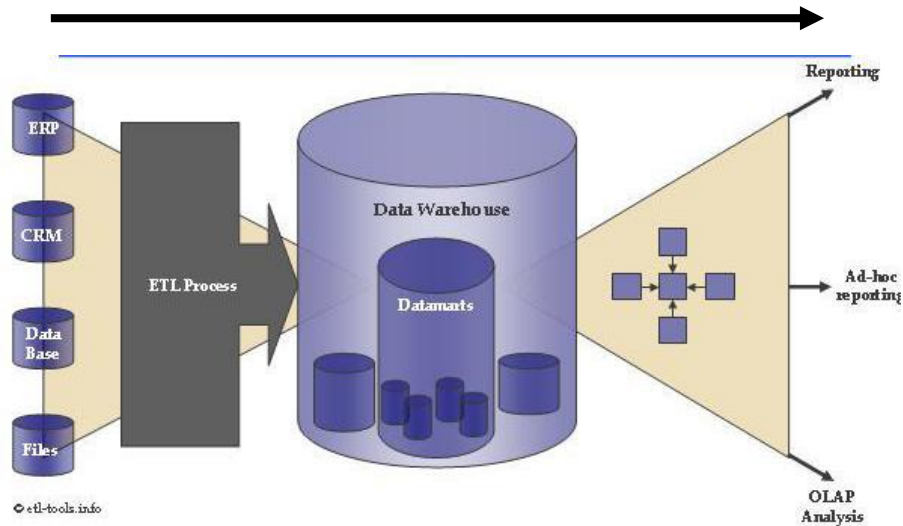


Figure 2: Structure of the BI system

Integration services adapt data from the everyday business environment to the needs of BI solutions. The process is known as ETL (Extract, Transform and Load). Data sources can be different:

- 1) ERP system (Enterprise Resource Planning) - business information system;
- 2) CRM (Customer Relationship Management) - customer relationship management system;
- 3) Business database;
- 4) Different files.

The transformation of this data is usually an automated process that is performed according to a predefined time schedule, according to a certain rotational scheme (monthly, weekly, daily). Analytical database, which is the basis for BI solution, is created according to the needs of business analysis. As an independent database, it gives the entire system adaptability to different business environments. Its connection to these environments is an integration system that is only redefined for application over other business systems. The development of BI solutions requires extensive preparation, collection of a significant amount of data related to business and business requirements, as well as a large part of time dedicated to planning to ensure proper design. It is very important to get information from all participants in the project because each of them individually has their own priorities and requirements that are unique to his role and business activities performed in the company. This is an iterative procedure, so the development cycle of the BI solution consists of several phases:

- **Design:** Within this phase, detailed data on user requirements are collected, business requirements are assessed, criteria and performance are defined and a specification is made. The conditions for monitoring and maintaining the solution must be defined. Procurement of necessary software and external services is also planned at this stage. At the end of this phase, the consent of the project sponsor (sponsor) is required for the transition to the next phase.
- **Implementation:** Once the design is approved, the necessary tools are provided and the development of the solution begins. During this phase, good coordination and management of all resources is required. Testing is performed and the first version of the solution is delivered to the users.
- **Monitoring:** During the life of the solution, useful information on the use and characteristics of the solution is collected by monitoring the business processes and systems. This information forms the basis for the assessment phase and any future redesign of the solution.



- **Assessment:** In this phase, based on the information collected during the monitoring, it is assessed whether the solution meets the set performance. The volume of data use shows how much value the solution represents for business users. Based on the assessment made in this phase, a decision is made on whether to move to the first phase of the new cycle - design.

As a prerequisite for successful project implementation, a full understanding is required: business requirements and objectives, user requirements (and identification of potential users) and technical requirements. The development of such a solution is performed in several phases:

- 1) Defining key parameters for analysis and forecasting;
- 2) Locating data from the business information system that represent concretized key parameters;
- 3) Creating an appropriate structure of the extracted data warehouse for the purposes of analysis;
- 4) Creating an automated system for extracting data from the transaction database, their processing and filling the database, which is a source for further analysis (Data Warehouse);
- 5) Creation of OLAP (Online Analytical Processing) database which is a multidimensional data model for efficient analysis and planning of further business development;
- 6) Creating dynamic interactive reports that are published via a web server on the company's internet or intranet;
- 7) Testing solutions on the client's side (web browser or excel).

### 3. REALIZATION OF DATA WAREHOUSE

The first step in developing a BI project is to define key parameters for business analysis and planning future business activities. Since the transaction database (OLTP) is constantly in use, creating a BI solution over it would take away system resources and slow down the work of regular users. Also, this database has a structure that is adapted to the needs of regular business. Therefore, for the purposes of analysis, a special database called Data Warehouse (DW) is designed with a structure adapted to the needs of business process analysis [2], [3]. It is desirable that this database be on a separate server where the OLTP database is located. The second step in creating a Data Warehouse is to locate the appropriate data in the OLTP database that will be the data source for the Data Warehouse. This also includes the type of source data in order to perform a correct mapping with the Data Warehouse table fields. The third step is just designing the DW database. Data Warehouse (DW), Fig.3, is a centralized warehouse of consistent data. An organization's operational information system contains data that describes a specific type or aspect of a business. The DW contains a separate copy of the data so that analysis, data mining, and reporting activities do not interfere with the core functions of the operating business. In most cases, the data in the DW are denormalized to improve query performance [2]. As operational data is constantly changing and increasing in scope, DW requires regular updates so that business information is up-to-date for users.

*Figure following on the next page*

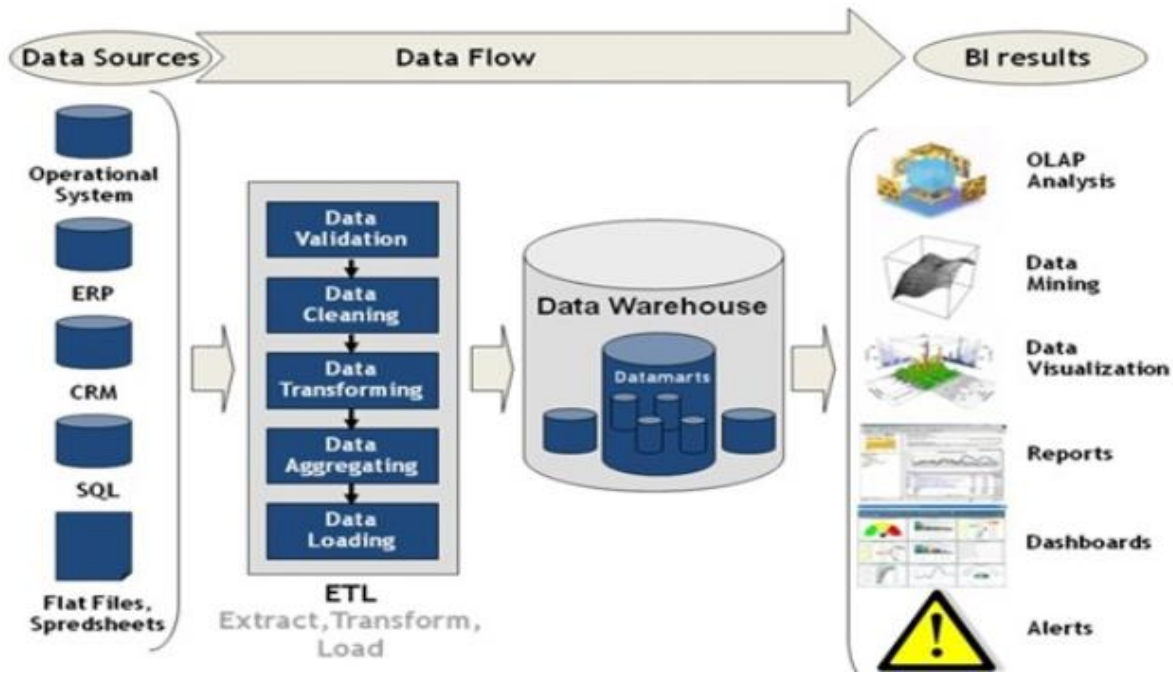


Figure 3: Data Warehouse component

A data mart is a data warehouse related to a specific business process or a specific department (for example, marketing or accounting). There are different approaches to organizing data when it comes to data mart. Some organizations build data marts according to departments and then integrate them into a central DW, while others build a centralized DW and then extract subsets of analytical data into data marts. More important than all of the above is that DW does not consider either technology or tools, but business needs. The DW designer is both a database administrator and a business analyst.

In order to meet the expectations and needs of business users, DW must meet certain requirements:

- 1) Data must be easily accessible and understandable. They must be intuitive and obvious to the user and not just to the development professional. Data labels must be clear and unambiguous to allow users to combine data indefinitely by intersecting a multidimensional structure in width and depth (operations known as slicing & dicing).
- 2) DW must be adaptable to changes. Changes are inevitable. They arise from the dynamics of business and new needs of users. The existing structure and data must not be compromised.
- 3) DW must protect the assets of the organization. Nowadays, the data of the organization represent a greater value than material assets. Unauthorized access to sensitive organization data can cause more damage than loss of equipment. That is why data security is one of the priorities.
- 4) DW must be the basis for improving the managerial decision-making process. Decision support system is another name for DW. This makes it fundamentally different from a transactional system that is tailored to operating business.
- 5) DW must be accepted by the business community. The final grade is given by the business user. The indicator of the value of DW is not technical perfection and elegance, but the degree of its use. DW is focused on the user and his needs, and therefore it is necessary for the DW manager to be both a good connoisseur of the technologies used and a good business analyst.

#### 4. DW COMPONENTS

The DW environment consists of 4 main components (Fig. 4):

- 1) Native operating systems. Although not under DW's control, operating data form the first component of DW. In this way, transaction systems can be relieved of historical data and thus improve their performance. Also, the change of the operational information system does not cause the loss of historical data because they are in the DW.
- 2) Data Staging Area. This component consists of data and a process known as ETL (Extract-Transform-Load). This involves reading and understanding the source data and transferring the necessary data to the preparation area for further manipulation. The data are in normal form (3NF) and here they are prepared for DW charging. Users do not have access to this area and no inquiries are made about this data. The reasons for introducing this component are:
- 3) Data purification (correction of damaged data, procedures with missing data, translation into a standardized format, etc.)
- 4) Presentation area. This is an area where data is organized to allow users to make simple queries and give fast and clear results. Unlike the relational model, here the data structure follows the dimensional model. In addition to the dimensional structure, the data must be atomic and support the DW structure of the bus, which will be discussed later. The data can be stored in a relational database or a multidimensional structure (OLAP cubes).

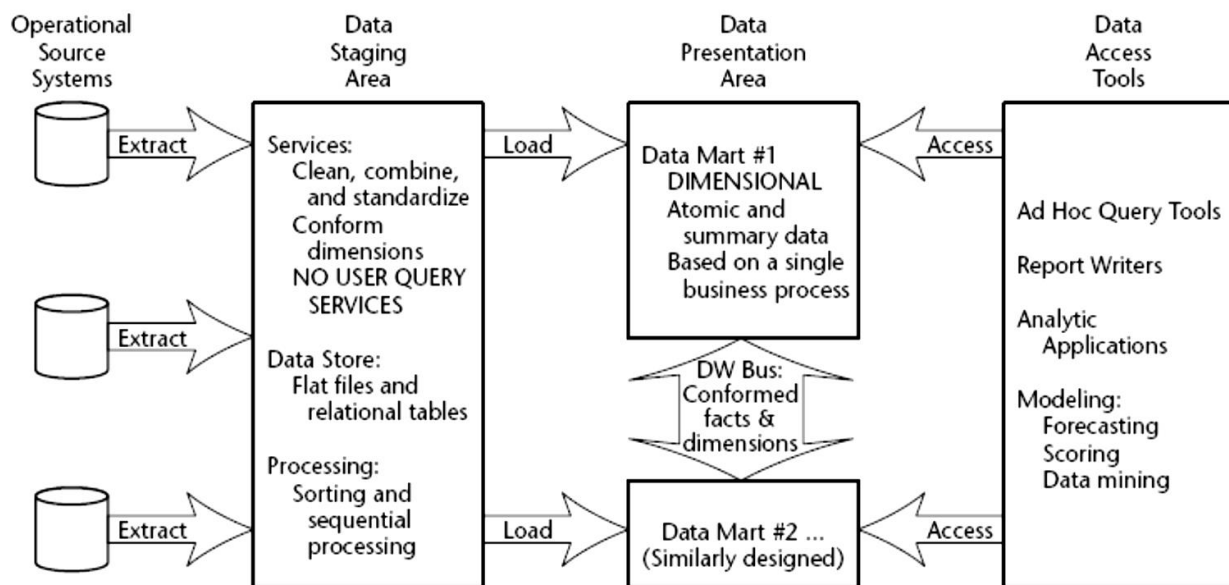


Figure 4: DW components

An important task in the maintenance of the warehouse is the immediate monitoring of the data stored in it; data information - metadata is stored in a catalog system. Thus, the catalog system is very large and is often stored and managed through a special database called a metadata repository. The size and complexity of the catalog is conditioned in part by the size and complexity of the warehouse itself, and in part because a lot of administrative information has to be maintained. For example, we need to track the source of each stored table and keep track of when it was last refreshed. The value of the warehouse is ultimately in the analysis it allows. Data in the repository is typically accessed and analyzed using a variety of tools, including OLAP queries, data mining algorithms, information visualization tools, statistical packages, and report generators.

## 5. DATA MINING

Data mining, Fig. 5, is called the subfield of statistics called exploratory data analysis, which is similar to the goals and relies on statistical measurements, and is also closely related to the subfield of artificial intelligence called knowledge discovery and machine learning (Knowledge). discovery and machine learning). An important distinction between data mining characteristics is that the volume of data is very large; and if the ideas of studies from these related fields are applied to data mining problems, scalability in terms of data size is an important new criterion. The algorithm is scalable if the current time increases (linearly) with respect to the size of the data set, giving available system resources (e.g., amount of main memory and hard disk). Old algorithms must be adapted or new algorithms must be developed to ensure scalability.

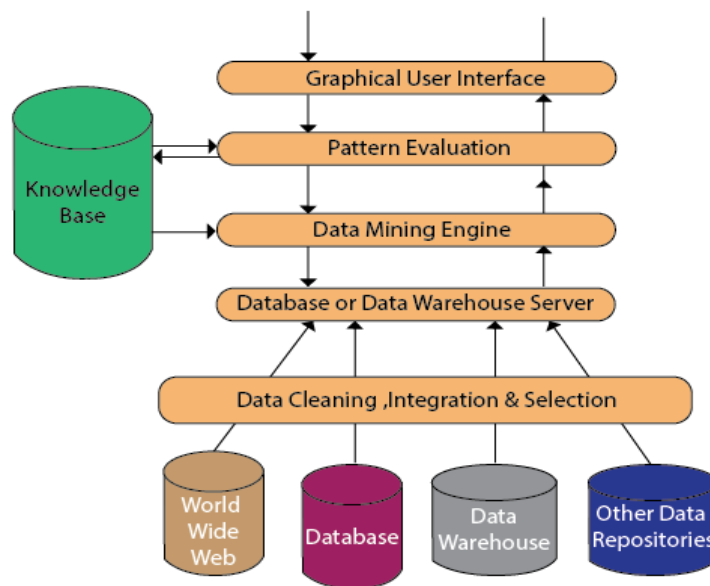


Figure 5: Components of Data Mining systems

Finding useful trends in a data group is a more loose definition of data mining: In a sense, all database queries can be observed doing just that. We really have continuity analysis and research tools with SQL queries at one end, OLAP queries in the middle, and Data Mining techniques at the other end. SQL queries are constructed using relational algebra (with some extensions); OLAP provides a higher level of idiom queries based on a multi-dimensional data model; and data mining provides most of the operations of abstract analysis. We can think of different data mining tasks as a complex of 'queries' determined at a higher level, with several parameters that are user-adjustable and built-in for each specialized algorithm. In the real world, data mining is much more than simply accepting one of these algorithms. The data is often incomplete, ie many interesting forms will be missing, so the reliability of the forms will be low. Next, the analyst must decide what type of algorithm to call and apply as a good selection of subsets of data samples and variables, review results, Knowing the Knowledge discovery process, or KDD for short, can be roughly divided into four steps. The raw data first goes through a data selection step, in which we identify the target of the data set and the relevant attributes. Then, in the data cleanup step, we remove the interference, transform the fields with the values of the tracking units, generate new fields through a combination of existing fields, and bring the data to a relational scheme used as input for data mining activity. The data cleansing step may also include denormalization of basic relationships. In the data mining step, we single out the current forms. And in the last step, the assessment step, we present the form in an understandable form to the end user.

## 6. OLAP

OLAP applications are dominated by ad hoc, complex queries. In SQL terms, these are queries that involve grouping and applying aggregation operators. OLAP enables direct analytical data processing and multidimensional analysis in terms of creating and interactive research of aggregated data generated from large amounts of operational data, as well as conducting trend analysis and exceptions for the execution of analytical models. The natural way to think about typical OLAP queries, then, is in terms of a multidimensional data model. Multidimensional tables contain textual descriptions of operations. According to their structure, unlike fact tables, they have a small number of rows and a large number of large format columns. The primary key of a dimension table is always one field through which it is connected to the fact tables. All queries made on DW are done across dimensions and its attributes. The higher the number of attributes, the better the analytical capabilities. Due to the small number of records (usually much less than a million), one should not skimp on attributes that represent a natural way of viewing data for the user. This way of structuring data makes navigation and understanding easier at first glance. When building an OLAP cube, this dimensional data model already determines the structure of the cube. Dimensional tables can be copied in 1: 1 ratio into dimensions, and fact tables into dimensions. The advantage we have of simplicity and speed of queries over denormalized tables is much greater than the savings in storage space if we kept the data in more normalized tables. In a multidimensional data model, the focus is based on a set of numerical measures built into a hypercube - a Data Cube based on a so-called Hyper Cube data organization made up of multidimensional arrays "cached" in RAM that are physically independent of the BP server. Each measure depends on a series of dimensions, while the data are in the cross section of the dimensions, Fig.6. Each dimension of the data joins a single hypercube of the hypercube while the measures of facts are recorded as values in hyperspace. Each point of the hyperspace of a hypercube is defined by: one combination of values of all dimensions, ie the coordinates of the corresponding vector in hyperspace. Dimensions are joined by pre-calculated, aggregated ("summary") data. OLAP transactions are mostly ad hoc queries, such that they can include several thousand torques of operational data, which require the merging of torques and the application of data aggregation functions, over the corresponding data set. In doing so, of course, we take care that OLAP transactions are performed over a DW database.

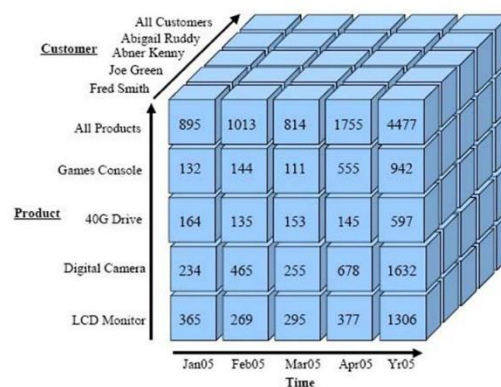


Figure 6: OLAP multidimensional hypercube

Among the advantages of such a system are the technical possibility of creating an unlimited number of dimensions and levels of data aggregation, the possibility of applying an unlimited number of analytical functions over a multidimensional structure, the possibility of dynamic management of rare matrices and full flexibility in shaping these different dimensional structures.

We can, for a more detailed explanation, use an example based on data on the sale of a product, but in different locations and at different times. The attribute of the measure in our example is Sales. Dimensions are Product, Location and Time. If we identify the product by a unique PID, and similarly identify the location with locid and time timeid, we can think of sales and information arranged in a three-dimensional array. For clarity, we can only show values for one location, locid = 1, which can be viewed as part of the orthogonal axis of the hypercube, Fig. 7.

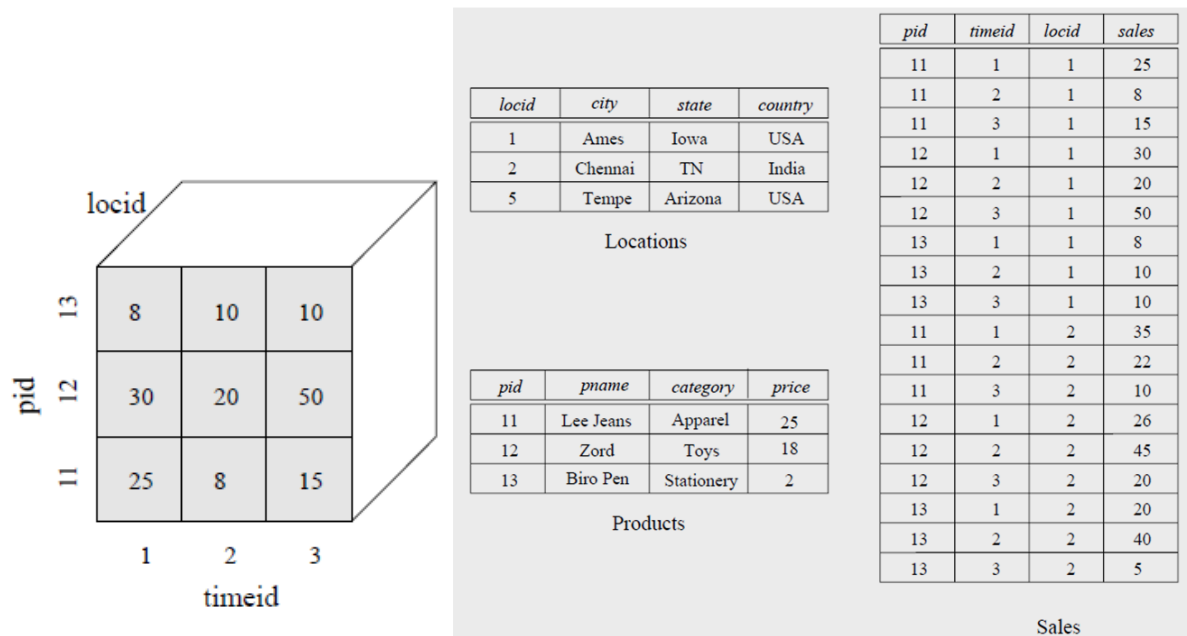


Figure 7: Hypercube of the Sales and Sales Fact table

We will now process the dimensions. Each dimension can have a set of related attributes. For example, the Location dimension is identified by the locid attribute, which we used to identify the location in the sales table. We will assume that it has the attributes country-country, state-state and city-city. We will also assume that the product dimension has the attributes pname-product name, category-category, and price-price, in addition to identifying the pid. The product category indicates its general nature. We will assume that time is a dimension and has the attributes of day, week, month, quarter, year and rest, in addition to timeid identification. For each dimension, the set of related values can be structured hierarchically. For example, cities belong to states, and states belong to countries. Dates belong to weeks and months, weeks and months are in quarters, and are contained in years.

And the OLAP query that implements the right table from Fig. 7 would look like:

CUBE PID, timeid, locid BY SUM Sales

This query will return a sales table with all subsets of the set <pid, locid, timeid> (including the empty subset). Very elegant and fast. The time dimension is therefore very important in OLAP systems. Some examples of typical queries might be:

- 1) Find total sales by months.
- 2) Find total sales of one month for each city.
- 3) Find the percentage change in total monthly sales for each product.
- 4) Find the tracking N days current sales average. (For each day, we must calculate the average daily sales of the previous N days.)

The first two queries can be expressed as SQL queries over the facts and table dimension. The third query is too complicated, so it is difficult to report it using SQL<sub>a</sub>. The last query cannot be expressed in SQL<sub>u</sub> if N is to be a query parameter. Clearly, the OLAP framework is handy to present and answer such a wide class of queries. It also provides the ability to apply interesting operations: cutting a data set into equal selections over one or more dimensions, and possibly with some dimensions projected externally, and creating a data set within the Data Cube to the scope of the selection. These terms come from the effect of visualizing cross-representation of data on a hypercube. All fact tables have 2 or more foreign keys as a link to the primary keys of dimension tables. Fact tables are also accessed through dimensions and its attributes. The primary key of a fact table is, in fact, a composite key made up of all foreign keys. Fact tables by volume of data make up about 90% of all data. Since there are a large number of records (even several billion!), It is very important that the format of each of the fields is minimized. Therefore, special keys are used as primary keys in dimension tables with integer format, while natural dimension keys represent attributes and a link to the source data. For example, if we have 20 dimensions with varchar keys (20) and add a new integer field as the primary key, then we have an increase in the volume of dimension table data. This increase is negligible compared to the decrease in the data volume of the fact table, which accounts for 90% of all data. By saving 16 bytes per key, for 20 foreign keys and a billion rows, we have a total saving of  $16 \times 20 \times 1,000,000,000$  bytes, or about 300GB of space! The process of designing a dimensional model can be divided into 4 steps:

- 1) Business process selection. The business process does not refer to certain departments (eg sales, marketing) but to certain business activities (ordering, delivery, invoicing, etc.).
- 2) Determining the granularity of the business process. This practically means what one row in the fact table represents (eg one row from the account). Finer granulation means more detailed data and thus better analytical capabilities.
- 3) Selection of dimensions to be applied in each row of the fact table. By answering the question: "How do business people describe the data that are the result of the business process?" We come to all possible textual descriptions of the measures we analyze.
- 4) Recognition of numerical values with which the rows of the fact table will be filled. We determine these values based on the answer to the question: "What do we measure?"

The dimensional model has proven to be a predictable and cost-effective approach in building a DW. At the same time, due to the dimensional structure that is the same for many DWs, we can count on multiple use of software modules and development logic.

## 7. CONCLUSION

Business intelligence systems are based on data warehouses in which multiple copies of operational data are stored. The design of these systems is a process that is primarily based on business processes. In order for access to data to be quick and easy, it is necessary to structure the warehouse according to certain rules and create fact tables and dimensional tables in order to finally have the appropriate dimensional data model. Just in time information is the power of every company. It is considered one of the key factors of today. Decision support systems enable managers to access information and thus identify opportunities and threats, detect possible and existing problems and make decisions based on quality information obtained from the company's data warehouse. Decision support systems are in fact software that delivers information to managers that is important for decision-making, which means for running and managing a company. Only such decisions can result in the prosperity of the company, and the realization of profit as its fundamental goal.

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## IMPACT OF CLUSTERS ON COMPETITIVENESS

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### ABSTRACT

*Global recession in the period 2007-2009 not only showed the financial-economic crisis in its traditional understanding, but also became a kind of announcement of the establishment of a fundamentally different world order, starting with the adaptation of economic systems through a completely new paradigm. The authors show that in the 21st century the world is moving to a new, networked way of doing business and living, based on dynamic horizontal interconnections, and the world economy and its subsystems are stratified into cluster network structures - more flexible than hierarchical structures and better integrated than market model. Through the ICT revolution and globalization, economies have been forced to develop on the basis of continuous renewal, ie. to have innovative economic growth that will be sustainable. The paper presents the evolution of the industrial policy model, its models, as well as the cluster-network approach according to Porter's diamond model. The authors also presented the EU project of smart specialization through its implementation in the European Union and Serbia.*

**Keywords:** *clusters, competitiveness, diamond model, industrial policy, networks, productivity, smart specialization*

### 1. INDUSTRIAL POLICY MODELS

Contemporary literature in the field of industrial policy enables us to make the classification of three historical periods of its conceptual and practical evolution. *The classical or vertical model* is aimed at building and developing a critical mass of new industries and sectors in the economy. The first successful version of this model was developed and applied in Japan in the period from 1950 to 1960 as part of an industrialization development course. At the heart of this model is the Japanese conception of development (developmentalism), more precisely, the ideology of the "development state". *The neoclassical or horizontal model* was formed in the period from 1980 to 1990, relying on the ideas of the Washington Consensus, assuming softer forms of state intervention in order to create framework conditions for a more efficient market distribution of resources. It is about a *general improvement of the competitive-market environment to increase the effects of reducing costs in the economy, without applying selectivity* (Warwick, 2013). This model stimulates production and exports through a broadly open economy and larger foreign direct investment through a variety of incentives. For countries in transition, it has become the basis for the creation of a critical mass of new market institutes, with Central and Eastern European countries as a model. *The systematic model* (systematic industrial policy) is characteristic of the era of transition to the knowledge economy. In conceptual terms, this model relies on institutionalism in evolutionary theory, as well as a neo-Schumpeter approach to the process of creating innovation (Warwick, 2013).

Preventing systemic collapse requires soft state intervention in the economy horizontally, covering all branches and sectors, in order to improve the environment of partnership cooperation of economic agents and the formation of triple spirals. The tripartite network partnership of the state, business and science provides for continuous optimization of the objects of state activity and obtaining aggregate effects of production growth, without distortion in the distribution of these effects in favor of any interest group.

## **2. CLUSTER APPROACH TO STRENGTHENING COMPETITIVENESS**

The cluster approach to industrial policy relies directly on Porter's theory of competitiveness. According to the latest version of the World Economic Forum (WEF, 2013b), such a policy in a broader sense refers to strengthening the competitiveness of the entire national economy in favor of cooperation and the creation of regional innovation ecosystems. In a narrower sense, it is about creating innovative ecosystems in the manufacturing sector in order to reindustrialize and develop the technologically prestigious industry of the new age (advanced manufacturing). According to theorists and practitioners (Ketels, 2006, 2011; Nallari and Griffith, 2013, WEF 2013a, b), modern ways of strengthening competitiveness are characterized by much more specificity compared to others. First, the open, global character of competition shifts its focus from the macro level of the state and the micro level of the organization to the meso level of location (cities and other territories), where the network nodes of global value chains are formed. If earlier international companies fought for territories because of resources, today territories fight for business functions of global companies. The competitiveness of the national economy depends on the general macroeconomic situation, as well as on the specific microeconomic environment in the regions in which the organizations operate. Secondly, efforts in that sphere are no longer the exclusive prerogative of the state, but have a complex character, relying on the coordinated actions of various institutional subjects. Third, the possibility of support for increasing competitiveness is related to the formation of a certain institutional economic regime, which directly directs resources to the most competitive clusters, and within them to the most efficient companies (World Bank, 2009). It is this special institutional regime that is in the center of attention of the cluster literature, which connects the growth of competitiveness with the formation of strong clusters, and this with the continuous improvement of the overall economic environment. Dynamic knowledge economies function as a whole of many local network environments (innovative ecosystems), where collectively, based on dialogue platforms, different entrepreneurial, scientific and managerial circles work together to jointly create innovations. Regardless of the fact that the formats of created innovations are born spontaneously, by market forces, in a winning position are those countries and territories in which the education of ecosystems and clusters is stimulated by a well-thought-out policy.

## **3. THE ANALYSIS OF COMPETITIVENESS AND THE ROLE OF CLUSTERS ACCORDING TO PORTER'S DIAMOND MODEL**

The state of the economic environment depends on the totality of macro and micro economic parameters that Porter states in his diamond model. The coordinated action of the state and individual circles on these parameters should provide such an organization of connections in the economy, which enables the intensive emergence of new cluster initiatives and their successful transformation into strong innovation clusters (Ketels, 2009). Porter believes that for the sustainable economic development of a country or region, it is necessary to have a good resource base and appropriate macroeconomic policy, and to support sustainable competitive winners through continuously raising overall productivity (Porter, 1990). According to this theory, productivity is determined by the quality of interaction at the micro level, if the quality of the product and the efficiency of production directly depend on it.

The local working environment is formed under the influence of the policy of the central government and local conditions of development of the territory (conditions of production, supply and demand in a certain industry). In addition, the effectiveness of the behavior of the companies themselves plays a significant role, because they work in that environment and enter global markets. All three levels of formation of competitive advantage (countries, local territories and groups of companies) form a unique ecosystem, the parameters of which are evaluated by the diamond model. In the late 1990s, Porter reworked his original version of the "diamond." Guided by the tendency of market globalization, the progress of the IT revolution and the specificity of the structure of Silicon Valley, he turned the model in favor of the analysis of network processes and conditions for the collective creation of innovations. The diamond preserved only four groups of indicators, with the role of state regulation (the sixth factor) being integrated into these four branches. The very essence of the model, on the other hand, has remained unchanged: an assessment of the ability of the economy of any level to form, renew and maintain its competitive advantage on the basis of innovation. At the beginning of the 21st century, Porter introduced the term innovative capacity to assess the competitive advantage of a territory, denoting the ability to create and commercialize new products and services. The innovation of the territory is determined by the following conditions: development of innovation infrastructure (which results in state investments in human resources, good protection of intellectual property rights, incentives for innovators, openness of the economy to the outside); development of inter-organizational networks (requires a good institutional environment for the development of horizontal links); the intensity of the formation of innovation clusters (this is determined by the integral interaction of factors found in all four branches of diamond). In 2008, these three conditions were integrated into a renewed version of the diamond in which the notion of productivity growth was replaced by the notion of continuous innovation. The four branches of the modern diamond represent interconnected groups of micro and macro economic factors, which determine the innovation capabilities of the territories. It is about the existence of effective conditions for the following processes: production of innovations (input conditions) - indicators of quality and degree of specialization of all factors of production, starting from infrastructure and human capital, to system-administrative management and research and development; demand conditions - indicators of sophistication of needs and availability of qualified users (organizations and individuals) who require new products and services; inter-organizational competition that initiates companies to create new ideas, improve their business strategies and search for smart specialization (contest to create knowledge and smart strategies); inter-organizational cooperation, which leads to the formation of cluster groups of companies in branches that relate to each other (related and supporting industries) (Nallari and Griffith, 2013). Together, these four branches, according to Porter, make the economic environment conducive to continuous innovation and, accordingly, to continuous productivity growth. As interactive innovations occur at the junction of different types of activity, so in the economy of a cluster agglomeration, which unites companies of related but different branches (4 diamond branches), represent its organizational orientation towards innovative type of growth (Delgado et al. 2012). In other words, the clusters testify to the birth of a new, modern principle of organizational production, suppressing the previous, branch principle, characteristic of the industrial model. Clusters increase productivity primarily due to the localization factor: joint accommodation of companies generates various agglomeration effects, which lead to lower costs, formation of network ecosystems, creation and collection of new knowledge (European Commission, 2013a). The effects of productivity growth are multiple, especially if the participants in the agglomeration act in a collaborative relationship. The clusters in which cooperation takes place in the form of a triple spiral, can become stronger and lead to innovative synergy. Only with such an organization can clusters generate aggregate network effects of collaboration, which enable continuous growth of overall

productivity and the cluster group itself and the territory in which it operates. In this way, properly organized clusters, having achieved the synergy of self-development, become real levers of growth: they maintain the required level of competitiveness of the local economy, and through it the national economy as well (competitiveness upgrading). The formation of clusters in a triple spiral and their transformation into powerful ecosystems, capable of creating innovations in a continuous mode - this is the result of a complex integral interaction of all four branches of the diamond. (Delgado et al. 2012) Therefore, the policy of strengthening national competitiveness, ie. modern industrial policy in its broadest sense must keep all diamond branches under control at the same time, ensuring continuous and complex improvement of the parameters of the economic environment at all levels of connection - national, regional and cluster. According to Porter, modern industrial policy should directly link sustainable economic growth with the development of collaboration, a unique network of communication between governments at all levels, companies, scientific and educational centers, as well as intermediary institutes. Unlike other types of networks, clusters in this process fulfill three important functions (Porter et al. 2009): platforms for disseminating accepted economic solutions; mechanisms for implementing these solutions; project initiatives that mobilize government efforts to improve the economic environment and take advantage of these effects. We find similar conclusions in the World Economic Forum (WEF) from 2013 on the methods by which countries and companies can achieve global competitiveness. Managers of six countries whose industries are considered central (America, Germany, Japan, China, India and Brazil) have shown the importance of strengthening the collaboration of public and private business circles. The basic way of reindustrialization should be the creation of powerful innovation ecosystems in the manufacturing sector ("manufacturing-innovation ecosystems") (WEF, 2013b). In their paper on industrial policy, Kuznetsov and Sabel talk about the fact that the best variant of cooperation between the state and private individuals is in a public-private partnership, which ultimately enables business to establish the closest ties with the world market. At the same time, as practice shows, this process can take place in those economies where the state relies on weak institutions, and most companies have inherent rent-oriented behavior and where, as a whole, both partners did not have partnership experience until then (Kuznetsov, Sabel, 2014). An example of best practice in the cluster approach to modernization of production are the countries of Northern and Western Europe, where the cultivation of the triple spiral in new, clustered sectors is carried out. The best example is the project "Support to Sectors' Leaders" ("Top Sectors approach" initiative), which started in 2010 in the Netherlands. It includes nine sectors in those spheres of production in which the Netherlands occupies a leading position on the world market. In each of them, public-private partnerships have been formed that serve as a platform for the development of collaboration between companies, research centers (knowledge institutes) and government. After only two years of the project, the participants formed 19 network consortia specializing in 'knowledge and innovation', which began working on joint research programs (Wawrick, Nolan, 2014).

#### **4. CLUSTER APPROACH IN THE NEW INDUSTRIAL POLICY OF THE EUROPEAN UNION (EU)**

At the EU level, the idea of supporting clusters connects two directions of the economic course - the Regional Development Program within the EU Cohesion Policy and the European Reindustrialization Program called "Complex Industrial Policy for the Globalization Era" within the Europe 2020 Strategy. The role of clusters in the Regional Development Program is: a conceptual basis for the realization of smart specialization and cluster initiative as instruments of influence in comparing the advantages of a particular region as well as attracting stakeholders (European Commission, 2013a, 2014a, 2014c).

The role of clusters in the Industrial Policy Program is as follows: clusters as instruments of education of regional innovation ecosystems and inclusion of small business in global value chains; clusters as mechanisms of integration of goals and tasks of EU industrial policy into strategies of smart specialization of the region with local specifics (European Commission, 2013a, 2014a, 2014c). The EU Regional Development Program 2014-2020 relies on a new approach to the development of European territories. Instead of the previous policy of budget settlement, applied until 2007, the principle of dynamizing the growth of lagging economies through cluster initiatives is now in force. The perspective of Europe's innovation transition is considered today as a task of the territories themselves, and their financial support from the EU budget depends on their elaboration and application of smart specialization. (Foray et al. 2009) Regional strategies must contain cluster initiatives and stimulate investment in those sectors that can strengthen the competitive position of a given territory (European Commission, 2014c). In the EU, smart specialization, RIS3, (Research and Innovation Strategy for Smart Specialization) means the choice of those directions of action that will enable the best effect of economic growth to support research and development as well as the development of innovations. More precisely, RIS3 is a document that defines the strategic direction of the region's development in the field of research and innovation in order to use the limited resources of countries and regions with the specifics and potentials of a country or region and their integration into the transnational network. It is important to note that smart specialization does not apply exclusively to high technologies or new production sectors. It can be in low-tech branches or in the sphere of services, but in those segments in which research and development affect the industrial development of the region and can give impetus to the development of other sectors of the economy (Dežina, 2013). The origin of the concept of smart specialization itself comes partly from the Knowledge for Growth expert group within the European Development Area (ERA). It all started with this group researching the reasons why Europe lags behind America, especially in research and development, as well as in competitiveness. It has been found that research in Europe is fragmented and that there is no coordination of investment in innovation and development from all stakeholders, so there is no critical mass between them. It was observed "that there is a syndrome only me and that they invest in similar areas and in that what is modern such as ICT, nanotechnology and biotechnology" (Kranjac et al. 2015). The EU leadership considers the policy of smart specialization not only as a prerogative, imposed from above, but much more as a course of the regions themselves developed from below, but harmonized with the general goals and tasks of structural transformation of the whole Europe, stated in the unique innovation and industrial policy of the European Commission (European Commission, 2013a). The EU's Integrated Industrial Policy supports the regional policy by focusing on improving the business environment for the smooth formation of cluster networks. Within this policy, clusters with a triple helix configuration serve as an instrument for the formation of regional innovation ecosystems, mechanisms for strengthening trans-European value chains, and also as a way of combining specific tasks of reindustrialization of the region with tasks of developing their smart specialization. The idea of applying a unified cluster approach to EU regional and industrial policy is supported by the Belgian government's conceptual report from 2013. The report emphasizes that the European Commission must urgently develop its own cluster policy, which will ensure mutual cooperation of European regional clusters and thus create conditions for the formation of world-class trans-European clusters. Combining the global scope of activities with the advantages of localization, such clusters will become drivers of the development of smart specialization in the region. It is not just about the mechanisms of generating and diffusing new knowledge. Overcoming technological and territorial boundaries, clusters realize a cross-border, interdisciplinary and collaborative approach to the development of economic systems (Belgian Federal Cabinet, 2013).

In that way, the EU has coordinated its industrial policy with the innovation one and localized it by regions in which cluster groups of branches of the economy appear as its basic objects, and cluster initiatives as the basic channels of realization. The European Commission believes that such an approach will enable not only diversification and more dynamic development of the regional economy, but also the deepening of European integration. Since clusters have no administrative boundaries, regions can develop strategies for their development with an emphasis on the overall spectrum of cluster groups and initiatives, created both on their own territory and on the territory of neighboring countries. This will strengthen the cohesion of Europe's national markets.

## **5. CLUSTERS IN SERBIA**

The cluster development support program was launched in Serbia in 2007. It is based on the development of the competitiveness of the Republic of Serbia. It was created with the aim of contributing to increasing the productivity and competitiveness of companies through clustering. The idea was to encourage cooperation between companies and entrepreneurs with science by connecting companies into clusters. Cluster Development Support Program in Serbia 2007-2015 defines clusters as “a geographical concentration of interconnected companies, specialized suppliers, service providers, companies from related industries, and related institutions that compete but also cooperate with each other” (Ministry of Economy and Regional Development 2009: 2) This program mostly focused on development cluster initiatives because they “represent legal entities established with the aim of connecting companies and research institutions into clusters” (Žarković, Mijajić, Sovrlić, 2016). There is no state strategy on cluster development, but the existing program is aligned with all strategies relevant for their development. The specific objectives of the Program are aimed at strengthening capacities, at strategic partnerships and increasing the volume and value of companies and entrepreneurs. Support for cluster development in Serbia has had several initiatives, and has been funded by both the state and the EU, through various funds and NGOs. It is important to note that the University of Novi Sad established the Center for Competitiveness and Cluster Development in 2007 with the aim of creating added value through strengthening the technical-technological, organizational and management structures of companies and establishing and developing business cluster networks. This Center supported the development of about 25 clusters. In 2010, the Council for Clusters was established at the Serbian Chamber of Commerce with the aim of affirming clusters as a concept. Through the Cluster House, LEDIB initiated the establishment of seven clusters in the field of construction, textiles, agriculture, medicine and business services in the territory of southeastern Serbia. The Cluster House further initiated the Balkan Cluster Network with about 170 cluster initiatives from the Balkans. Since 2015, there is the Association of Serbian Clusters ASKA, whose mission is networking and connecting of clusters in Serbia. Taking into account many secondary indicators (Competitiveness Index), it can be concluded that the Program has not achieved major positive effects on the productivity and competitiveness of clustered companies. The reasons for that are: unfavorable external factors (financial crisis, low level of technological development of companies in Serbia, unfavorable business environment). Positive effects have been achieved in the ICT sector. For many years, three key clusters with the most important companies in this sector have been supported and this has led to very positive effects on the development of the sector and on the sustainability of the clusters. Although most of the financial support went to the tourism sector, the level of sustainability of the initiatives and the results achieved are very low. The same can be stated for the sector of agriculture and food industry, within which 12 clusters were supported. Positive effects were also noticed in the part of strengthening cooperation between cluster members, which was one of the goals of the program, as well as in the part of popularizing clusters.

The trend of establishing clusters grew until 2012, and in the last few years this trend has been declining. It is important to point out that the goal of developing new products and innovations was not achieved, although it was the focus of financing. Nevertheless, according to the European Innovation Scoreboard for 2017, compared to EU member states and other European and neighboring countries, Serbia is ranked, along with Turkey, among the countries that are modern innovators (European Innovation Scoreboard, 2017:6). According to this report, the relative strength of the innovation system lies in the firm's investments, the influence of employees and innovators. Relative weaknesses are intellectual resources, unfavorable innovation environment and connectivity (European Innovation Scoreboard, 2017:74).

## 6. CONCLUSION

In the 21st century, the state is no longer the supreme manager, but is moving towards horizontal interactions similar to a social agreement. The tendency towards decentralization and socialization of governance is present today on all continents, starting from the Anglo-Saxon countries all the way to the East Asian ones. This tendency is implemented by the emergence of a new systemic model of industrial policy at the center of which is the idea of diversification and dynamization of the economy by the bottom-up method. Governments leave the choice of priorities at the discretion of global market competitiveness, and they themselves perform the role of accelerators and coordinators of network relations, helping markets to form ecosystem cluster groups of sectors at the local level. Thus, the new industrial policy synthesizes development into a single set of measures, aimed at organizational restructuring of the entire production system into the format of network ecosystems, and through that at the transition of the economy towards innovation-oriented growth. The cluster literature classifies into innovation clusters only those agglomerations that develop in the form of a triple spiral, since in addition to the cost-lowering effect, they also have a synergistic effect of innovation. Therefore, properly organized cluster programs are supported by the state not only through the support of individual participants and profile activities, but also through the mechanisms of their collaboration in order to increase this synergy effect. The ultimate task is to disseminate the aggregate network externalities of clusters in the territory of their operation, thus raising the competitiveness of the region, and through them the dynamism of the national economy as a whole. In the non-linear world, instead of budget-credit micro-stimulations, the organizational ones come to the fore. As the experience of the Scandinavian countries, taken as an example for the entire EU, has shown, it is necessary to keep microfinance stability stable and uninterrupted, in a routine regime. Nevertheless, governments must continually improve the economic and business climate at the macro and micro levels, eliminating all ongoing threats to the development of horizontal ties and the emergence of triple helices. A good economic and business climate for the formation and development of cluster initiatives raises the innovation activity of local territories, brings them smart specialization and, ultimately, ensures the diversification of the national economy in the optimal direction. This approach stems from Michael Porter's famous diamond model. It is becoming increasingly popular and is being used by the World Economic Forum to measure the Global Competitiveness Index. Improving the competitive position in the world economy without reliance on interactive innovations is no longer possible. This requires a transition to horizontal connections and the distribution of the mechanism of their coordination. That is why all countries, from developed to transition ones, face complex reform tasks. As the literature testifies, the formation of such an institutional regime is forthcoming, which will enable a clear direction of resources towards the most competitive cluster groups, and within them towards the most efficient companies. It is significant that since 2010 the European Commission has introduced a cluster approach in its unique industrial policy focused on smart specialization of the region and thus realizes its renewed model of economic integration through the idea of new regionalism (formation of

cluster metasystems for unification of national markets of the Baltic region, the Danube region, and other macro-regions of Europe). Since 2016, within the Horizon 2020 program, Serbia has received a project for the implementation of smart specialization and the formation of cluster initiatives under the leadership of the 'Mihajlo Pupin' Institute. According to the latest Competitiveness Index, it can be concluded that the cluster development program in Serbia did not produce the expected effects on the productivity and competitiveness of companies in clusters. Positive effects were achieved in the ICT sector. The goal of developing new products and innovations was not achieved either, although it was the focus of financing. Positive effects were also noticed in the part of strengthening cooperation between cluster members, which was one of the goals of the program, as well as in the part of popularizing clusters. The trend of establishing clusters in the last few years in Serbia is declining. Realistic firm positioning in the global world will be achieved by those companies and countries that base their strategies on the horizontal logic of world development. The experience of world technological leaders shows that in order to raise the overall productivity of the nation, in addition to the informatization of society, it is important to get out of institutional archaism, and to advocate the process of adapting the internal economy to the renewing global one.

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# INFORMATION RELIABILITY AND SECURITY INCREASE IN ECONOMIC AND HEALTH SYSTEMS USING ADAPTIVE TRANSMISSION ALGORITHMS

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## ABSTRACT

*The pandemic of COVID 19 virus has caused a lot of damage around the world. In addition to human lives, the economies of entire countries are at risk. In order to avoid business, health and education systems breakdown, it was necessary to find a new models of their functioning. An increasing number of these systems depends on IT support, so online teaching, obtaining information on health status and video conferencing meetings in business corporations has become a daily life. Although from the point of view of the end users of these systems, the result is information or data that has been processed, special attention should be highlighted to the transfer of information of various types through existing modern communication systems. In case that information of a great importance is intercepted or unreliable, the consequences can be catastrophic. Given the current situation at the global level and the importance of the information transmitted, in this paper we will focus on the protection and reliability of information transmission using adaptive transmission algorithms. Modeling and implementation of adaptive transmission algorithms can allow us to adapt the data rate with higher bandwidth or fixed data rate with lower bandwidth depending on the needs of end users and their requirements. Whether optical cables, radio frequency systems or modern wireless optical communication systems are used for the transmission of information, adaptive transmission algorithms can be successfully implemented and thus greater security and reliability of the transmitted information can be achieved. In addition to the model of adaptive transmission algorithms, the pseudocode of their functioning will be given in this paper. Finally, a comparative analysis of these algorithms observed through a measure of channel capacity will be graphically presented.*

**Keywords:** *Adaptive transmission algorithms, Information reliability, Information security*

## 1. INTRODUCTION

During the COVID 19 virus pandemic, we turned to the use of modern technologies to continue our day-to-day operations. The use of computers and smartphones for information exchange, shopping, scheduling doctor's appointments and education have become a reality. New opportunities that modern technologies provide are being used for the development of markets, education and health systems such as applications, social networks and e-learning platforms (Li et al., 2021; Kolodner et al., 2008; Alotaibi & Federico, 2017; Gikas & Grant, 2013; Spanakis

et al., 2021). The use of new technologies in economics is a topic that has been researched before, but with the appearance of the virus COVID 19 it has again come into the focus of research (Poushter, 2016; Krasavina, 2019). The latest research presented in (Matyushok et al., 2021) clearly shows in which direction modern technologies will be applied in the economy. Technologies such as artificial intelligence based on algorithm modeling, software development, internet technologies and space technologies play a key role in the future development of the economic market (Sarker, 2021; Montáns et al., 2019). The use of 5G mobile technology will provide a universal connection between anything and everything, combining broadband, energy-intensive protocols with narrowband, and energy-saving technology as is explained in (Matyushok et al., 2021). Today, we are used to living in the information age, and we are almost all the time within the reach of the global network. Most of time, our devices require minimal interaction on behalf of user in order to connect to network, which is bringing the computing pervasive paradigm to its communications-based outcome: we might not yet be at the point in time where the computers are imperceptible fabric of our everyday life, but we are almost there if we consider pervasiveness of communication networks. Therefore, communication fabric is a precursor of computing fabric, and pervasive communications are the basis on which the mobile computing will develop further (Orwat et al., 2008; Tentori, 2012; Bello Usman & Gutierrez, 2018). There are multiple communications technologies that enable this pervasiveness, such as mobile cellular networks, cognitive radio technologies, wireless networks, etc (Stüber, 2000; Hranilovic, 2005; Proakis & Salehi, 2007; Freeman, 2005). These technologies represent the outermost layer of communications infrastructure that is visible to mobile or static users, and can be viewed as distributive technologies since they are used to distribute the data to the end users in range. Of course, in the pervasive communications scenario, there would be no space gaps in which there is no coverage of at least one of these technologies. Another assumption naturally follows, and that is the ability of mobile stations to use different technologies to connect to networks. The later assumption is enabled by the widespread use of software-defined radio technology that uses almost universal radio front-end and couples it with flexible software approach in digital signal processing, effectively providing support for different types of modulations, communication standards, and protocols (Willebrand & Ghuman, 2001; Arnon et al., 2012; Kikuchi, 2010). The inner layer of communication fabric is usually invisible to end users. Its purpose is to transport data between the distribution points – covered by distribution networks, and hence such networks are known as transport networks. Considering the use of these networks, they are designed to be high-speed, low-latency, resilient to outages, self-restoring, and efficient. Examples of technologies commonly used in transport networks are fiber optics and satellite networks. Fiber optics is mostly used in the transport layer since it offers unprecedented bit rates, especially when considered in the wavelength-division multiple access scenarios used to simultaneously transport multiple data streams over one fiber. Free Space Optics (FSO) is an innovative technology that has recently gained attention as capacity demand grows. This technology offers flexible networking solutions that provide connectivity to a number of applications that include voice, video and data transmission, entertainment, disaster recovery, surveillance and many more. Some advantages of FSO communication systems, as described in (Ghassemlooy et al., 2017), are: huge bandwidth (around 200 THz in the wavelength range of 700 nm - 1500 nm); unregulated medium - there are no tariffs for using the atmosphere as transmission channel; the transmitted optical rays are invisible and confined into a narrow beam, which makes them difficult to find and thus intercept; higher capacity compared to existing communication systems; small, lightweight and compact components at relatively low prices; they are relatively easy to install; they are not dangerous to health (no radiation in microwave range); they are resistant to electromagnetic interference.

In every segment of communication networks, being it distributive or transport related, demand for increasing bandwidths is growing by the day. This demand is explained by Shannon's theory that clearly indicates that the information capacity of any system is directly proportional to the available bandwidth (Shannon, 1948). Thus, by increasing the bandwidth, we can directly increase the available information capacity. However, there are other ways of increasing information capacity, such as – increasing spectral efficiency of the modulation scheme used, or increasing signal level with respect to the noise level. Of course, these factors are interconnected and it is often the case that increasing one of them indirectly leads to decrease of others. Therefore, adaptive transmission seems to be necessary to dynamically compensate for the changing channel conditions in order to achieve the information capacity that is close to theoretical boundaries for the specific conditions (Chung & Goldsmith, 2001; Goldsmith & Chua, 1997). Another important aspect of modern communications is security. There are many possible viewpoints to the security problems, each addressing specific communication layers, and there is a consensus that the security is a joint task for the system as a whole. In this paper, we are interested in the physical level security, which sits at the lowest level, and deals with the ability of a would-be attacker to eavesdrop on the communications and extract information about the transmitted data. By adaptively decreasing the transmitter power to the levels that still provide required reliability of the legitimate transmission, eavesdropper chance to intercept and decode part of the data also decreases, making the transmission more secure at the physical level.

## 2. SYSTEM MODEL OF ADAPTIVE TRANSMISSION

In principle, we can improve the telecommunications performance of the system by applying adaptive transmission technique (Goldsmith & Varaiya, 1997; Alouini & Goldsmith, 1999). The adaptive transmission technique for FSO communication systems is implemented using adaptive transmission algorithms (Smilić et al., 2019b; Milić et al., 2019; Smilić et al., 2019a). The most commonly used adaptive transmission algorithms are: Optimal Rate Adaptation (ORA), Optimal Power and Rate Adaptation (OPRA), Channel Inversion with Fixed Rate (CIFR) and Truncated Channel Inversion with Fixed Rate (TIFR).

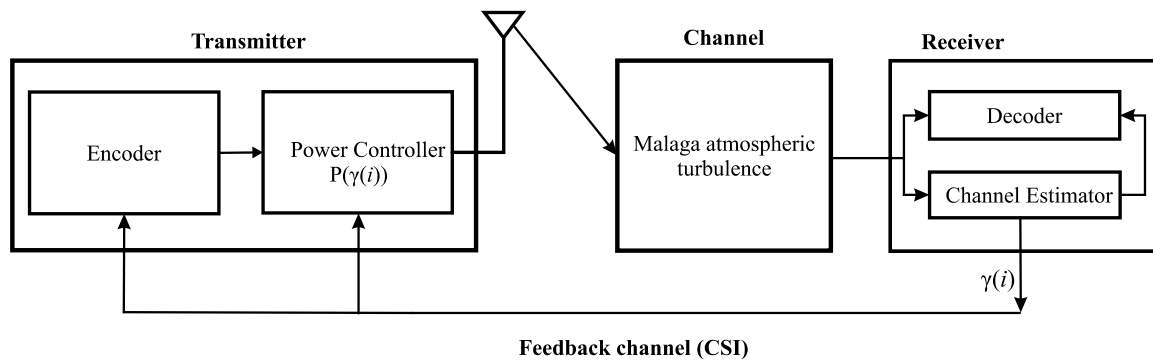


Figure 1: System model employing adaptive data transmission technique

Fig. 1 shows the basic model of an adaptive transmission system. In our paper, we will implement the presented model on the FSO system when we use the Malaga model of atmospheric turbulence. The Malaga model of atmospheric turbulence includes almost all existing models and theories of atmospheric turbulence, combining them into a more general formulation of closed form. In addition, the Malaga model is applicable for both plane waves and spherical waves for all conditions of turbulence, from weak to extremely strong, so it gives this model a practical meaning (Jurado-Navas et al., 2011). In order to increase the reliability of the system and the capacity of the channel, adaptive transmission is often applied. Adaptive transmission relies on the existence of channel state information.

On the receiving side, we assess the condition of the channel. Channel status information is sent from the receiver to the transmitter via the feedback channel. Based on the obtained information, the transmitter can adapt the power and/or data rate.

### 3. MODELING OF ADAPTIVE TRANSMISSION ALGORITHMS

We already said in Introduction that Shannon's theory indicates information capacity of any system is directly proportional to the available bandwidth. Analytically it can be written as:

$$C = B \int_0^{\infty} \log_2(1 + \gamma) f_{\gamma}(\gamma) d\gamma \quad (1)$$

where  $B$  denotes channel bandwidth expressed in  $Hz$ ,  $\gamma$  is received signal-to-noise ratio (SNR),  $f_{\gamma}(\gamma)$  is Probability Density Function (PDF) of instant SNR. Combined PDF function for Malaga atmospheric turbulence is given in (Smilić et al., 2019b).

#### 3.1. ORA algorithm

The ORA algorithm is based on Shannon capacity. It allows us optimal rate adaptation. Model of ORA adaptive transmission algorithm with appropriate pseudocode is presented on Fig. 2.

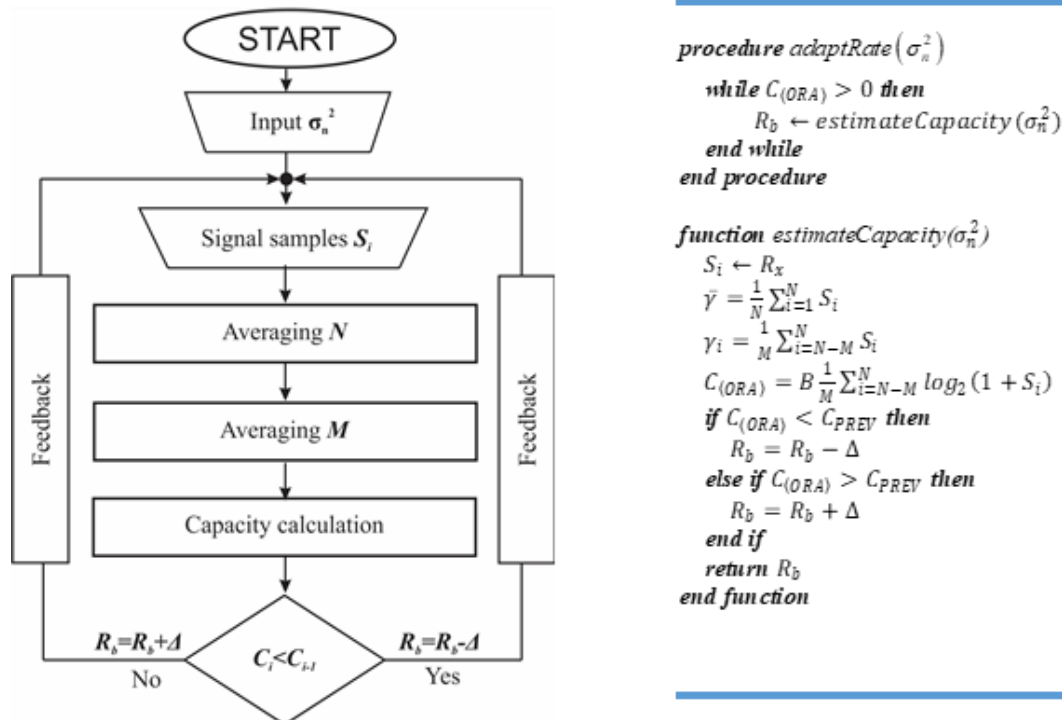


Figure 2: ORA adaptive transmission algorithm with appropriate pseudocode

The presented algorithm works as follows:

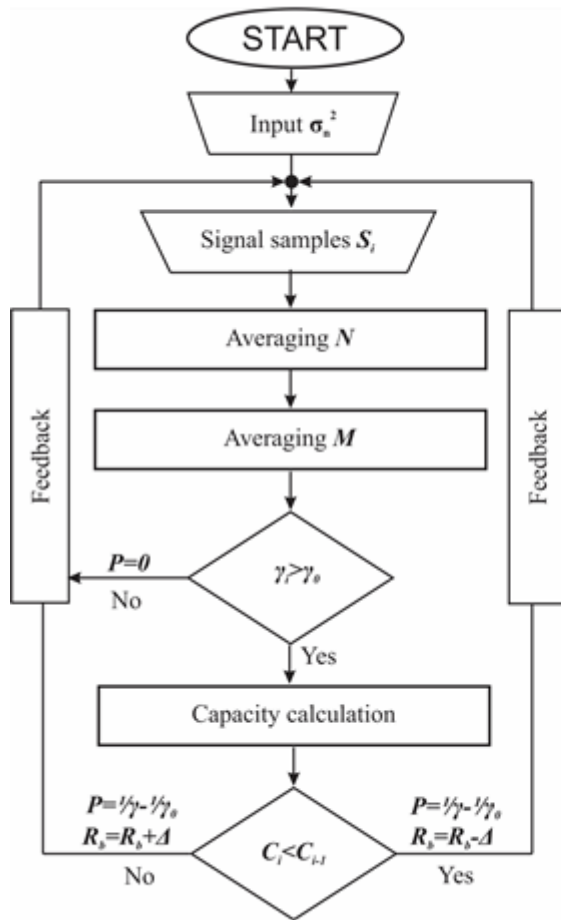
- 1) Input the sensitivity of the receiver to calculate the SNR
- 2) Signal samples to form a distribution
- 3) Averaging to get average strength
- 4) Adaptation block that determines the instant power
- 5) Capacity calculation
- 6) If the capacity is less than the one we are currently using then we reduce it data rate. If the capacity is greater than the current one we use then increase the data rate.

### 3.2. OPRA algorithm

We can improve the previous algorithm if we optimize the transmitter power. Power optimization is achieved by the condition:

$$p = \begin{cases} \frac{1}{\gamma_0} - \frac{1}{\gamma}, & \gamma \geq \gamma_0 \\ 0, & \gamma < \gamma_0 \end{cases} \quad (2)$$

where  $p$  denotes power optimization and  $\gamma_0$  is cut off SNR level. By substituting equation 2 in equation 1 we obtain channel capacity for OPRA algorithm. Model of OPRA adaptive transmission algorithm with appropriate pseudocode is presented on Fig. 3.



```

procedure adaptPowerAndRate( $\sigma_n^2$ )
    while  $C_{(OPRA)} > 0$  then
         $R_b, P \leftarrow \text{estimateCapacity}(\sigma_n^2)$ 
    end while
end procedure

function estimateCapacity( $\sigma_n^2$ )
     $S_i \leftarrow R_x$ 
     $\bar{\gamma} = \frac{1}{N} \sum_{i=1}^N S_i$ 
     $\gamma_i = \frac{1}{M} \sum_{i=N-M}^N S_i$ 
     $\gamma_0 = \frac{1}{1 + \frac{1}{M} \sum_{i=N-M}^N \frac{1}{S_i}}$ 
    if  $\gamma_i > \gamma_0$  then
         $C_{(OPRA)} = B \frac{1}{M} \sum_{i=N-M}^N \log_2 \left( 1 + \frac{S_i}{\gamma_0} \right)$ 
        if  $C_{(OPRA)} < C_{PREV}$  then
             $R_b = R_b - \Delta$ 
             $P = \frac{1}{\gamma_i} - \frac{1}{\gamma_0}$ 
        else if  $C_{(OPRA)} > C_{PREV}$  then
             $R_b = R_b + \Delta$ 
             $P = \frac{1}{\gamma_i} - \frac{1}{\gamma_0}$ 
        end if
    else if  $\gamma_i < \gamma_0$ 
         $P = 0$ 
    end if
    return ( $R_b, P$ )
end function

```

Figure 3: OPRA adaptive transmission algorithm with appropriate pseudocode

Steps from 1 to 4 are the same for ORA and OPRA algorithms. If the SNR level at the reception is higher than the cut off SNR level, we have an established channel and calculate the capacity. Based on that, the transmitter adapts the power and data rate. Works of this adaptive transmission algorithm is based on the transmitter transmitting less power and lower data rates for poor conditions in the channel, when the SNR at the reception is small. In contrast, it transmitting with higher power and higher data rates when the conditions in the channel are good, the SNR on reception is high.

### 3.3. CIFR algorithm

The previous two algorithms have an optimized data rate. The CIFR algorithm has a fixed data rate. Adaptation of transmitter power for the algorithm with channel inversion and fixed data rate is given as:

$$p = \frac{\gamma_{CI}}{\gamma} \quad (3)$$

where  $\gamma_{CI}$  denotes a constant received SNR that can be maintained under transmission power optimization. Model of CIFR adaptive transmission algorithm with appropriate pseudocode is presented on Fig. 4.

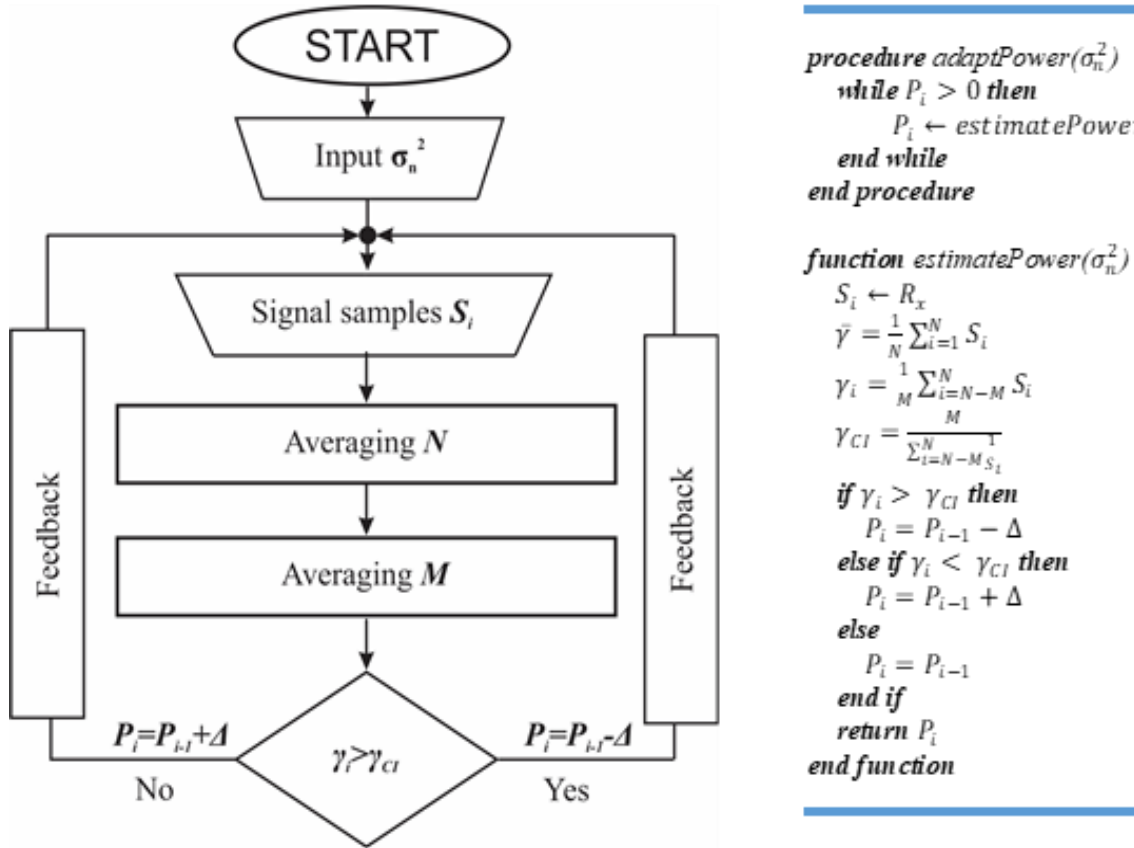


Figure 4: CIFR adaptive transmission algorithm with appropriate pseudocode

Steps from 1 to 4 are the same as for ORA and OPRA algorithms. If the current SNR is greater than the constant received SNR then we reduce the transmitter power, and vice versa. As a result, the CIFR algorithm is the easiest to implement under the assumption that we have good channel condition estimates on the transmitter and receiver.

### 3.4. TIFR algorithm

This algorithm works by the transmitter maintaining a constant received power on the receiver based on the channel state information received via the feedback channel, ie a constant SNR level on the receiver by inverting the channel but only when the received SNR level is higher than the fixed cut off SNR level.

Transmitter power adaptation for reduced channel inversion algorithm with fixed data rate is:

$$p = \begin{cases} \frac{\gamma_{TCI}}{\gamma}, & \gamma \geq \gamma_0 \\ 0, & \gamma < \gamma_0 \end{cases} \quad (4)$$

Model of TIFR adaptive transmission algorithm with appropriate pseudocode is presented on Fig. 5.

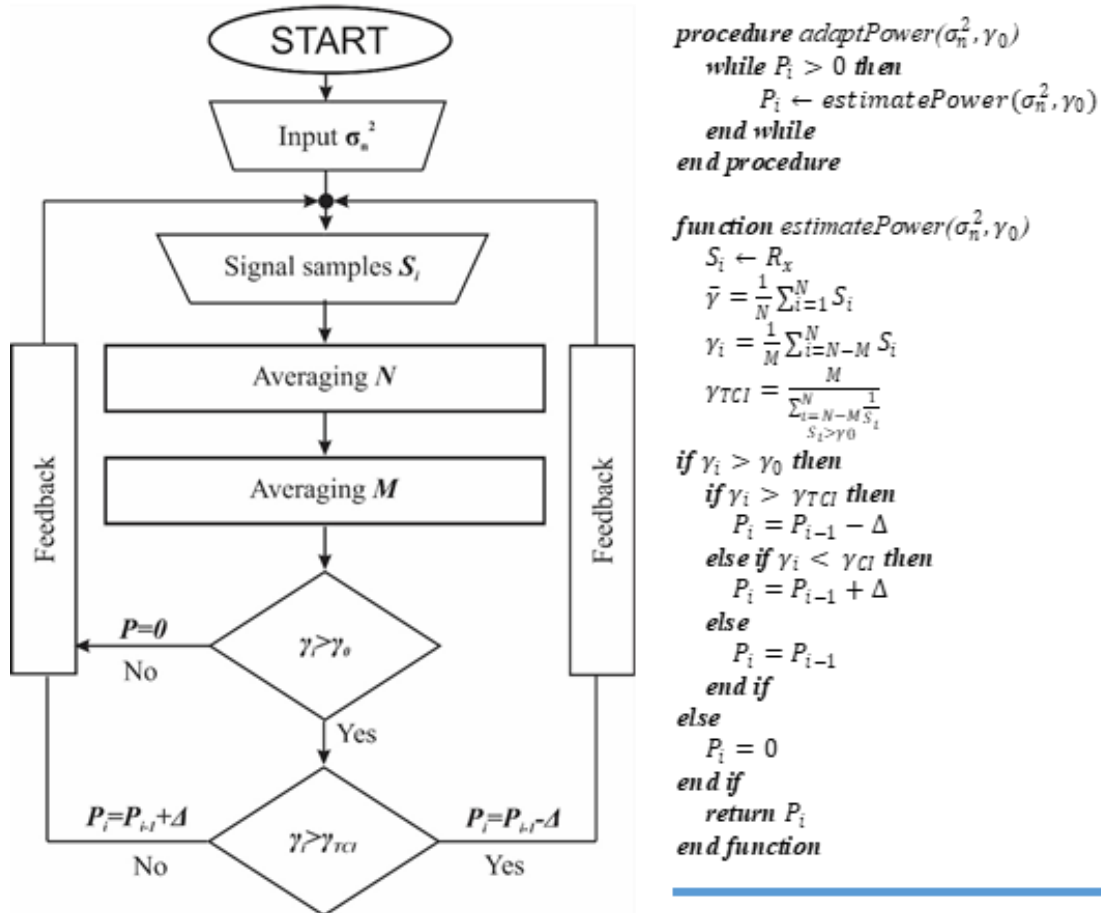


Figure 5: TIFR adaptive transmission algorithm with appropriate pseudocode

In case when level of the received SNR becomes less than the cut off SNR level, the transmission is interrupted. This information is also sent from the receiver to the transmitter via the feedback channel and the transmitter adapts its mode of operation in one of the following ways: transmit at minimum power, transmit at medium power, transmit at maximum power to regenerate the channel and establish communication which is explained in (Milić et al., 2019; Smilić et al., 2019a).

#### 4. NUMERICAL AND SIMULATION RESULTS

In this paper, we are used FSO system model to show the results of adaptive transmission algorithms. We have already explained the advantages that FSO systems have over other transmission systems. Also, we explained the reason for using the Malaga model of atmospheric turbulence.



In this section, we will show the channel capacity achieved by applying adaptive transmission algorithms for moderate atmospheric turbulence when direct and heterodyne detection are applied. Based on analytical expressions, a simulation model was developed in the software package Wolfram Mathematica 11.3.

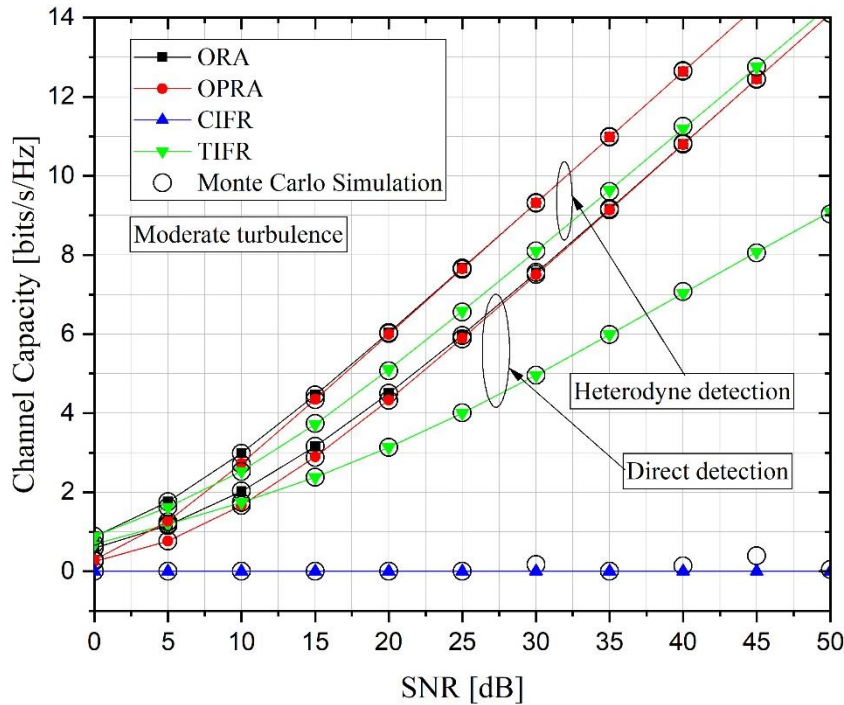


Figure 6: Channel capacity of IM/DD and heterodyne detection FSO in moderate atmospheric turbulence versus SNR, regarding different adaptation scenarios

From Fig. 6 we can see that we achieve higher capacity if we apply heterodyne detection. In practice, direct detection is more often used due to its simple application. From the picture it can be concluded that we achieve higher capacities if we apply algorithms that adapt the data rate such as ORA and OPRA algorithms. Fixed data rate algorithms have less capacity but are easier to use. Using the CIFR algorithm, we do not achieve any capacity, but this is a special case because we used the Malaga model of atmospheric turbulence. The presented adaptive transmission algorithms do not have to be used only for FSO or RF communication systems but can also be used in neural networks and artificial intelligence.

## 5. CONCLUSION

In the era of the COVID 19 virus pandemic, we are increasingly relying on the application of modern technologies. The use of modern technologies in the economy and health is experiencing a great expansion. A technology that greatly accelerates economic development and health care is a technology based on 5G networks and mobile computing. Reliable transmission of information and achievement of higher capacity are of great importance in the current conditions of the pandemic. For this reason, in this paper we have presented different models of adaptive transmission algorithms that can be applied in different information transmission systems. By using these adaptive transfer algorithms, a higher data transfer rate can be achieved. Also, by applying these algorithms, a lower power consumption of the transmitter can be achieved. The use of the FSO system is another technology that can find application in various spheres of life. Due to all the advantages that FSO systems have, which we have already mentioned, they can find application in both economics and health.

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## INTERNAL COMMUNICATION FROM THE PERSPECTIVE OF MARKETING AND PUBLIC RELATIONS

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### **ABSTRACT**

*Many organizations pay attention to internal communication and informing of employees because communication and informing within an organization contribute to its success. The aim of this paper was to present internal communication from the perspective of marketing and public relations. The reason for this is that in practice, marketing and public relations are mainly focused on external actors, and that internal actors should not be their target group, especially not marketing. In this regard, marketing as the function is less responsible for effective internal communication than other business functions, although internal communication is one of the basic elements of internal marketing concept. At the same time, internal communication plays a key role in the development of public relations especially in the development of employee–organization relationships. The quality of both employees–organization relationship and employee–manager/leader/supervisor/superior relationship can affect organizational effectiveness. In the academic literature, internal communication is seen as a part of corporate communications and is called integrated internal communications. Hence, it is important for organizations to integrate communication activities or to ensure good coordination of disintegrated communication activities of different departments. It is not questionable whether internal communication is important for an organization, nor which function is responsible for it, but how to ensure good coordination of communication activities. This paper modestly contributes to the field of internal communication from the perspective of marketing and public relations. The paper is intended for public relations professionals, (internal) marketing professionals and management of an organization as a general insight into internal communication and its importance for employees’ satisfaction and organizational outcomes.*

**Keywords:** *employees, internal communication, internal marketing, public relations*

### **1. INTRODUCTION**

Internal communication as well as employees’ satisfaction with internal communication are positive job-related outcomes of employees.<sup>1</sup> Therefore, internal communication is one of the field of the organizational behaviour research and other disciplines in the field of management and organization (e.g. human resource management, corporativne communication, etc.). At the same time, since internal communication has been found to contribute to other outcomes of employees, such as job satisfaction and job performance (e.g. Chan & Lai, 2017), as well as organizational commitment of employees (e.g. Konja, 2014), it has received significant attention in broader research literature. In this regard, the impact of communication and internal communication satisfaction on employees’ outcomes, their satisfaction, customers’ satisfaction, as well as organizational successes has been explored in a lot of studies including studies in marketing, public relations, etc. According to Men „Multidisciplinary by nature, internal communication can be positioned between public relations, human resources management and (internal) marketing“ (Men, 2021, p. 2).

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<sup>1</sup>Besides, job satisfaction, organizational commitment of employees, organizational engagement and involvement of employees, organizational identification, and more, all these are positive job-related outcomes of employees.

Besides, internal communication and other disciplines such as marketing, internal marketing, relational marketing, public relations, human resources management, corporate communication are close to each other. “Managerial activities cannot be properly performed without using internal communication to some extent. However, internal communication should not be perceived as subordinate to any of the mentioned<sup>2</sup> disciplines, except when management structures in a given organization place internal communication in a reporting line to one of them” (Verčič et al., 2012, p. 226). This paper supports the stated claim of Verčič et al. (2012) with a focus on the perspective of marketing and public relations. The reason for this is that in practice, marketing and public relations are mainly focused on external actors, and that internal actors should not be their target group, especially not marketing (Lings, 2004). In this regard, internal communication in practice is less related to marketing compared to other business functions. The paper modestly contributes to the field of internal communication from the perspective of marketing and public relations; the paper is intended for public relations professionals, (internal) marketing professionals and management of an organization as a general insight into internal communication and its importance for employee satisfaction and organizational outcomes. The structure of this paper consists of the following parts: introduction, evolution of (internal) communication through marketing and public relations, the overlap between public relations and marketing, the role of internal communication in internal marketing, the role of internal communication in public relations, conclusion, and references.

## 2. EVOLUTION OF (INTERNAL) COMMUNICATION THROUGH MARKETING AND PUBLIC RELATIONS

Internal communication includes both formal and informal communication within an organization taking place at all its levels (Kalla, 2005). In this regard, internal communication was developed as the part of the organization's communication. Evolution of communication through marketing and public relations is presented in Table 1.

Characteristic	Press agency/publicity	Public information	Managerial discipline
Purpose	Propaganda	Dissemination of information	Persuasion and/or mutual understanding/accommodation
Nature of communication	One-way complete, truth not essential	One-way, truth important	Two-way, i(m)balanced effects
Communications model	Source → receiver	Source → receiver	Source → receiver ← feedback actor ↔ actor
Nature of research	Little if any	Little, readership readability	Formative attitude evaluation
Quote	“public be damned”	“public be informed”	“public be influenced, involved and/or accommodated”
Communications disciplines involved	Publicity (propaganda)	Publicity, media relations	Publicity, media relations, employee communications, investor relations, general counsel, government affairs...
Period	1800-1899	1900-1904	1940-1990

*Table 1: Historical models of public relations  
(Source: Cornelissen, 2020, p. 35, Table 2.1.)*

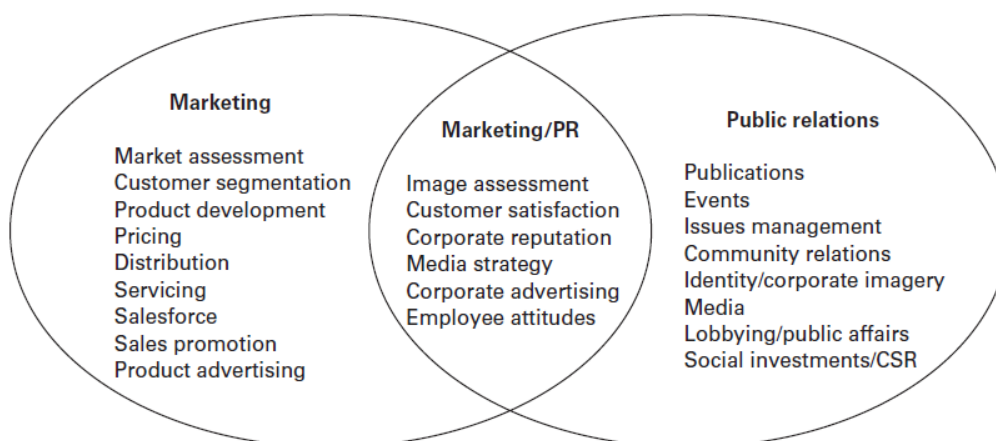
<sup>2</sup> „human resources, change management, organization development, public relations, marketing and general management, corporate human resources, corporate strategy, and as the most logical partner – corporate communication“ (see more: Verčič et al., 2012, p. 226).

According to Table 1, in the period 1800-1899, the purpose of communication was propaganda. Publicists, press agents, especially print media agents, promoters or propagandists played a key role in the organizational communication with the external public (or the general public). Their messages (advertisements) were exaggerated and even outright lies. It was believed that only experts professionals in this field could develop successful communication campaigns and apply appropriate techniques. Even then, the importance of experts professionals for public relations in the communication of organizations with their external public was emphasized. *Press agency orientation* was dominated in the field of public relations. *Production orientation* was dominated as the business philosophy of the organization (Cornelissen, 2020, p. 36, Figure 2.1.). In the next period, between 1900 and 1940, dissemination of information was the purpose of organizational communication i.e. organizational public relations. Organizations needed publicists or advertising agents to be continuously hired rather than occasionally. This was “the first inkling of expertise in the area of communications and planted the seeds for the two professional functions that were to define for the majority of the twentieth century how communications management was approached and understood in organizations: public relations and marketing” (Cornelissen, 2020, p. 35). In order to prosper, organizations must care about both their public (external and internal) and the strategies of effectively bringing their products and services to external market. *Public information orientation* was dominated in the field of public relations of organization. *Selling orientation* was dominated as the business philosophy of organization (Cornelissen, 2020, p. 36, Figure 2.1.). These functions developed mostly independently, unfortunately. In the following period (1940-1980), public relations developed as a managerial discipline and two-way activity. It is characterized by a *symmetrical orientation*. At the same time, marketing developed as a *managerial discipline*. It is characterized by a *market orientation*. Market orientation (e.g. from decision-making perspective - Shapiro, 1988; from market intelligence perspective – Kohli & Jaworski, 1990; from culturally based perspective - Narver & Slater, 1990; from strategic perspective - Ruekert, 1992 in: Radosavljević, 2017, pp. 48-53) is „an important factor from which the success of strategy formulation and implementation depends” (Radosavljević, 2017, p. II) and „strategic advantage in achieving the objectives of customer satisfaction and loyalty” (Bansal et al., 2001, p. 62). Communication with employees occurs as a managerial and communication discipline. Socio-economic force and power of individual actors of the external public – stakeholders, such as environmental associations, investors, government, and trade unions, have influenced the change in the attitude of organizations towards the external public. Today, the process of organizational communications with external public has been based on dialogue and building of relationship instead on downright persuasion. At the same time, employees become important actors of the internal public. Development of internal relations, i.e. relations with employees has gained in importance. Socio-economic force, especially fast changing economic conditions, greater competition, the power of customers, greater ethical power of customers and their unions, advances in media, communication and technology have influenced the change in the attitude of organizations towards overall business and their external markets. Product branding, positioning, customer needs and wants are in the market orientation focus. Relationship with customers and other stakeholders are developing in the focus on advertising, publicity, sales promotions, direct marketing and other types of marketing communications. Direct persuasion does not play an important role in marketing communications as in earlier periods. At the same time, employees become important from the marketing perspective. With the development of internal marketing, employees become its target group while internal communication becomes its dimension. Since 1990, the communication activities of both the marketing function and the public relations function have been integrated into a new discipline - corporate communications.

In the practice of many organizations, communication activities are still disintegrated by business functions (e.i. marketing, public relations, human resource management, business communication or organizational communication, etc.).

### 3. OVERLAP BETWEEN PUBLIC RELATIONS AND MARKETING

Public relations activities, marketing activities and their overlap are presented in Figure 1.



*Figure 1: Public relations and marketing activities and their overlap  
(Source: Cornelissen, 2020, p. 40, Figure 2.2.)*

According to Figure 1, employees' attitudes and customer satisfaction are marketing and public relations activities. Besides, there are corporate advertising (as the type of external communication), media strategy (as a communication decision), image assessment and corporate reputation (as the objectives and the tasks of external communication). As a common dimension, there is no internal communication but there are employees' attitudes. Today, internal communication is the part of corporate communications and is called integrated internal communications.

### 4. THE ROLE OF INTERNAL COMMUNICATION IN INTERNAL MARKETING

According to American Marketing Association "Marketing is the activity, set of institutions, and processes for creating, communicating, delivering, and exchanging offerings that have value for customers, clients, partners, and society at large" (Approved 2017, AMA, website). Parts of the definition - communicating, and the value of the offerings not only for consumers, but also other actors and society as a whole indirectly indicate the link between marketing and employees as the internal customers and thus marketing and internal communication. In this regard, as the dimension of holistic marketing<sup>3</sup>, "internal marketing is the task of hiring, training, and motivating able employees who want to serve customers well" (Kotler & Keller, 2006, p. 20). According to internal marketing concept, employees are the internal customers of an organization (Ahmed & Rafiq, 2002). In this regard, internal marketing focuses on employees' satisfaction (Ahmed & Rafiq, 2003; Balta, 2018) because such employees are more motivated (Grönroos, 1985) and contribute more to organizational performance (Salehzadeh et al., 2017). Keller and Kotler (2006, p. 20) explain this clearly in the following sentence "It makes no sense to promise excellent service before the company's staff is ready to provide it" (Kotler & Keller, 2006, p. 21). Relations among employees and relations of managers (supervisors, etc.) with employees (internal relations) are a prerequisite for successful external

<sup>3</sup>"The holistic marketing concept is based on the development, design, and implementation of marketing programs, processes, and activities that recognize their breadth and interdependencies" (Kotler & Keller, 2006, p. 17).



relations (adopting to Gummesson, 1987). Internal (marketing) communication plays a basic role in developing, maintaining, or improving effective relations with employees as internal customers (customers on internal market). External marketing communication plays a basic role in developing, maintaining and improving effective relations with customers on external markets and other actors in the external environment. Internal communication is one of the elements of the internal marketing concept (Gummesson, 1991; Lings, 2004)<sup>4</sup>, hence internal communication in marketing. Most marketing studies<sup>5</sup> have found that employees' job-attitudes, and their behavior are related to organizational outcomes (profits, etc.) and more importantly, to customer satisfaction. In this regard, the impact of the internal marketing orientation of an organization (i.e. "its commitment to internal marketing practices that treat employees as assets") on organizational financial success is positive and direct (Bansal et al., 2001). Also, the impact of internal communication on an organizational performance is direct and positive (Snyder & Morris, 1984; Hwang & Der-Jang, 2005). Internal communication can contribute to the adoption of internal marketing and indirectly positively affect employees' job satisfaction.

## 5. THE ROLE OF INTERNAL COMMUNICATION IN PUBLIC RELATIONS

„Public Relations is about reputation - the result of what you do, what you say and what others say about you. Public Relations is the discipline which looks after reputation, with the aim of earning understanding and support and influencing opinion and behaviour. It is the planned and sustained effort to establish and maintain goodwill and mutual understanding between an organisation and its public“ (CIPR, website). Employees are important actor of *internal public* i.e. *they are internal stakeholders of an organization*. "Internal stakeholders provide the link between strategy-makers and external stakeholder targets"; they "can impede or encourage the achievement of market-oriented objectives by a market-oriented company" (Schlosser & Mcnaughton, 2007, p. 307). Therefore, it is very important that organization focuses on employees as internal stakeholders. Based on the above, public relations professionals treat employees as an important actor of the internal public of an organization. According to Wright (1995) employees are another important public and organizations should be focused on internal communication and not just on communication with external public. In this regard, organizations develop internal public relations i.e. internal relations (see more: Verčič et al., 2012). The objectives of internal public relations are: training, information and motivation of employees, and building of corporate identity. Employee communication is a significant area of internal public relations. In this regard, internal communication plays a basic role in developing, maintaining and improving effective relations with actors of internal public, while external communication plays a basic role in effective relations with actors of external public. The relationships between managers and employees are complex and hard although „each is the other's most important public“ (Kennan & Hazleton, 2006, p. 312). Besides, public relations management in practice is hard. Nevertheless, according to Kennan and Hazleton (2006, p. 312), the perception that public relations managers should have a technical role instead managerial role continues to persist in practice of many organizations. According to Cornelissen (2020, p. 190), manager, ie. communications manager is „A practitioner who makes strategy or programme decisions concerning communications, and is held accountable for programme success or failure; engages in research, strategic planning and management of communications“. Public relations managers should be allowed a managerial role in the communications and public relations segment. According to Mishra et al. (2014) „Strong internal communication directed by public relations professionals can build trust and

<sup>4</sup>Other elements of internal marketing are internal market research (Piercy, 1995) and employee training (Tansuhajet al., 1988).

<sup>5</sup>e.g. Bansal & Sharma, 2000; Hartline & Ferrell, 1996; Hunt, Chonko, & Wood, 1985; Siguaw, Brown, & Widing, 1994; Sujan, Weitz, & Kumar, 1994, in: Bansal et al., 2001.



commitment with employees, which can in turn lead to employee engagement“ (Mishra et al., 2014, p. 184). Employees are the most valuable asset of an organization (Millar et al., 2017) and its intangible resource, that is important predictor of organizational performances (Muwardi et al., 2020).

## 6. CONCLUSION

Internal communication is still insufficiently studied in the field of (internal) marketing and public relations. Scientists and researchers mainly focus on external influence of communication especially marketing communication, while its internal aspect is marginalized. According to Men (2021, p. 1) “Internal communication sometimes referred to as employee communication, internal relations, or internal public relations”. This statement illustrates the breadth of internal communications including internal marketing and internal public relations. Holistic approach to employees and communication with employees allows us to consider the role of employees in the organization as actors on which the success of the organization depends. Today, internal communication is the part of corporate communications and is called integrated internal communication. It is important for organizations to integrate communication activities or to ensure good coordination of disintegrated activities. It is not questionable whether internal communication is important for an organization, nor which function is responsible for it, but how to ensure good coordination of communication activities.

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## INVESTMENT REASONS FOR USING STANDARDS COMPLIANCE IN AUTONOMOUS VEHICLES

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### ABSTRACT

*The possibility of a quick return on investment - ROI, is reflected in the application of clear research studies on the actors involved in production processes, with an emphasis on investment and the application of compliance. Tendencies to ensure the stability, reliability and compliance of software require the application of certain standards. By understanding the application of standardization and digitalization, companies can identify themselves as leaders in investing in innovation. The main element of the research is reflected in the identification of the reasons for the cooperation of software companies, suppliers, manufacturers. Research studies rely on supplier segmentation, through the study of decision-making methods. The analysis of the accompanying literature ensures the application of harmonization of standards in business practice with the aim of defining research issues. The scope and structure are limited in the review of the sources of connection of the processes that take place during production from the physical parts to the software itself. The application of the methodological approach considers the degree of innovation in order to provide a secure and reliable integration solution. Performance is measured through the constant presentation of acquired software knowledge and verification of compliance. Relying on intelligent data collection techniques can accelerate development and enable a higher degree of definition writing by harmonization between companies.*

**Keywords:** *investment reasons, standards compliance, standardization, autonomous vehicles, supplier investment, logistic management, esaris*

### 1. INTRODUCTION

Investors ask key questions about profitability, analyzing the economic cost-effectiveness of applying software development standards in practice. Companies with a higher level of technology and standards are becoming more determined to create a clearer vision of the future business. The paper will study the best examples in the current time interval, recognizing the critical characteristics of the relationship with strong financial performance. By preserving the value of digital investments and realizing sales opportunities, further research into the digitalization process provides information vital to creating success. With a clearer strategy and understanding of market circumstances, managers accept the broader picture when applying innovative technologies. Data storage needs are created in accordance with the requirements of complex relationships with legislation and the market. Therefore, data transformation and analysis (Popović, et al., 2016) require skills to measure digital investment outcomes related to proactive defense and cyber security.

Companies that possess the attributes of creativity and understanding of the applications of standardization and digitalization, can be marked as leaders in investing in innovation (Li & Li, 2021). The process of improving the development of autonomous vehicles (AV) by large manufacturers is partially slowing down in 2021 with the onset of the Covid-19 pandemic crisis. The production and marketing of final products are declining due to the paralysis of the supply and demand market. The creators of the automotive industry, in correlation with the policies, raise the key question of the momentum of the transition to autonomous vehicles and the implementation of the necessary standards and legislation. According to Gartner Trends and analyst Pedro Pacheco (Alawadhi, et al., 2020) (Pacheco, 2021), a milestone is predicted as several carmakers such as Daimler, including Ford, Toyota, Honda, and Xpeng, begin to apply high standards by creating a third-tier AV model (Kaplan, et al., 2019). They refer to the reduced need for human intervention, providing a greater degree of computer control and the use of models with human behavior. The UN (United Nations) is launching the door to further development, by signing agreements with 60 countries. In order to create clearer regulations for autonomous systems and to define the necessary requirements for road infrastructure maintenance. The automotive industry requires a greater degree of integration with IT companies to provide the final product in the form of a fully functional autonomous vehicle. One of the forms of connection verification can be seen in the signed contract by Daimler with Alphabet's affiliated company Vaimo. The main goal of this is to create autonomy for their trucks, which required the further signing of contracts with chip manufacturers like Nvidia. The main priority for companies is to create high-quality products. It is essential that the various elements work purposefully at all times in order for production and sales to function flawlessly (zero interruption). The zero interruption can be presented in more detail in the form of the necessary control capabilities without possibly jeopardizing the degree of control over a certain part of the system with which the interaction is performed. In order to ensure the quality of information and communication technologies and enable zero interruption, it is necessary to invest in human resources. Integrating reliable ICT (Dakić, et al., 2021) into this industry ensures the digital stability of ensuring high standards and setting priorities for companies.

## **2. RESEARCH METHODS**

The scope and structure of this research are limited to a review of the literature that deals with compliance with standards, suppliers within autonomous vehicles, processes that take place during production from physical parts to the software itself. Emphasis is placed on the importance of investing in the application of compliance with regular and software standards during production. The starting point for companies is to consider the possibility of ROI (Return of Investment) (Dakić, et al., 2019; Ćurčić, et al., 2021), which requires the application of clear research studies on the actors involved in the production processes of an autonomous vehicle. Given that the requirements of users are high, without the harmonization of formats and legal regulations, it is difficult to achieve and ensure the quality of final products. The aspiration of the methodological approach is to summarize the current situation in the industry, so that car companies decide to apply a greater degree of innovation and communication with software companies. Research studies are related to supplier segmentation by using the study of decision-making methods. We try to see the shortcomings of industrial practice in relation to examples from the real environment (Dakić, et al., 2016). The main element of the research is reflected in the identification of the reasons for the cooperation of software companies, suppliers, manufacturers, and others, applying appropriate standards. A systematic approach to analysis has been defined and applied in the development of the issue, through the analysis of the accompanying literature. An attempt is made to answer some of the defined questions within the paper. With a studious approach, a comprehensive review of the literature dealing with the topic of selecting software companies and their application in accordance with standards and

legal frameworks were performed. Implementing the selection methodology can enable impartiality and transparency in the market of manufacturers and suppliers of autonomous vehicles. This study is based on a systematic review of the literature that deals with procedures, practices, and selection in accordance with the criteria applied in business.

### **3. FORMULATION OF RESEARCH QUESTIONS**

From the analysis of relevant literature, it has emerged a research identification for asking questions and looking for answers:

- RQ1: Why are investments related to more criteria (environmental standards, product economy, innovation, reliability)?
- RQ2: What decision-making methods have been used in research studies on segmentation and supplier selection based on standards and their limitations in industrial practice?
- RQ3: What standards are currently most sought after and applied during the development of autonomous vehicles?

### **4. LOCATING RESEARCH PAPERS**

The sources of research work were based on searches from the scientific databases Scopus and Google Scholar, applying the keywords: investment rationality, esaris, zero break, and other terms. Based on the obtained search results, research articles, and journals, conference proceedings were included. The search result consisted of research articles that best fit the research topic.

### **5. SELECTION AND EVALUATION OF RESEARCH PAPERS**

The analysis of research papers has a special emphasis on research issues, which are defined in the previous section. Parts of the conclusions of each article were studied separately. Then, knowledge was collected in order to determine the goals, after which the research articles with the most valid matching opus were reviewed.

### **6. THEORETICAL BASIS**

Current high-tech investment costs of 100,000 dollars (Fagnant & Kockelman, 2015) and above are much higher than purchase prices. By declining the purchase value of goods in the markets, transport companies or suppliers make higher profits and increase investment in technology. The safety of autonomous vehicle technology is being called into question due to the lack of human-driven presence (Dakić & Živković, 2021). The controversy is in the lack of perception of artificial intelligence, which activates political activities aimed at slowing down the implementation of the process of introducing new standards. Higher cost prices of final products and problems with their placement are recognized, which requires greater efforts in resolving the shortcomings of responsibility and safety. In reality and in the practical approach, the new technology will be more and more present on the roads and the accompanying road infrastructure, representing a turning point in the history of transport. Adequate further development will enable great benefits for companies and passengers through higher security and less pollution and savings through the use of renewable energy sources, which will contribute to the global economy. The need for electronic security requires the efforts of transport policymakers and AV manufacturers. Namely, targeting intelligent transport mechanisms and AVs by malicious organizations, computer hackers can cause traffic disruptions and collisions. Understanding the scope of possible threats, one should accept the techniques of isolation from attacks, which are applied mainly in comparable systems of critical infrastructure of state importance (Dakić & Živković, 2021). The commercial availability of new technologies is also slowing down due to lagging behind in many technological aspects of (Dakić & Todorović, 2021).

Technical development in a package with relevant political activities, affects the positive outcomes and creates uncertainty about the improvement of further processes. Government efforts for certification and testing should ensure more efficient use of shared and personal resources. Policymakers should also consider the potential negative aspects of regulation, and thus the effects of excessive caution, which can be detrimental to technological progress.

### **6.1. The latest trends in technology and reasons for investing**

Looking at the automotive industry, the necessary component suppliers have clear long-term goals of conquering market share and are correlated with manufacturers owning shares. Their strategies are based on investing in new technologies (SourceScrub, 2021; Talavera, et al., 2021) with a tendency for efficient development with the application of adequate standards. However, problems in the availability of chips on the market affect the uncertainty of the development process and thus prevent further planning strategies. Slowing down the process and the need for compliance with standards, software requirements prevent the placement of the final product such as autonomous vehicles (Alawadhi, et al., 2020; Duarte & Ratti, 2018). One of the solutions in the current technological trends in the partnership and mutual interest of producers and suppliers in the form of forming incentives to invest in various related areas. This interdependent relationship should encourage manufacturers to be open to the application of new technologies and standards. Part of the automotive industry has established mutual cooperation and created a clearly defined format for future cooperation (Winston & Karpilow, 2021). This is reflected in the fierce competition which, in accordance with environmental norms, achieves results by raising the limit value of products and their acceptability. The positive effect is observed through the prism of the growing number of companies present and their intentions of constant presence in innovative technologies (Eberhard & Behnsen, 2012; Fagnant & Kockelman, 2015). In this paper, we will study several new trends in technology and investment banking that push the market forward in 2020 (Shiralkar, et al., 2021; Leonardo, 2020). The times when investment banks dominated the financial services sector may be a thing of the past. Now FinTech companies are introducing new principles for the functioning of the industry, creating disruptions and reducing the profits that were guaranteed. The FinTech research (LJungholm, 2020) on a global level made possible by PwC (PwC, 2015) showed two important things:

- 1) due to the disruption of FinTech companies, there is a risk of 28% in profits for the banking and payment sector.
- 2) increased market disruptions in the future are a cause of concern for 81% investment done by banking managers.

Consumers are offered new opportunities to control finances and payments with the presence of FinTech providers, while companies can choose ways to simplify financial operations and terminate cooperation with suppliers. The phenomenon of the emergence in FinTech had a slight effect on the banking sector, which led to a stronger partnership between investment banks and third-party fintech companies (PwC, 2015; Vives, 2021).

### **6.2. The benefits of investing in autonomous vehicles**

The successful process of transforming a vehicle into an intelligent machine is performed by software. The necessary standards in correlation with that must be clearly defined, which enables developers to create efficient and advanced AV applications that include perception, planning, and control of drivers, mapping and localization, processing of natural languages, and other possibilities (Dakić & Živković, 2021; Gružasuskas, et al., 2018).

A clear strategy for coordinating business with the supplier network creates additional value for the business (Pandey, 2021). Certain benefits that companies could have by investing time and energy in partnership with suppliers are:

- 1) a larger range of suppliers and connecting companies with them through global and localized business processes. The business volume of many companies is increasing and becoming more sophisticated. However, controlling and managing business cycles with suppliers is a complicated task.
- 2) deriving value with the tendency of companies to, in addition to the economy, will try to efficiently identify the possibility of savings within the supply chain. At present, the emphasis is on the effective recognition and elimination of market disturbances.
- 3) rationalization of data for analysis with the aim of increasing the network of suppliers, and the amount of necessary information. It is necessary to avoid systemically unorganized and long data collection based on a growing database of suppliers. It also depends on the ability of companies that strive to be competitive in today's dynamic markets of the global world.
- 4) risk avoidance and early warning signs of increased risk levels are conditioned by the creation of a larger supplier base. The complexity of networks creates the presence of complex risk factors in business. It is, therefore, necessary to ensure strong management control. Using processes that encourage communication, build trust and ensure transparency integrates a stable supply chain of the market.
- 5) with the diversification of the supplier base in the global supply chain, there is a need for segmentation of suppliers, defining the amount of categories that can be managed on the basis of certain dimensions and characteristics. Industrial practice shows that in the supply chain this need is brought about by applying a limited set of criteria through assessment and opinions. However, decision bias and limited criteria can lead to inefficient supplier segmentation strategies that do not use the required standards for autonomous vehicles. Unforeseen effects of loss of control over a certain part of the system can occur, which can lead to a breach of trust and the inability to validate the production process (Hill, 2021; Golmohammadi & Hassini, 2021; Zhang, et al., 2021).

### **6.3. Compliance with standards**

The vehicle industry is increasingly turning to IT security standards to manage complex production environments, reduce costs and improve quality levels. Enabling the implementation of innovative technologies is dispersed among several specialized IT teams and among corporations that are positioned within the supplier network. This requires a clear plan, classification scheme, and structured organization. The classification is necessary for system security and must be arranged in a way that meets the criteria of complex industrialized provision of IT services (Liu & Guo, 2021; Paolucci, et al., 2021; Ruggero, et al., 2021).

### **6.4. ESARIS**

ESARIS as a relevant factor serves for detailed delivery of materials to the target group for which it was created. Fills in the gaps in IT service management standards and standard catalogs with topics and aspects. Zero downtime can be achieved by relying on the ESARIS security taxonomy. It represents an alternative to the balance requirements of the IT manufacturing industry, the interaction of suppliers and customers of goods and services (Behnsen & von Faber, 2012).

### **6.5. Achieving compliance with ESARIS standards**

ESARIS is a model for achieving compliance, linking to activities that implement safety standards through verification methods. The basis for all this is the IT engineering process. The need to develop a reliable process of ICT services in cooperation with the ESARIS standard

should be a classification and organizational plan that will support further modernization of industrialization and ensure more effective interaction of parties within the market itself (Eberhard & Behnsen, 2012; Guranda, 2021). Transparency is provided by relying on a modular and hierarchical approach, supporting IT service providers and the various capabilities of customer organizations. The digital economy is increasingly integrating into the global industry. The creation of financial instability in the market leads to increased competition and the imperative to constantly reduce operating costs with greater efficiency and productivity. The key to opening the exit can be found in various innovative contents and appropriate technological solutions (Todorović & Ristić, 2019; Ristić, et al., 2019).

### **6.6. Zero Outage**

Data in 2015 show that two-thirds of the companies surveyed by PwC (PwC, 2015) consultants say that the basis or the main criterion in choosing a service provider is precisely quality. It is emphasized that one of the key factors is the performance related to the level of sustainable services and stable processes. Increasing the dependent relationships between processes and platforms leads to a greater possibility of incidents. The occurrence of a small incident, such as a current IT failure, leads to a large financial loss. By supporting the high-quality standards that today's business requires from IT, it is necessary to provide efficient and fast troubleshooting that is possible by applying Zero Outage strategies. They refer to an idea that implements instead of reacting the idea of prevention to the behavior of companies. The goal is to achieve continuous improvement of the quality of companies through efficient and systematic action with tasks. Precisely because of this, Zero Outage's activities are focused on providing services, optimizing the user interface, managing projects, managing telecommunications, and attracting other ICT providers. Summarizing all the elements of a proactive risk management system, the goal is to stop instead of reacting, representing the basis of Zero Outage's strategy (Behnsen & von Faber, 2012). The creation of security measures by the methodology relies on the ESARIS security taxonomy. The process of a methodological organization takes place using security measures, which distinguishes this process from other procedures because it can be used within any IT structure and regardless of employee education. The mainstay of application lies in the use of simpler terms, making it much simpler compared to other security measures that use complex classification and security terms. IT systems require the application of different security measures of components and related actors during the management of IT services and services of a company. The complexity of security measures can contribute to the difficulty of applying the necessary standards. ESARIS with its taxonomy of expressing facts proved to be the best architectural approach due to the direct approach of demonstrating "how". This involves the use of clear instructions. Another key feature can be reflected in the use of graphical elements, making the process of use and understanding much easier and simpler (Eberhard & Behnsen, 2012; Behnsen & von Faber, 2012).

### **6.7. The rise of research management software and standard aggregation**

Companies in partnership with investment banks have turned new technologies into capital, creating opportunities to increase knowledge capacity and improve decision-making processes. The possibilities of full technological utilization are provided by the company SourceScrub (SourceScrub, 2021; SourceScrub, 2021; SourceScrub, 2021) and successfully enable easier connection and download in several important ways:

- 1) enabling investment banks to identify future investors more dynamically and accurately.
- 2) Making available demographic data in order to study the work of private companies.
- 3) Partnerships with fintech companies such as SourceScrub provide a major source of income for investment banks.



With the convergence of the cross-sector process between new technologies and investment banking, the trend of the relationship is expected to last in the next decade. By achieving efficiency through the use of artificial intelligence, companies invest money and valuable time more dynamically. The cost reduction trend related to the aforementioned PwC (PwC, 2015; Hajhamad, et al., 2021; Rao, et al., 2021) survey indicates statements by more than 50 % of managers about greater investment in standardization and AI platforms. The implementation of AI in banking is made possible by the functioning of two key areas:

- 1) customer service and fraud services.
- 2) The ability of chatbots to process most customer problems gives more space to management for control due to the number of reported cases by AV users.

By recognizing potentially fraudulent transactions from AI technologies, consumers are notified and their accounts are automatically suspended. Based on these innovations, financial institutions have achieved great savings, leaving room for reorientation to other operations. Technological progress is a competitor to investment banking because it has applied efficiency and improved decision-making processes. Further consideration of the circumstances predicts that banks will be reformed by relying on technologies to optimize operations. Software and hardware components are parts of a cyber-physical system that are frequently updated and changed over a lifetime. The interface components and their formal feature specifications are key to nullifying the integration problem.

#### **6.8. Raising the awareness of managers and staff**

Ensuring high quality must be a top priority in the company. Numerous components must be efficient and available as soon as possible for production and sales to function smoothly. It is crucial for further innovative access to technologies to include digital standardization with accompanying reliable ICT. Software advances allow managers to more easily communicate and define their future requirements in a series of small software environment developments and by supporting certain multimedia capabilities. To enable all this, it is necessary to raise awareness of the existence of current standards and technologies that can be applied to ensure compliance at the global level.

### **7. ANALYSIS AND DISCUSSION**

Critics of industrial practice use supply risks and profit impacts to segment suppliers and set certain undefined criteria. The assumption is that suppliers due to difficult direct access with companies are not able to realize the entire logistics process, which opens the discourse into the validity of the segmentation of supplier selection. The question is whether pre-defined criteria can be applied to each of the actors involved and in which case a justified exemption should be made? All this opens up questions and dilemmas for further research of previously posed research questions.

### **8. CONCLUSION**

In order to adequately address the lack of integration in this domain of standardization, it was necessary to examine certain criteria from practice in order to define the determination of companies to invest in future research related to the autonomous vehicle manufacturing industry. Many studies have shown the positive effects of applying innovative standardization methods, despite the fact that investments by IT have been reduced. Other research studies have demonstrated the greater reasons for investing in logistics infrastructure and distribution by applying standards. Given the need for constant review of the impact of information technology on innovative processes of improving the industrial market segment, it was necessary to adopt recommendations for the development of theory in systematic reviews of professional material.

From this, the model of organizational innovation system as a theoretical approach is perfected and inter-theoretical existing research is integrated more efficiently. It has been argued that OIS offers a greater focus on IT artifacts, activities, actors, and organizational context that will create a more complex set of theoretical insights with greater relevance in practice. Further review within the research showed insufficient knowledge of all elements of the framework of the organizational system of innovation, although the roles of CDO, CIO flexibility of IT architecture, and IT / business integration in organizational structures of innovation were previously recognized. Finally, we can point out various possibilities for expanding the scope of future research based on everything concluded, recognizing the shortcomings in what has been said so far.

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## LEGAL AND BUSINESS ASPECT OF FRANCHISE AND FRANCHISE BUSINESS AND MEASURES DURING THE COVID - 19 PANDEMIC

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### ABSTRACT

*Franchise is a business privilege defined by franchise law through which the franchisee operates, performs the franchise activity of selling certain products or performing defined services by the franchisor. The franchisee uses the trademark, the service mark of the franchisor, all based on his work and methods in the defined activity, use of franchise privilege. Based on the franchise agreement, the franchisee pays the franchisor a franchise fee. A franchise agreement is based on the principles of contract law, concluded with the consent of the will of the contracting parties and belongs to unnamed contracts and by its nature is a mixed contract, since it also contains elements of some other contracts. National and international regulations affect the protection of intellectual property rights and determine the content and manner of performing franchise activities. Franchising as a segment of entrepreneurship is a complex legal and economic business model, created between two independent economic entities. Franchise business can be viewed from several business aspects, such as: the manner and method of growth of economic entities that are geographically conquering new markets; enable growth of production and distribution capabilities of franchisors and recipients; form of new entrepreneurial activity of economic entities towards winning and starting a business activity with the creation of new jobs; the emergence of a new organizational form and a new form of restructuring in organizational terms with the beginning of new distribution channels and finding new sources of funding. At the same time, franchise business from the aspect of the theoretical concept gained its practical verification of business success through the operationalization of franchising as a way and method, "Know-how", a concept that ensures the development and sustainable growth of the business entity in accepting franchising as a new opportunity in the economic development of the business entity. Also, today in these times of lockdown and closed stores and restaurants, franchisors and franchisees were and still are affected by the COVID-19 pandemic and requested to adapt their sales model, planning and implementation to the circumstances, because a whole franchise system has been challenged.*

**Keywords:** *trade, franchise, patent, license, franchisor, franchisee, intellectual property, "know – how", COVID - 19*

## 1. INTRODUCTION

The progress of civilization is based on intellectual activity, as a reflection of creativity and invention in all domains of human creativity. The progress of civilization has imposed the need for legal regulation and protection of intellectual property, and especially the work that refers to the author's work as an intellectual creation of the human mind. Legal standardization of creativity has led to the creation of intellectual property, which has its own defined property title and enjoys regulated legal protection, both, from the spectrum of national regulations and from the international legal aspect, by adopting certain international conventions that provide international legal framework. overall regulation and protection of intellectual property rights. There are two key reasons for international legal protection of intellectual property: defining intellectual creation as a form of intellectual property imposes the need to standardize the moral and economic rights of authors, as well as harvesting the economic effects, but at the same time regulating the manner and conditions of availability of these rights, through their circulation or otherwise; in this way, intellectual property based on a certain creation of the human mind also appears as Intellectual Capital - which can therefore appear as a participant in payment transactions and in the realization of certain economic movements and flows of trade and other economic activities. In this way, Intellectual Capital also performs its own promotion as a factor that can significantly affect the economic growth and development of a society and civilization in general. Through its creation expressed in certain defined inventions and innovations, intellectual creation can appear as intellectual property in the free exchange of intellectual goods on national and international markets, which in fact becomes a form of capital, in the form of intellectual capital of the bearer of intellectual creation and enables it to freely and fairly exchange its intellectual value (creation) as an intellectual work contained in a certain economic expression as a product, service or some other economic activity. By protecting the created intellectual work as a newly created intellectual property, the creator is enabled to voluntarily and fairly exchange the products of the author's intellectual effort. In this way, the creator receives adequate compensation for his author's work through exchange, as a quantification of his intellectual achievements and realized creations, while the users receive the basis for useful application through the realized exchange. In this way, intellectual capital has a dual function, the bearer of the idea gets satisfaction of his work in a certain compensation of a defined value, and the user realizes certain benefits either on the market or for some other useful use of the acquired intellectual work as a determined value of intellectual capital (Petrović AD, 2019). In this way, Intellectual Capital appears as a defined value in economic flows and realized trade exchange through trade in intellectual property rights and this contributes to each participant in the exchange, and at the same time provides a crucial incentive to achieve new achievements in creating new discoveries. With the development of international trade, the place and share of Intellectual Capital from the aspect of the new classification of this economic category is becoming more and more important. At the same time, this type of exchange gives impetus to new technical and technological development. Competition in the market imposes a constant need for manufacturers to improve their products and realize new products that will provide a rival relationship in a competitive market. This is achieved by continuous improvement and refinement of existing products and the creation of completely new products either through the content of innovation, new design or a new product as a novelty in the market (Petrović A D, 2019). National legislation regulates intellectual property rights based on international regulations in this area, adopted conventions and agreements. The task of international regulations is to harmonize the diversity of legislative solutions of national legislations and in that way to ensure the uniqueness of legal protection of intellectual property and that the realization of protection is done practically on the basis of one registration of intellectual work in several countries at the same time.

Out of such a need, the World Intellectual Property Organization was founded „WIPO” – World Intellectual Property Organization, which was founded in 1967 "to encourage creative activity as well as to promote the protection of intellectual property in the world" (Convention Establishing the World Intellectual Property Organization, 1967, amended 1979). WIPO is becoming an important source of intellectual property rights from the international legal aspect and the basis for the harmonization of national legislation. The WIPO agency has 193 member states and is based in Geneva, Switzerland. WIPO is one of fifteen specialized agencies that perform various functions on behalf of the United Nations. Every business organization that has intellectual capital at its disposal actually realizes newly created value through intellectual property, expressed as intangible value, intellectual capital. At the same time, the increase in capital can be much more valuable than other material assets and equipment of the business entity. Intellectual property also includes: trademarks, design, know-how, copyrights and patents. The effects of the spread of the COVID - 19 virus which were felt in various spheres of social life, changing the way of doing business, education, and performing daily activities, redirecting them to the possibilities that the Internet and digital age opened the door to (Čović, 2020), in the franchise business has caused the biggest crises in the last decades. Different countries have tried in different ways and with different measures to mitigate the consequences of the negative effect of the pandemic on franchise business.

## **2. THE FORMS OF INTELLECTUAL PROPERTY PROTECTION**

New product design and innovation due to the constant struggle for presence and survival in the market have emerged as a constant need for businesses to produce new product types and ever more perfect models innovated by the advancement of creative ideas realized as products of intellectual creations and efforts of inventors and innovators. Also, all business processes that contribute to the improvement of competitiveness and sustainable growth of economic entities are innovated and improved. All these creations are the product of intellectual capacities and efforts of employees in the organization with the aim of realizing a concrete appearance of intellectual property, which can be expressed through concretized contents, which are conceptually expressed in science: copyright and related rights; trademark rights; geographical indication rights; industrial model and design rights; patent rights; real schemes; rights to the protection of undisclosed information, and rights to control the practice of restricting competition in license agreements (Čović D, 2014). An author's work is an original spiritual work of the author, expressed in a certain form, regardless of its artistic, scientific or other value, its purpose, size, content and manner of manifestation. The general ideas, principles, principles and instructions contained in the author's work are not covered by copyright protection. An author's work is published when it is communicated to the public for the first time in any way and anywhere in the world by the author, ie a person authorized by him. The author enjoys moral and property rights in respect of his copyright work from the moment the copyright work is created. The author has the exclusive right to be recognized as the author of his work, to publish his work and to protect the integrity of his work as well as the right to its economic exploitation. The author has the exclusive right to prohibit or allow another to place copies of his work on the market or to lease them or to allow the performance, presentation and broadcasting of his work. The manner of using certain types of author's works is done in a special way, by showing or performing those works by performers or performers, by recording on means for mechanical reproduction of sound (phonogram) and image and broadcasting via radio broadcasting network. In such situations, there are often disputable situations between the users of copyright works and authors, which are not regulated by positive regulations, so a new branch of law has been created, which has been named related to copyright. Related rights also include the right of the database, which regulates the position of the database producer, conditions of use, manner of use, legal protection and the like.

In addition, the right of the first publisher of a free work has recently been included in related rights, in order to provide legal protection to publishers who are the first to publish or communicate a work that has not been published or announced before, after the author's property rights expire. An invention in any field of technology, which is new, inventive and industrially applicable is a patent and is governed by patent law. A patent right protects an invention in the form of a product or process. They are not considered discoveries of discovery, scientific theory, mathematical theory, aesthetic creations and the like, because they have a general social significance, benefit and value. An invention is considered new if it is not contained in the prior art. The invention has an inventive step if, for the person skilled in the art, it does not follow, obviously, from the state of the art. It is industrially applicable if the object of the invention can be produced or used in any branch of industry and agriculture. The inventor has the right to enjoy the economic benefits of his claimed invention, ie of the invention protected by a patent. The rights of the inventor who created the invention in employment and the rights of the organization in which the invention originated are determined by law, general acts and the contract between the employer and the employee, or their representatives. The invention can also refer to certain knowledge and experiences that can be applied in production and in economic life. A generally accepted term for this knowledge is know-how. Due to its generally known meaning, the term is no longer translated, but is uniquely used in the professional literature to denote a set of specific knowledge and experiences. In modern international trade, the share of knowledge and experience transfer is increasing - the so-called technology transfer for several reasons such as levels of investment in research programs, constantly present economic matches to raise competitiveness, the growing importance of Total Quality Management in achieving business goals and market requirements and the need for efficiency and effectiveness in achieving and achieving goals of Total Quality Management. Know-how still does not enjoy legal protection through international conventions or national laws as a form of intellectual property, but as a right related to patent law, it has the treatment of business secrets in the defined protection of business capital - the so-called. knowledge capital. Sometimes even the industrial application of a patent is not possible without the transfer of special knowledge and experience of know-how by transfer through a license agreement. The TRIPS Agreement on Trade-Related Aspects of Intellectual Property Rights obliges all member states to ensure the protection of the topography of integrated circuits in accordance with the Convention on the Protection of Intellectual Property on Integrated Circuits. A number of inventions do not have the necessary inventive step required to define it as a patent, but they have creative work that represents the realization of an inventive idea, which is confirmed as useful for production - a "useful" model. International registration of industrial designs is performed in accordance with the provisions of the Hague Agreement Concerning the International Registration of Models and Samples of November 28, 1960. and the Geneva Act of the Hague Agreement Concerning the International Registration of Industrial Designs of June 2, 1999. years. Design is a creative creation in the field of production and must be characterized by novelty and individual character. The author of the design has moral and property rights - moral law consists in the author's right to have his name mentioned in the application, writings and documents relating to the design he has created, and the property right of the author consists in enjoying the economic benefit from the exploitation of an object that has been reported as a new design and which is protected. A trademark is a right that protects a sign that is used in trade to distinguish goods or services of one person or corporation from the same or similar goods or services of another. The trademark can be individual or collective, and the trademark is not considered to be a seal, stamp and punch (official sign marking precious metals, measures, etc.). A trademark protects a sign that serves to distinguish goods or services in circulation, which can be represented graphically.



A sign may consist, for example, of words, slogans, letters, numbers, pictures, drawings, color schemes, three-dimensional shapes, combinations of these signs, and musical phrases that can be displayed graphically. Geographical indications are names of origin and geographical indications. Geographical indications are used to denote natural, agricultural and industrial products, handicrafts and services. The name of origin is the geographical name of a country, region or locality that serves to denote a product originating there, whose quality and special properties are exclusively or essentially conditioned by the geographical environment, which includes natural and human factors and whose production, processing and preparation take place as a whole. specific area. A geographical indication is a designation that identifies a particular good as goods originating in the territory of a particular country, region or locality in that territory, where a particular quality, reputation or other characteristics of the goods can be essentially attributed to its geographical origin.

### **3. FRANCHISE BUSINESS AND FRANCHISE**

Intellectual property has an extremely strong impact on foreign direct investment and technology transfer, strongly encourages them, which affects the huge growth of franchise business and the impact of franchise turnover on gross national income and is reflected in the growth of trade in patent rights and licenses - production technique; technological equipment; organizational methods; management methods, and created innovative services. All this leads to the need to create a new style of management, management based on the Total Quality Management, which with the emergence of globalization and the progress of scientific and technological development, contributes to the realization and success of a specific program in the global market. That is why we say that the excellence achieved by Total Quality Management enables the concept of adapting the organization to changes to function and achieve the required level of competitiveness, based primarily on the concept of intellectual creation of change, including all elements of technical, market, economic, organizational and ethical aspects (Čović AD, 2019). Therefore, Total Quality Management, implies the concept of adapting the organization to change and achieving competitiveness, as a concept of intellectual creation of change that combines technical, market, economic, organizational and must contain the ethical aspect of business. In the context of what is presented in the distribution channels, a franchise appears as a form of vertical marketing system. Based on it, the franchisor is a market entity that has successfully developed the expansion of its product or service and built a cooperative relationship with another market entity - the franchisee, which on the basis of that legal transaction has acquired a legal basis to operate under a trademark. The franchisor, which continues to enable and provide him with continuous support and special control, whereby the franchisee regularly fulfills the obligation of the agreed fee for the transferred licensed rights. From the beginning of 2020 till today, the COVID-19 pandemic will have a big impact on the franchise sector, so action is needed to help the sectors directly affected by the COVID-19 pandemic, including catering franchises (Calligaro & Caballero, 2021). According to the principle "*pacta sunt servanda*", contracts must be honored despite the COVID-19 pandemic, and as a contract may be affected by the COVID-19 pandemic, there exist exceptions to this principle (Sturzenegger & Buetler, 2021). A fundamental change of the circumstances after conclusion of a contract, may allow the contract to be adapted: right to adjust the contract, right to adjust the price or even right to extraordinarily terminate contract, but "this will always depend on an assessment of the contract and the circumstances of the individual case" (Sturzenegger & Buetler, 2021).

#### **3.1. The concept of franchise**

The franchise represents the franchise right as a business privilege, by which the franchisee operates, by selling certain franchise products or performing franchise services of another

business entity that appears as a franchisor by using its trademark, or service mark, all based on the experience of the franchise provider, its method and manner of work in a particular production or performance of certain services in the so-called Franchising. By obtaining a franchise through a regulated business relationship and contract, the franchisee pays a certain amount of compensation to the franchisor for this privilege in accordance with the business arrangement. That is why it is said that franchising as a business activity and activity from the aspect of entrepreneurship in fact represents a complex business-legal business model, as a complex of business relations and arrangements between two independent economic entities. Franchising as a business arrangement contains a variety of business aspects, which are defined in advance by the franchise agreement, which regulates the diversity of arrangements and business relationships, such as:

- The manner and method of doing business of economic entities, which provides them with sustainable development and growth, and with the help of which new geographical areas, ie new markets are conquered at the same time;
- The franchisor and user of the franchise is provided with sustainable development and growth of production and provision of services, and at the same time improves the distribution capacity;
- Franchising provides, through franchising, the conquest of a new form of entrepreneurial activity which initiates a new activity;
- The franchise also contributes to the emergence of new forms of organizational structures of economic entities with the restructuring of the organization and the launch of new distribution channels, as well as the definition of new sources of financing.

Franchising as a business activity confirms its importance through the realization of qualitative changes in the realization of the profit of the business entity, which is reorganized and restructured organization, in order to find a new position in the state development and growth of the organization. Franchising business implies a new strategy of a certain direction of development, emphasizing the national level of business, as well as the commitment to inclusion in the international division of labor and presence in the global market. At the same time, franchising contains a new level of technical and technological innovation of the organization and its ability to raise existing resources to a higher level of complexity of finished products and services. Thus, franchising affects a new place and role in economic life, and at the same time contributes to the further economic development of national economies. Therefore, it is important that the system of economic measures in the economic policy of each economy is dedicated to special encouragement and improvement of franchise business, which allows franchisees a new perspective as a new economic activity, which opens the content to new economic flows in qualitative terms. This further implies that franchising at the national level encourages national economies to be more active in global markets, especially for the reason that it imposes the need to harmonize national regulations with international conventions governing the matter of franchising and franchising and its international legal protection. Sustainable development is becoming a necessary need, which is based, among other things, on the component of the need to further strengthen franchise business in Serbia, which gives a new contribution, among other things, in the place and new role of Total Quality Management, as a requirement that changes, leads to a change in the organizational structure of economic entities, changes in the educational levels of employees and the need for continuous professional development. This in turn leads to changes in the organization of work, the need for productivity growth, the establishment of new business capacities with a higher level of complexity of business processes and performance of activities, either in the manufacturing sector or in the service sector (Petrović AD, 2019).

The concept of franchise business, which finds its confirmation in the operationalization of business activities that lead to the newly realized value expressed in the profit of the organization, which proves the success of franchising economically. Carrying out a franchise business model based on defined planned business assumptions and provided organizational structure with the necessary capacities prepared represents the necessary business elements to bring all business activities and processes to competitive market potentials and expected business results. Also, the franchise business model and the way to "Know-How" represent a new significant intellectual capital of the organization. The implementation of a franchise business project implies the training of the necessary staff, so that the totality of business processes and activities at the micro level can be projected simultaneously as an entrepreneurial business activity and business venture at the macro level, as the franchise and franchising in new markets and geographical areas. Franchising in a lucrative sense has a significant economic function, because it affects the business results of the organization, franchisor and recipient, provides sustainable development and growth of the organization, as intellectual capital reflected in an innovative way, method and business model, which in a new manner sets and changes the existing manner of performing business activities and processes and contributes to the formation of a new philosophy of business activities that include Total Quality Management with a new entrepreneurial concept in making primarily adequate business decisions. That is, the subject model of franchising, influences the formation of business decisions that various stakeholders further transfer to their entrepreneurial activities in the adoption of new models of doing business and performing franchising activities. Of course, this includes professional training of the required workforce to perform all necessary business processes and activities. Franchise business also imposes the necessity that in the new business strategy of the organization, the achievement of "excellence" must be created by achieving the required level of quality with the use of all necessary management tools. Application of the principles of Total Quality Management and business in the conditions of TQM, that all this defines the justification of determining the necessary investment funds in the implementation of a franchising business project. In this way, the franchise becomes a new business opportunity for the organization. If we look at the success of franchising or franchise business of the organization that has adopted this business system from the aspect of economic principles, starting from profitability, productivity and economy, where the starting criteria for comparison are the achieved production capacity and services with planned cost savings, defined as a labor economy, then the rate of profitability is a determining precondition for the success of a business venture. Based on the presented franchise, it therefore represents a strategy based on innovation, which as an intellectual right is protected as a license right, a license of a business method and business procedures. These franchise licenses impose a justified need to protect them by developing and improving legal patent protection. The economic indicator expressed through labor economics, the achieved productivity should show a realistic picture of all business performance indicators, with the proportion of productivity in the direction of maximum results with minimum investment. Also, the achieved profitability is realized as a business result in relation to the invested capital. All this is achieved by optimizing all business activities and processes as a business strategy in a new way through the franchise method and mode of operation with the application of all management tools and defined changes in the management of activities and processes and organization management in general. The business outcome of the franchise business in accordance with the franchise project is the ability of the organization to increase its business result by placing the franchise products or services. The growth of the organization's business result in franchising through franchising is defined as the realization of a license through a franchise project, obtained by franchising through the protection of a protected patent. If the organization confirms the success of the franchise project with a new business result, then it can be considered a business success, which ensures

sustainable growth and development of the organization. In this way, the franchise license as a method of growing business success confirms the following motives: success and further growth and development of economic indicators of the organization; confirmed the success of the new business strategy of the organization; the organization records further growth of intellectual capital, that is, an organization that learns and progresses with respect for all political and legal factors

### **3.2. The effects of Franchise law**

Intellectual property, namely a patent, a franchise license with the creation of innovation and achieved legal patent and license protection becomes not only the "capital knowledge" of the organization, but also a commodity that has a defined value in the market and can to be performed through placement in trade business relations. Thus, knowledge as a commodity becomes a specific form of capital as capital knowledge, a new business model and way of doing business activities and processes not only as a franchise product, but also as a franchise medium of performing franchise services. This type of trade as capital knowledge is increasingly occupying an increasing volume of trade and is in great expansion both in national markets and in the global market. The franchise contains Know-how, which appears as a special form of intellectual property, which through the franchise as a franchise right through a license and patent is materialized as a franchise product and service, and thus appears on the market as a business method and model with its adequate value in traffic. A franchise defined as a patent and a license right that is recognized in the protection procedure by both national and international regulations, becomes a property right, which can be fully realized, because:

- The holder of the franchise right may transfer it by legal transaction in accordance with the franchise agreement;
- Franchise right provides the right holder with the right to use it and reap all the fruits of that right, with franchise production and services, but only within the regulated rights and obligations arising from national and international regulations, especially having in mind the temporal and territorial limitation of franchise law;
- The franchise is protected by regulations and the envisaged sanctions for violation of the franchise right, especially in situations of unauthorized use by some legal user;
- The transfer of franchise rights from the right holder as the grantor of rights to the franchisee is done with the definition of all franchise rights and obligations, especially the right to franchise compensation in accordance with special criteria and criteria established by special regulations.

The franchisor action does not end with the introduction of the franchisee to the business, because he is still interested in promoting the franchise in question and in monitoring and controlling the franchisee's conduct and what is done to preserve reputation of its business and intellectual property (Čović et al., 2019a). The franchise is very important in the economy of the United States, because more than 780.000 franchise companies employ more than 8.8 million people with 890 billion dollars in direct economic output (Bekhouché & Kahlessenane, 2018). In some countries, there is no a legal definition of "franchise", nor a codified franchise law, and franchise law is set out by different areas of law, civil, commercial and corporate law, as in Austria (Lager M, 2021).

## **4. THE CHALLENGES DURING THE COVID - 19 PANDEMIC AND THE CRISIS MITIGATION MEASURES**

In the current situation of the COVID-19 pandemic has had a significant financial impact on global companies, including franchising operations due to locking measures and restrictions implemented by governments. During the COVID-19 pandemic, virus can be considered an

unavoidable elementary event which exclude liability for possible damages (Lager M, 2021). The French Government has put in place subventions, eg. solidarity fund, freezing of penalty clauses for a certain period, to support businesses, and some companies with less than ten employees have been able to temporary deferral of commercial rents (Féraud - Courtin & Methamem, 2021). In Germany some courts affirmed full payment obligation, and other courts argued that the lessee may claim a reduction, as it is "unreasonable to continue the unchanged agreement given the circumstances", but the extent to which a reduction may be claimed is dependent on balancing of interests and all circumstances of the individual case (Reif & von Hauch, 2021). Some franchises faced a positive impact during the COVID-19 pandemic, because "either sell products tailored to the new environment or have adapted to a new business model during the crisis" - such as food deliveries, clothing and footwear, and cosmetic products sold via online stores (Koimtzoğlu & Gkouti, 2021). The Saudi Arabian Government has introduced relief measures in connection with tax payments, corporate compliance, value added tax, customs and excise, and deferral of loan payments (Idrees R, 2021). Similar to that, the Singapore government has introduced the COVID-19 (Temporary Measures) Act 2020 which offer temporary relief to businesses and individuals who are unable to fulfil contractual obligations because of COVID-19, (in connection to leases /licenses for non-residential immovable property, construction, provision of and contracts for the sale of goods and services, and loan agreements) (Idrees R, 2021), which could be a model for overcoming the current franchise crisis. Some of the measures also included moratoriums on bank loans, and (in certain cases) moratoriums on lease payments (Kastelec & Zavašnik, 2021). For a period of time in Sweden, there were also support in the form of temporarily reduced employer contributions and deductibles and increased provision for accruals fund. Still current support are: sales support to sole traders and trading companies; adjustment support to companies based on turnover loss; short - term layoffs for reduced wage costs; rental support; event support; increased state responsibility for sick pay costs; deferment of tax payments; government loan guarantee for small and medium-sized enterprises; tax reduction for investments in equipment; reduces employer and deductibles for young people; temporarily abolished benefit taxation for gifts to employees (Friberg & Fjellström, 2021). In order to mitigate the negative impacts of the pandemic, in Turkey all enforcement and bankruptcy proceedings at execution offices have been suspended to prevent the spread of the COVID-19 epidemic from 22 March 2020 until 30 April 2021. (Lerzan & Burcu, 2021). However, in some countries franchise fees are not covered by legislations to address labor issues and relief packages to alleviate the impact of the pandemic and therefore, has to be paid continuously, eg. Taiwan (Chen & Lee, 2021). The Covid - 19 impact on franchising market in U.S. was the most visible in the hospitality and restaurant industries, followed by personal services and retail (FRANdata, 2020). As of the end of August 2020, an estimated 32,700 franchised businesses are closed; 10,875 businesses of them are closed permanently (FRANdata, 2020). As of August 31st, 2020, the franchising market experienced an estimated total loss of 1.4 million jobs due to COVID-19 (59.8% were temporary, and 40.2% were permanent), and states that were most negatively affected by COVID-19 were New York, New Jersey, California and Washington (FRANdata, 2020).

## 5. CONCLUSION

Franchise as intellectual property expressed in a patent and license in trade appears as a commodity-knowledge that is defined as intellectual property or intellectual capital-knowledge, which as knowledge-model and way of working as a commodity with its market price, whose turnover is by concluding a franchise agreement. Knowledge in trade as a commodity becomes a specific capital, capital-knowledge and now participates in the market with a significant percentage of total turnover, not only nationally but also globally. We must know that the significance and impact of franchise rights in the world trade has grown significantly over the

past 20 years, and has grown by about 50% (Čović et al., 2019b). Each franchise contains a special form of intellectual property, as a related right expressed in the elements of "know-how", which right in itself contains adequate value in the market and the right as "know-how", or model-knowledge and way of working-knowledge. For the security of trade, intellectual property rights, including patent law and license law, imply the obligation to establish adequate legal protection, not only at the national level, but through the conclusion of international treaties and conventions and from the international legal aspect. The organization expresses its intellectual capital by protecting the patent in the defined regulations of patent law, which simultaneously protects the trademark, as well as copyright based on the copyright of the franchised product or service. Such a procedure creates and obtains an appropriate license by which to exercise ownership rights over certain processes, information or technology, which as a new franchise form is used as a new method of growth of the organization, performing franchise production and franchise services. Franchisor acquires the right to receive franchise compensation by the franchisee. Failure to meet expectations is the most common cause of dispute and generally occurs between six and eighteen months after the conclusion of the contract (Čović et. al., 2019c). With efforts in developing the system and strengthening the support that franchisees receive in order to "survive the crisis and minimize risks, the franchising market is expected to experience a steady and stronger recovery from the Covid - 19 pandemic" (FRANdata, 2020). On the other hand, some authors consider that "even though the businesses are reopening, the franchise will never be the same after COVID-19, because even when the short- term effects end, the long-term economic impact will ripple for years" (Thuy Dung, 2020).

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## LEGAL REGULATION OF THE RESPONSIBILITY OF INDIVIDUALS AND ORGANIZATIONS REGARDING EMPLOYMENT IN COMPARATIVE LAW

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### ABSTRACT

*The paper deals with a comparative analysis of legislation related to the liability of individuals and legal entities in connection with the work. The first part of the paper is related to the concept of labor responsibility of persons (individuals and legal entities) networked in an appropriate organizational structure associated for profit in the territory of the Republic of Serbia and in the positive legal regulations of our country related to them. The second part of the paper refers to the analysis of international regulations dedicated to the responsibility of the subjects of employment, while the third part of the paper is related to a comparative analysis of legislation on the subject for neighboring countries, EU member states. The purpose of this paper is to point out that labor regulations in the Republic of Serbia are satisfactory, equally good for employers and employees, but that there are many ways to improve it, especially in the part of legislation related to the responsibility of employment entities. The paper uses a comparative method and a method of document content analysis. The literature used for the preparation of the paper includes capital monographic works in this field as well as the latest legal solutions of the researched countries. The consequences of the results of the work for research practice are multiple, because they encourage further research in this area, but they can also lead to the improvement of legislation in this area.*

**Keywords:** Companies, Individuals, Labor responsibility, Responsibility

### 1. INTRODUCTION

Responsibility is a category that is established in every area of society, so we distinguish between legal, economic, political, disciplinary, material, sports, moral, parental, work and many others. In this paper, we will emphasize the work responsibility, i.e. the responsibility of individuals and companies that establish mutual labor relations. Responsibility is the core of the relationship between people, between man and society, property, nature, etc. In essence, responsibility is the harmonization of the activities of free people, through the knowledge of needs, limiting oneself, where everyone is responsible for the consequences of their actions in terms of allowing freedom to others in every social relationship they enter. Therefore, responsibility is a human quality that is reflected in the restriction of one's own freedoms for the sake of the freedom and rights of others (Obradović, Kovačević Perić, 2016, p.7). The word discipline comes from the Latin word *discere*, which means submission to rules, which regulate the totality of behavior and mutual relations in the work community, i.e. in the work environment. Disciplinary liability is the subject of disciplinary law, i.e. labor law. Disciplinary law is a branch of law that deals with work discipline and disciplinary responsibility of employees, regardless of their nature, organizational unit, character and type of service in which they are employed. This means that disciplinary law is a system of legal norms that regulates and determines work discipline and disciplinary responsibility in relation to work and relations regarding work, regulates responsibility before the competent authorities.



All in order to apply disciplinary sanctions against persons who commit disciplinary acts, as well as to protect the prescribed work discipline with the employer, due to the smooth running of the work process (Baltić, Despotović, 1981, p.23). Disciplinary liability of employees is liability for misdemeanor violation of work obligations and /or obligations of conduct provided by law, collective agreement or other general legal act, rulebook, employment contract, for which a disciplinary sanction provided by law and other general legal act may be imposed in order to ensure the successful functioning of the employer, i.e. the internal cohesion of the working group, their collective interest, as well as to preserve certain standards that have effects outside the employer (Chiavario, 2003, p.665). Due to the increasing occurrence of damage that employees or employers can cause to each other or a third person that is not covered by their employment relationship, the Labor Law, the Law on Obligations and legal doctrine deal with the issue of material liability.<sup>1</sup> To understand work and labor relations, it is necessary to explain the concept of individual and company. An individual is a term that rightly means a human being, an individual, a person. An individual is a person who is self-conscious, who has certain rights and obligations and is able to establish, change and abolish various legal relations. Every person acquires the status of an individual at birth and this status ends at the moment of death. An individual in the law of the Republic of Serbia is characterized by some attributes such as: personal name<sup>2</sup>, domicile or residence<sup>3</sup> and citizenship<sup>4</sup>. An enterprise or company is a legal entity that has certain rights and obligations. An enterprise occurs in the form of an organization, company or enterprise and is composed of one or more individuals. Like individuals, a company has its own attributes, which are the name of the company<sup>5</sup>, place of incorporation of the company<sup>6</sup> and citizenship of the company<sup>7</sup>.

## **2. THE MOST IMPORTANT INTERNATIONAL REGULATION OF LABOR LIABILITY OF INDIVIDUALS AND COMPANIES**

Ratifying the International Labor Organization Convention No. 158 on Termination of Employment at the Initiative of the Employer of 1983, the SFRJ, and later its legal successor, the Republic of Serbia establishes an international legal framework for termination of employment due to various causes, which equally imply responsibility of employees and employers. The General Conference of the ILO, at its 68th session held in Geneva, adopted new international norms dedicated to the system of liability of employers and employees in the event of termination of employment, especially in conditions of economic difficulties, technological changes and other undesirable processes. The provisions of the Convention are elaborated in more detail and incorporated into national regulations, which ensures their application. Moreover, their application is ensured through arbitral awards and/or court rulings, which is very important, especially in countries where the provisions of the Convention, as well as the provisions of other relevant conventions, are not sufficiently "enshrined" in national legislation. Article No.4 of the Convention (Law on Ratification of the International Labor Organization Convention No. 158 on Termination of Employment at the Initiative of the Employer, Official Gazette of the SFRJ, 1991) stipulates that employees may not terminate their employment if

<sup>1</sup> The legislation of the SFRY also dealt with this issue, where a fine was envisaged for liability for damage. The method of determining the fine in all analyzed countries can be found in more detail in: A. Nikolić, *Priručnik o odgovornosti radnika, Cenat za radničko samoupravljanje*, Beograd, 1978., str .32-33.

<sup>2</sup> The personal name of a individuals is a mark by which one person differs from another. It consists of first and last names.

<sup>3</sup> Each individual must be tied to one place where he is permanently or temporarily resident.

<sup>4</sup> Citizenship is belonging to a particular state.

<sup>5</sup> The name of the company is like the personal name represents for individuals, i.e. serves for identification. Every business organization has its own company under which it appears on the market and by which it differs from other organizations with same or similar activities.

<sup>6</sup> The place of business of the company is the place to which the company is legally connected, i.e. in which do rights and obligations. It must be determined by the company's statute.

<sup>7</sup> The nationality of a company is determined by the country in which the company is headquartered.

there is no valid reason for such termination like his ability or his behavior at work, i.e. in a company, institution or service. Reasons for termination of employment at the initiative of the employer cannot be related to gender, religion, nationality, pregnancy, maternity, union membership, political opinion, etc. Section "C" of the Convention defines the procedure for appeal in the event of termination of employment. An employee may file an appeal against the decision on termination of employment with an arbitrator or a court. Contrary to established legal practice, the Convention establishes a rule according to which the burden of proof is not borne by the worker, but by the employer. If the competent body assesses that the termination of employment was unjustified, the worker will return to work and will be paid the appropriate compensation. Every employee whose employment is terminated has the right to a notice period, unless he has committed a serious breach of duty, i.e. work discipline. It does not matter whether the employment was terminated, at the initiative of the employer or not, the employee is entitled to a certain amount of severance pay, which depends on the length of service and the amount of salary. Unemployment benefit can be paid from a special fund set up by the employer. Of course, provided that he founded it earlier. If a worker does not meet the necessary conditions for the collection of unemployment insurance or commits a serious breach of duty, i.e. work discipline, the Convention provides for the loss of the right to severance pay. The liability of the subjects of employment in international law is the subject of the Convention on Termination of Employment at the Initiative of the Employer. Out of a total of 73 ratified conventions, it is worth mentioning the Convention of the International Labor Organization No. 121 on benefits in case of accidents at work and occupational diseases (Official Gazette of the SFRJ) and the Convention No. 102 on the minimum norm of social security (Official Gazette of the FNRJ).

### **3. RESPONSIBILITY OF INDIVIDUALS AND COMPANIES REGARDING EMPLOYMENT IN COMPARATIVE LAW**

For a closer and more complete overview of the given topic, it is very important to clarify the main institutes in comparative law, especially the legal and other regulations dedicated to the responsibility of the subjects of employment differ from country to country. Starting from such an approach, we first presented the responsibility of employers and employees in the surrounding countries, and then their responsibility in the countries of the European Union. An overview of the system of responsibilities of the subjects of employment, for the purposes of this paper, would not be complete without a critical approach to the disciplinary, material and other responsibilities of employers and employees in the surrounding countries. For these purposes, a review of comparative solutions contained in the law of the Federation of BiH, Republic of Srpska, Montenegro and Macedonia. Although there are many almost identical solutions in their regulations, the fact is that there are significant differences which explanations are given below. In the legislation of the Federation of Bosnia and Herzegovina, the responsibility of the subjects of employment is regulated by the Labor Law of the Federation of BiH (Official Gazette of the Federation of BiH, 2018). The provisions on that are contained in Articles No. 89 to 93. According to it, one or more employees may cause damage to the employer. If the employee intentionally or extremely carelessly causes damage to the employer, performing daily tasks prescribed by the rulebook on job systematization, he is obliged to compensate the damage to the employer. If such damage is caused by several workers, their obligation is to compensate it jointly and severally, in equal parts (if it is not possible to determine who did how much damage individually) or everyone will be responsible for the amount of damage individually. Article 90 of the mentioned Law prescribes the possibility of determining the amount of damage caused to the employer as a lump sum. This article stipulates that the amount of damage is determined as a lump sum only in the case when the exact amount of damage cannot be determined, or determining its exact amount would cause disproportionate costs.

If it happens that the employee intentionally or through gross negligence causes damage to a third person or company, or someone else, the Labor Law of BiH prescribes a rule according to which such damage is compensated by the employer, with the employee being obliged to compensate the employer. Article 92 of this Law sets out the conditions under which the amount of damage may be reduced, as well as the conditions under which the employee may be completely released from the obligation to pay the damage. In addition, this article initiates the need for closer regulation of these issues by the collective agreement and the rulebook. The Labor Law of BiH also deals with the liability of employers for damage caused to employees. This issue is regulated by Article 93. The amount of damage caused by the employer to the employee is compensated according to the general rules and principles, determined by the norms of the obligation law. Also, it should be noted that in the legislation of Bosnia and Herzegovina, compensation for the salary earned by the employee, due to illegal dismissal, is not considered compensation for damage. The next observed state is the Republic of Srpska. The system of responsibility of the subjects of employment in the Republika Srpska is also regulated by the provisions of the ninth chapter of the Labor Law. The subject matter is regulated with a total of 16 articles (from 137 to 153 articles) (RS Labor Law, 2018). Article 137 of the mentioned act prescribes the rule according to which the employee is responsible to the employer for his irresponsible and inappropriate behavior at work, especially if he violates the obligation from the employment contract and causes material damage to the employer or another person, or if he commits a misdemeanor or criminal offense. In such and similar cases, the employee is subject to disciplinary and material, as well as possible criminal and misdemeanor liability. Article 138 defines cases, i.e. actions and activities, that qualify as serious violations of work obligations. It is prescribed that a serious violation of work obligations exists:

- 1) if the employee causes serious harmful consequences to the interests of the employer;
- 2) if the employee repeats or makes another omission within a year, regardless of the fact that the employer has previously warned him not to do so;
- 3) if the behavior of the employee is such that it can be reasonably concluded that his further work with the same employer is not possible.

Article 139 defines minor violations of work obligations. This term implies a failure in work that has no significant harmful consequences for the employer and his business, as well as for his business reputation. If, however, it happens that the employee violates the work obligation, i.e. work discipline, according to the Labor Law of the Republika Srpska, one of the following three measures can be imposed:

- 1) written warning;
- 2) fine;
- 3) termination of employment.

Instead of termination of the employment contract the employer may impose one of these the measures:

- 1) a fine in the amount of up to 20% of the basic salary of the employee for the month in which the fine was imposed, for a period of up to three months,
- 2) a written warning announcing the termination of the employment contract stating that the employer will terminate the employee's employment contract without re-warning, if within the next six months he violates the work obligation or disrespects work discipline "(Labor Law of the Republic Srpska, 2018).

Issues related to compensation for material damage are regulated almost in the same way as in the Federation of Bosnia and Herzegovina.

Provisions on this are contained in Art. No. 142-148. Article No.149 regulates the issue of dismissal of a worker in the event of a serious breach of duty, reasonable suspicion that an employee commits a criminal offense or similar actions that endanger the property of a company of greater value. Such behavior of the employee may cause dismissal before the termination of the employment contract, which may last for a maximum of three months or until the end of the criminal proceedings. An employee who is in custody shall be removed from work on the first day from the beginning of detention. As long as the employee is away from work, he is entitled to a salary compensation in the amount of 50% of the salary he earns when he is at work. The rest of the money (50%) the employee has the right to demand from the authorities that initiated the criminal proceedings, i.e. ordered custody in the event that:

- 1) criminal proceedings against him suspended by a final decision;
- 2) acquitted by a final decision;
- 3) the accusation against him was rejected, in accordance with the provisions of Article No.153.

The Labor Law of Montenegro (Official Gazette of Montenegro, 2021) also contains provisions on disciplinary and material liability of employees and employers. Articles 144 and 145 of the Law stipulate that the employee is obliged to adhere to the obligations prescribed by law, employment contract or collective agreement, and if he acts contrary to the prescribed and violates his work obligation through his own fault, he will be liable for the violation. Initiation and conduct of proceedings for violation of work obligations is more closely defined by a collective agreement or employment contract. The next article prescribes the measures that can be imposed for violations of work obligations. These include: reprimand, fine and termination of employment. If the employee commits a minor breach of duty, he may be issued a reprimand or a fine in the amount of 20% of the monthly salary for a period of one to three months. For serious violations of work obligations, it is possible for the employee to terminate the contract. The decision on the imposed measure, according to the Labor Law of Montenegro, is pronounced by the competent sector of the employer, i.e. employer. In case the employee is not satisfied with the pronounced final decision, i.e. disciplinary measure, he can initiate an appeal procedure in the court. Article No.154 also prescribes the conditions of temporary distance from work. An employee may be temporarily removed from work, i.e. suspended from work:

- 1) if there are circumstances that indicate that he has committed a serious breach of duty and
- 2) if criminal proceedings have been initiated against him for a criminal offense committed at work or some activity in connection with work.

The employee is temporarily removed from work by creating a decision on temporary removal from work. Even in cases when he is temporarily removed from work, the employee is entitled to a salary compensation in the amount of one third, and if he supports his family, in the amount of one half of the monthly salary. The Labor Law of Montenegro also regulates the system of material responsibility of employees, i.e. employers. The Labor law stipulates that the employee is responsible for the damage that he intentionally or through gross negligence did at work and caused to the employer. The existence of the damage, the circumstances under which the damage occurred, its amount and other significant issues are determined by a special commission formed by the employer. Other issues related to the material responsibility of employment entities in Montenegro are mostly regulated as in the Republic of Serbia, which is why they do not need to be explained in more detail. The Labor Law of the Republic of Macedonia (Official Gazette, 2013) contains twelve articles (from 81 to 93) dedicated to the responsibilities of the subjects of employment. Article No. 81 prescribes the rules for termination of the employment contract for violation of work discipline, if: doesn't perform or negligently performs or postpones work; doesn't comply with regulations relating to obligations

at the workplace; doesn't adhere to work dynamics and use of working time; doesn't arrive on time or doesn't inform the employer about the absence from work; absent from work due to illness or justified reasons, and doesn't inform the employer within 48 hours; doesn't perform tasks diligently and in accordance with the technical instructions for use; causes damage, malfunction or loss, and doesn't immediately notify the employer; doesn't respect act and regulations for safety at work or doesn't maintain equipment for safety at work; causes disorder and violent behavior; uses the resources of the employer illegally or without authorization. The mentioned article also prescribes that the obligation of the employer is to put the rules of work and work discipline in a visible place. The rules and conditions under which an employment contract may be terminated due to violation of work discipline or work obligations, without a notice period, are regulated by the provisions of Article No.82 of the Labor Law of the Republic of Macedonia. This article stipulates that the employer may terminate the employment contract, without notice, if the employee:

- 1) unjustifiably absent from work for three consecutive working days or five working days during one year;
- 2) abuse sick leave;
- 3) doesn't act in accordance with the regulations on health protection, protection at work, protection against fire, explosion, dangerous influence of poisons and other dangerous substances and violates the regulations on environmental protection;
- 4) uses alcohol and drugs;
- 5) causes damage to the employer through negligent work or gross negligence;
- 6) reveals business or state secrets.

#### **4. RESPONSIBILITY OF INDIVIDUALS AND COMPANIES REGARDING EMPLOYMENT IN THE LAW OF EUROPEAN UNION COUNTRIES**

Analyzing the responsibilities of the subjects of employment would be incomplete without presenting comparative experiences gained in the law of the European Union, i.e. in the law of its individual members. Especially since our country is very determined to join that community as soon as possible. The paper presents a brief analysis of the situation in the labor law area of Croatia, Germany and England<sup>8</sup> and France. The Labor Act of the Republic of Croatia (Official Gazette, 2020) contains several provisions dedicated to the system of liability of employment entities. The provisions are contained in Articles No.107, 108, 109, 110 and 111. The employee's liability for damage caused to the employer is prescribed by Article No.107. Damage to the employer may be caused by negligence of one or more employees, who are jointly and severally liable up to the amount of damage. An individual assessment of the damage caused to each employee can sometimes be impossible or create disproportionately high costs, so in such situations the amount of damage is determined in accordance with the rules and principles established by the collective agreement or rulebook. A careful analysis of the provisions dedicated to the subject matter, can conclude that the compensation for damage caused by gross disregard of obligations under the employment contract and regulations on job systematization is regulated almost identically as in the Republika Srpska and the Federation of Bosnia and Herzegovina. Therefore, there are no reasonable reasons for their larger analysis and presentation. The liability of the subjects of employment in the Republic of Germany is regulated by the German Civil Law (articles No.254, 276, 278, 280, 283, 286, 611, 619, 823, 826, 827, 831 and 840). The regulation of employment liability testifies to the fact that the issue of disciplinary and the material responsibilities of employers and employees are not regulated by the labor legislation of Germany, which is quite strange and a bit unexpected for our understanding of things.

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<sup>8</sup> The United Kingdom has decided to leave the European Union, but a brief analysis of the situation in the subject area in England is not out of the question, because it is also the „cradle“ of the Anglo-Saxon legal system.

Article No.254 of the German Civil Code stipulates that the liability for the damage, the obligation to compensate it, as well as the scope of its compensation, depend on the circumstances under which the damage occurred. The debtor's liability to third person or organizations is regulated in such a way that the debtor must be liable to the same extent for the guilt of his legal representative as for his own guilt. Also, if the debtor violates an obligation from the debtor's relationship, the creditor can claim compensation for the damage done. Article No.286 defines compensation for damage in case of delay of the debtor. Article No. 619a. of the Code stipulates that the employee is obliged to compensate the employer for the damage which caused. Pursuant to the provisions of Article No.823, paragraph No.1 of the same Code prescribed that for damage is responsible a person who intentionally or negligently injures life, body, health, freedom, property or some other good or right. The mentioned Code also prescribes the obligation to compensate damages in case of immoral behavior against the another person or organization, even the employer. It is determined that anyone who harms another by violating moral principles must be punished or sanctioned. Disciplinary proceedings, appeal proceedings and statutory dismissal in *English law* were first introduced in 2002 by the Employment Act. The Law prescribed that statutory procedures are something that must be respected and that any non-compliance with them has negative consequences. If a employee is unfairly dismissed from work, without respecting the rules of procedure and the necessary procedures, such treatment is considered unfair dismissal, for which the employer should suffer harmful consequences. In order for the procedure of termination of the employment contract or disciplinary procedure to be in accordance with this law, three rules, ie obligations, must be observed: a hearing must be held, a decision made and the right to appeal respected. The decision on initiating disciplinary proceedings must contain the reasons for which the proceedings were initiated and the reasons for which the procedure is conducted. One copy of the decision is delivered in a timely manner to the employee, who then receives an invitation to a hearing, at which statements are taken from the parties to the dispute and other participants in the proceedings, present evidence on the subject of the dispute and establish relevant facts. If the dispute is initiated by the employee, the same procedure is carried out, but in that case the employee is obliged to timely inform the employer about the reasons for initiating the procedure and the place and time of the hearing. The rules of the second instance procedure are also prescribed. English law promotes the position that it is necessary to hold at least one hearing in that procedure as well, in order to discuss the cause of the dispute and possible solutions to the disputed issues. At the end of the hearing, the employer must inform the employee of the outcome of the dispute and of the right to appeal. Employees dissatisfied with the outcomes of the first instance procedure have the opportunity to appeal. If the employee wants to complain, he informs the employer, which is why the hearing is held again. It should be noted that the procedure can be conducted, and therefore the hearing can be organized even in the event that the employee is not employed by the employer with whom he is in dispute, especially if the dispute is due to termination of the employment contract. However, the law provides for specific penalties for non-compliance with work discipline, established rules of conduct and notice period. Non-compliance with the procedures and prescribed rules by the employer is considered unjust, inadmissible and punishable behavior. Employee behavior is treated in the same way. Practice has shown that, in case of non-compliance with the prescribed rules, smaller and medium-sized employers get bigger consequences than large employers who regulate the necessary rules of conduct and rules of appropriate procedures by their own acts. (Blanpain, Engels, 1998., p.277). Whether it is a first instance disciplinary procedure or a second instance appeal procedure, there are requirements that must be respected in both proceedings. Those are:

- 1) every step, ie every action in the procedure must be taken without undue delay;
- 2) the time and place of the hearings must be reasonable;

- 3) hearings must be conducted in a way that allows both the employee and the employee to express their views;
- 4) in the case of holding hearings in the appeal procedure, the employer should be represented by a manager from a higher level than the manager, or another possible representative of the employer who participated in the first instance proceedings and in the hearings held there. (Kovačević Perić, 2005., p.249).

French law contains a number of provisions dedicated to the liability of the subjects of employment and provisions relating to their disciplinary and material liability. The rules about that are clear, unambiguous and quite strict. They must be respected even if the employer has only one employee. In the analysis of French law, especially in the subject area, it is quickly concluded that in many labor law regulations, the Labor Law stands out for its importance. (Lyon-Caen, Pelissier, Supiot, 1994., p.381). The regular procedure is applied when the employer intends to impose a stricter measure on the employee, not counting the public reprimand. First of all, it means dismissal from work, transfer to another job or degradation in the profession. Such a disciplinary procedure in many ways coincides with the procedures for dismissal of employees. The employer invites the employee and states in the invitation the place, time and purpose of the meeting, i.e. discussion. During the hearing, the employer must indicate the basis and motive of the sentence, and the employee has the right to request the presence of another person who is employed by that employer. After one day, the employer imposes a penalty, in accordance with the law, the established facts and the degree of responsibility of the employee. The dismissal procedure in French law stipulates that the employer must invite the (interested) employee to come and declare himself about the things that are being charged against him. At the meeting with the employee, the employer is not obliged to state the reason for his decision or to accept his explanations, i.e. his defense. In the absence of representative staff institutions in the company, the employee is entitled to the assistance of an advisor of his choice. Accordingly, a preliminary interview cannot be held less than five days after the delivery of the letter inviting the employee to the discussion. (Pelissier, Supiot, Jeammaud, 2000., p.444-448). Invitation to the interview and organization of the interview are obligatory if it is a case of cancellation for personal reasons. If the employee does not want to appear at the interview, the employer may dismiss him, after the deadline for the hearing and the deadline for dismissal. The French Labor Law provides for three types of penalties for employers who do not comply with the legal rules in these proceedings. For example, the court may order the employer:

- 1) to conduct the procedure;
- 2) to pay the employee a compensation that cannot be higher than one monthly salary;
- 3) to pay unemployment benefits to the dismissed employee, starting from the day of dismissal until the day of pronouncing the verdict.

In addition, it should be noted that French law prescribes the obligation for employers to adopt a rulebook, in order to further regulate disciplinary proceedings and disciplinary measures. Also, that act prescribes the powers of the labor inspection in disciplinary proceedings, especially in the case of serious violations of work duties and work discipline. Finally, it should be noted that under French law, employers are not allowed to impose fines and other inappropriate penalties or sanctions for employees.

## 5. CONCLUSION

If we discuss about the sentence "work created a man", the most commonly used motto in this area, we must note that it is one of the guiding ideas of the modern business environment, because work not only "creates" man - work also allows man to develop in all spheres. The creation of a social paradise is achieved exclusively through constructive work that creates

goods and values that are useful for the whole society. However, this does not mean any kind of work and work of questionable quality. Only work that is positively valued and work that is accompanied by a large dose of responsibility can produce positive effects. Therefore, we believe that work under material and disciplinary responsibility, work in which people's labor rights and freedoms are respected, is socially useful work. Like every area, this one cannot be left to society and regulated by soft norms, so it must be legally regulated, i.e. rules and sanctions must be determined for it. This attitude has been taken by all organized, modern societies and they have included labor law regulations in the "positive legal regulations". In this paper, we wanted and managed to prove that all the observed countries (four of them from the immediate environment and four of them that are members of the European Union), have their own way of defining labor responsibility of employers and employees, individuals and companies, but legal definitions of labor responsibility largely overlap. The legislation of the Republic of Serbia has identical views on the regulation of labor liability of individuals and companies as well as developed countries that are already members of the European Union. So, it can be concluded that the europeanization of labor regulations in the Republic of Serbia is largely implemented. We can conclude that in our country all acts related to the regulation of employee liability, employer liability, compensation for work-related damages (whether incurred by an individual or a company) are set in accordance with high legal standards and guarantee a high degree of legal certainty, but still in connection with these institutes, employees, as well as employers, encounter difficulties in practice. The "letter on paper" is in line with international labor law practice and labor law regulations in the Republic of Serbia provide a high degree of protection to employers and employees, but the application of these regulations by the authorities is not in line with good international law practice. Despite the good legislative framework, employees and employers in the territory of the Republic of Serbia are very concerned about the employment right in practice. This legal uncertainty can be suppressed and eradicated only by adopting good labor law practice from developed countries and greater engagement of state institutions to control the work of companies and persons employed in them.

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## **SUSTAINABLE DEVELOPMENT AS A PRINCIPLE OF ENVIRONMENTAL LAW**

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### **ABSTRACT**

*Sustainable development is a global principle that includes and implies a balance between economic development and environmental protection, defined and substantively elaborated in international documents adopted within the United Nations. It refers to the creation of better living conditions on the planet for each individual, group, and entire humanity and has a well-established socioeconomic, ecological, legal, and socio-humanistic dimension. Sustainable development implies economic development that guarantees the right to a healthy life and a healthy environment for today's generations while raising the awareness of and encouraging responsibility for the rational consumption of natural values in order to preserve sufficient resources for future generations and thus enable their growth, development, and prosperity on a healthy planet. This paper, using the comparative method and analyzing legal norms of international law, presents the emergence and development of the principle of sustainable development as a basic principle of environmental law, determines its content and significance, and indicates its application within the national law of the Republic of Serbia.*

**Keywords:** *Sustainable development, Natural resources, Balance between economic development and environmental protection, Sustainable development goals, Environmental law*

### **1. INTRODUCTION**

Nowadays, the principle of sustainable development is one of the basic principles of environmental law accepted and applied by all member states of the United Nations. The emergence and development of the concept of sustainable development are associated with economic development, industrialization, and increasing economic growth which began to gain momentum in the middle of the last century. The appearance of the consumer society based on material values in economically developed countries and the desire of developing countries to overcome economic stagnation by faster economic growth mark the beginning of uncontrolled consumption of natural resources and environmental endangerment. The requirement on all UN member states to include the need to preserve natural values in their economic policies and future development and ensure the right to a healthy life and a healthy environment is the basis of sustainable development. Thus, economic development and the environment are inextricably linked, intertwined, and conditioned by each other, meaning, economic development becomes unsustainable without environmental preservation and protection.

## **2. INTERNATIONAL LAW AND SUSTAINABLE DEVELOPMENT**

Sustainable development as a principle of international law emerged in the late 80s of the last century. It has been created and harmonized at international forums and UN conferences to mark the end of the competition for economic development at any cost, particularly regarding the depletion of the planet's natural resources and significant threats to the environment. The exploitation of natural resources as a basis for economic development has become an inevitable problem in the conditions of industrialized society, increased production and consumption of material goods and food to meet the needs of the growing human population which include ecological values as well. Natural resources are regarded as a national treasure, although a holistic approach indicates they can be considered the common good of humanity since the earth's resources are not inexhaustible but are quantitatively and qualitatively limited. The need for constant economic development imposing a great burden on natural resources in order to reduce poverty and hunger, whereas simultaneously increasing human life expectancy, and population growth on the one hand, and widening the gap between economically developed and developing countries, and the emergence of the consumer society on the other, are the main reasons for defining and introducing the principles of sustainable development in international law and international economic relations. The fundamental idea of establishing the principles of sustainable development is to create a balance between economic development and environmental protection and thus allow current generations to preserve the natural wealth of our planet for future generations, by adopting a responsible approach. Sustainable development as such has occurred and has been defined within the efforts of the UN to protect the environment. A new branch of international law referred to as International Environmental Law has gradually emerged from these efforts. However, since its establishment within the framework of international law, sustainable development has included three subsystems, namely: economic, ecological, and social subsystem (Munitlak Ivanović, 2018: 17). Sustainable development as "development that meets the needs of the present, without depriving future generations of the opportunity to fulfil their needs" was included in the 1987 report "Our Common Future" by the World Commission on Environment – the World Commission on Environment and Development founded by the United Nations General Assembly. This report highlights the harmful impact exerted on humans and our planet by the policy of economic growth without considering the possibility of regenerating the planet Earth (United Nations - UN, 1987). Sustainable development has been further developed in all following UN initiatives such as the Millennium Development Goals for the period between 2000 - 2015, whereas a particular context and broader interpretation of sustainable development have been provided in the UN Agenda for the implementation of sustainable development goals by 2030, where sustainable development has been associated with achieving 17 global goals, namely: 1) End poverty in all its forms; 2) End hunger, achieve food security and improved nutrition and promote sustainable agriculture; 3) Ensure healthy lives and promote well-being for all at all ages; 4) Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all; 5) Achieve gender equality and empower all women and girls; 6) Ensure availability and sustainable management of water and sanitation for all; 7) Ensure access to affordable, reliable, sustainable and modern energy for all; 8) Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all; 9) Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation; 10) Reduce inequality within and among countries; 11) Make cities and human settlements inclusive, safe, resilient and sustainable; 12) Ensure sustainable consumption and production patterns; 13) Take urgent action to combat climate change and its impacts; 14) Conserve and sustainably use the oceans, seas and marine resources for sustainable development; 15) Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and

halt biodiversity loss; 16) Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels; and 17) Strengthen the means of implementation and revitalize the Global Partnership for Sustainable Development (UN, 2015: 14). Sustainable development, accomplished by the achievement of the stated goals, acquires a more concrete, precise multidisciplinary context, i.e. these goals strengthen the socio-economic, ecological, legal, or social-humanistic dimension of sustainable development.

### **3. THE APPLICATION OF THE PRINCIPLES OF SUSTAINABLE DEVELOPMENT IN THE EUROPEAN UNION**

In addition to the global dimension, considerable impetus has been given to the acceptance and implementation of the principle of sustainable development within the European Union (EU) as a regional organization of sovereign European states with elements of supranational. The EU was established on the foundations of the European Communities by the most economically developed countries in Western Europe that included environmental protection and sustainable development in the list of main common policies relatively early. The initial development of EU environmental policy is related to the Declaration of the European Council, i.e. the summit of the heads of states and governments of the member states of the European Economic Community (EEC) in 1972, immediately after the first UN Conference on the Human Environment in Stockholm. The declaration envisaged a reduction of risks to the conditions and quality of life of people caused by the negative impact of economic development on the environment, especially by the uneven exploitation of natural resources leading to disruption of ecological balance. At this summit, the European Council required the Commission to develop the first action plan for environmental protection within the EEC (Lilić, Drenovak - Ivanović, 2014: 75). Since then, the EU has established high standards of environmental protection and improved and legislated plenty of segments of environmental protection and sustainable development. Today, environmental protection and sustainable development are an integral part of primary law, i.e. the EU Treaty which includes provisions having constitutional characteristics. Sustainable development and environmental protection are related to the establishment of the internal market as one of the objectives of the existence and future development of the Union (Article 2, paragraph 3, Consolidated Versions of the Treaty on European Union and the Treaty on the Functioning of the European Union, 2016). EU competencies in the field of the environment enable the adoption of secondary legislation and various initiatives for environmental protection based on the principle of sustainable development as a precondition for economic and social progress, and improvement of living standards of EU citizens (Articles 191-192, Consolidated Versions of the Treaty on European Union and the Treaty on the Functioning of the European Union, 2016). This is particularly evident in certain Union acts, both recently adopted or still in the process of adoption. At the end of 2019, the European Commission adopted a strategy for environmental protection by 2050, referred to as the “European Green Deal”. This strategy is based on respect for and further improvement of sustainable development. Moreover, the Green Deal represents the EU's strategy for applying the UN Agenda on the implementation of sustainable development goals by 2030 that directly links sustainable development and citizen well-being with future economic policies and includes sustainable development goals in almost all areas of EU action (European Commission, 2019, COM/2019/640). Furthermore, the current debates on the proposal of the 8th Environment Action Programme to be adopted in the form of the European Council and the European Parliament Decision focus on sustainable development. The idea contained in this Action Programme is to hasten the transition to a regenerative growth model that gives back more to the planet than it takes, i.e., to reduce the environmental footprint produced by economic development.

This implies establishing welfare economics allowing a systemic change which is not based solely on measuring Gross National Product (GNP) as an indicator of a country's economic development. This systemic change should be based on an economy recognizing that human well-being depends on a stable climate, a healthy environment, and the preservation of all ecosystems on the planet. Economic activities should be more intensively developed in a sustainable way which does not cause harm, but on the contrary, halts climate change, protects and restores ecosystems and biodiversity, protects human health from negative environmental impact by reducing all forms of pollution to a minimum while maintaining and enhancing both renewable and non-renewable natural resources (European Parliament, 2021, Amendment 14). The proposed Regulation (European Climate Law), aiming to make the EU the first climate-neutral region with zero greenhouse gas emissions by 2050, is also based on the application of sustainable development principles and the achievement of Goal 13 of the 2030 Agenda for Sustainable Development (European Commission, 2020, COM/2020/ 80). The aforementioned examples of EU legislative initiatives indicate intensified activities in policies concerning sustainable development affecting economic cooperation with third countries and especially with candidate countries for EU membership, including the Republic of Serbia.

#### **4. SUSTAINABLE DEVELOPMENT IN THE NATIONAL LEGISLATION OF THE REPUBLIC OF SERBIA**

The need to introduce sustainable development into the national legislative framework, particularly in legislative acts regarding the environment and economic activity, arises from the international obligations of UN member states established by international conventions, treaties, and protocols. The National Legislative Framework of the Republic of Serbia on Environmental Protection contains the principle of sustainable development included both in the Constitution as the supreme legal act and systemic laws establishing the basis of the national environmental law. Article 74 of the Constitution of the Republic of Serbia establishes the constitutional protection of the environment and imposes the obligation to inform the public about the state of the environment, its preservation, and improvement. Sustainable development is a constitutional category concerning the necessity of establishing sustainable regional development and competencies of the Republic of Serbia (Articles 94 and 97 of the Constitution of the Republic of Serbia, "Official Gazette of the RS", No. 98/2006). Within the legal acts of the Republic of Serbia, sustainable development as a basic principle is an integral part of the Law on Environmental Protection and Law on Strategic Environmental Impact Assessment. Both laws equally define sustainable development as "a harmonized system of technical-technological, economic and social activities within the total development using natural and man-made values in an economically efficient and reasonable way aiming at preservation and improvement of quality of the environment for the present and future generations". On the other hand, the laws differ in the second part of the definition of the principle of sustainable development in the Law on Environmental Protection explicitly connecting environmental and economic interests of sustainable development that "shall be implemented through promulgation and implementation of decisions producing a balance between the environmental protection and the interest of economic development" (Law on Environmental Protection "Official Gazette of RS", No. 135/2004, 36/2009, 36/2009 - state law, 72/2009 - state law, 43/2011 - decision of the Constitutional Court, 14/2016, 76 / 2018, 95/2018 - state law and 95/2018 - state law). The connection between economy and ecology has not been noted in the second part of the definition of sustainable development in the Law on Strategic Environmental Impact Assessment, bearing in mind that it regulates the processes of planning, adopting programs, and determining conditions for environmental protection. These processes must include "rational use of natural resources to contribute to the fulfillment of objectives of sustainable development" (Law on Strategic Environmental Impact Assessment "Official

Gazette of RS", No. 135/2004 and 88/2010). In addition to the constitutional and legal basis of sustainable development in the national law of the Republic of Serbia, specific initiatives have been undertaken to allow the implementation of the UN Agenda sustainable development goals by 2030. The report "Serbia and Agenda 2030" is a good example of the approach of the executive authority in the fulfillment of these goals. It is part of the process of developing a strategic framework and systems for monitoring and evaluating the achieved results and promoting various partnerships, technical and scientific cooperation, including public-private, to achieve global goals. The process of drafting the strategic framework of the Republic of Serbia is an integral part of coordination with the UN, within the cooperative approach to more effective and coherent support for the implementation of Agenda 2030 (The Government of the Republic of Serbia, 2017). This was followed by the Voluntary National Review on the Implementation of Sustainable Development Goals, presented to the UN in 2019. It highlighted the commitment of the executive authority and the entire Serbian society to the values and principles of the 2030 Agenda, the efforts made to incorporate sustainable development goals into national frameworks as well as further action concerning politics and greater involvement of the private sector and civil society into fulfilling the 2030 Agenda goals in Serbia (The Government of the Republic of Serbia, 2019). These activities indicate further harmonization of national policies with sustainable development goals and their inclusion in all areas of social life in Serbia thus allowing the citizens to experience the benefits of achieving sustainable development goals.

## 5. CONCLUSION

Sustainable development has evolved dynamically from the initial idea to its acceptance and inclusion in national frameworks. The realization that we do not possess sufficient resources for global economic development based on uncontrolled consumption of natural resources was an unpleasant confrontation with reality that encouraged the occurrence of sustainable development. The approach to its definition was mainly based on the established balance between the requirements for environmental protection and economic development. Activities related to sustainable development in the UN, EU, and the Republic of Serbia confirm the hypothesis of establishing sustainable development as one of the principles of environmental law in international and national frameworks. On the other hand, there is a pronounced social component of sustainable development reflected in its social acceptance and human dimension as its integral part. Attempts of sustainable development to reconcile the contrast between economic development and environmental protection are inconceivable without greater social activity and setting the goals for the transformation of the global society. The fulfilment of these goals in the future should transform the global society into a place acceptable to all with equal and just opportunities for dignified life and development in all areas of social life, such as nutrition, education, equality, and justice by creating just and accessible institutions serving each individual.

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# TAX TRANSPARENCY OF THE OPERATIONS OF MULTINATIONALS IN THE ERA OF COVID-19

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## ABSTRACT

*Multinationals (MNEs) have an important influence in business activities around the world. They not only tailor the global business models, but also have significant impact on allocation of the global income and wealth, and consequently on the lives of the people in all the countries where doing business. Bigger business - bigger risk, but also bigger income and tendency to hide it and pay less or no tax and other fees. In last few decades, MNEs created different schemes in business and tax planning with intention to avoid (legally or illegally) great part of their tax duties. Since last decade of 20th century, many international organizations have been working on different (but, interrelated) projects to prevent and/or sanction such a behavior of MNEs and make their business operations more transparent. However, COVID-19 pandemic, global locks of cross-borders and conduct of almost all types of business online, put a shadow on many MNEs' business operations and open a door to different methods of tax avoidance. This paper deals with global projects and achievements that made MNEs' operations more transparent in earlier period and difficulties national and international administrations are faced with in making MNEs' playing fair and pay taxes in states where they are making business and income, which have become larger and bigger caused with global pandemic. And, finally, achievement of the agreement on global minimum tax multinationals should pay.*

**Keywords:** business operations, MNEs, tax, transparency

## 1. INTRODUCTION

MNEs are important players on the global business and economic map. Not only in the sphere of the economics and business, but also in the sphere of the political relations between states they have an important role. Even more, almost ten years ago (2013), MNEs are indicated making approximately 11% of the global GDP (Owens, 2013a). MNEs are the companies doing business and making profit in more than two countries; this fact is directly related with their demand for precise and transparent rules applied on business sphere: MNEs “want globally agreed rules which are consistently applied” (Owens, 2013a). However, often this requirement is not proportional to the requirement of national governments and international organizations - requirement to MNEs to make transparent rules applying in each country of their business and to disclose precise data of their global income and profit made in each country, and used resources. Between the requirements for making transparent and clear their business, requirement for tax transparency is one of the most important, because hidden profit and costs of the spent resources are in direct relation with national and global GDP and wealth.

## 2. TAX TRANSPARENCY

Tax (fiscal) transparency can be consider from three aspects, which are all closely related: (1) the aspect of the taxpayers and tax authorities relation; (2) the aspect of the public disclosure of the taxes paid by companies; and (3) disclosure of the (tax) information by governments themselves (Owens, 2013b; Stojanovic, 2014). Breaking out global financial and economic crisis in the first decade of the 21st century and global pandemic at the very beginning of the third decade of the same century, brought to the surface many problems in providing different aspect of transparency.



## **2.1. Taxpayers and tax authorities relation**

The main function of tax transparency is to help tax authorities having knowledge about “all the entities within a country controlled by a taxpayer”. However, again, the global financial crisis and a need for more revenues in national budgets have given this concept a broader meaning, taking into account actions and measures undertaken by different international and regional organizations, and national governments<sup>1</sup>. Global financial crisis influenced initiation of different (inter)national projects for solving many (un)discovered problems (Owens, 2013b). The success in realization of each project soon was replaced with failure and rapid decline of the global income, factual business activity and crossing national borders by individuals and business caused with breaking out COVID-19 pandemic. Closing national borders in every aspect (air, water and road) made companies (MNEs, but also small and medium sized companies and entrepreneurs) to start all the business online. Such a way of doing business open a door to different types of abuse, especially different forms of tax abuse.

## **2.2. Public disclosure of the taxes paid by companies**

Related with previously mentioned transparency between taxpayers and tax administration, public disclosure of the data on the profit MNEs made and taxes paid in each country where operate, also, become difficult to implement (again, as a consequence of the global pandemic). Mostly, this aspect of (tax) transparency is related with the companies doing business in extractive industry in developing or undeveloped countries with low GDP and poor educated citizens. In this industry sector, companies are often inclined to legally or illegally avoid payment of their tax and other duties. Generally, these companies and national authorities are closely related and, often, companies and national governments make arrangements where all (or the biggest part) of the profit made from exploitation of the domestic natural resources is transferred in the country of company registration or other country without investing and renewing the exploited resources. This concept of transparency is widely explored with proposals of the actions to be taken and projects initiated and conducted at international and the EU level. One of the most significant ongoing international project, certainly, is the Base Erosion and Profit Shifting (BEPS) Project. This project was, originally, initiated by G-8 (later G-20), but research and all the work on defining the actions has been done by the Organization for Economic Cooperation and Development (OECD). In 2013 the OECD has launched BEPS, consisting of 15 actions. Having in mind the topic of our research paper - tax transparency - we will focus only on the actions dealing with this issue - actions 12 and 13.<sup>2</sup> Action 12 is based on the requirement taxpayers to disclose their aggressive tax planning (ATP) arrangements; the Action 13 comprise with the rules on transfer pricing documentation (OECD, 2013). In the sphere of transparency, the EU has been intensively working on the Capital Requirements Directive and Directive on Transparency and Accounting: the first directive relates with public disclosure on a country-by-country (CBC) basis; the second one relates with the requirements for large companies engaged in the extractive industries (EI) or in the logging to report certain data on their business activities (Owens, 2013a).

## **2.3. Transparency by governments themselves**

The national governments should disclose their dealings with large companies. Especially, tax arrangements are important for the transparent and fair competition between states. This leads us to the conclusion that concept of the transparency by the governments themselves is, mostly, tailored with measures proposed and developed under the OECD project on Harmful Tax

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<sup>1</sup> See the work of the OECD Global Forum on Transparency and EOI for Tax Purposes and Forum on Tax Administration.

<sup>2</sup> Beside actions 12 and 13, actions 11 and 14 deal with the transparency issue, but in a different way from the actions 12 and 13. The action 11 refers to the establishment of the methodologies for collection and analysis of the data on BEPS and related actions: the action 14 refers to the effectiveness of the dispute resolution mechanism.

Regimes (OECD, 1998) and the BEPS project (OECD, 2013). In the EU, the focus is on the companies doing business at the Common market and measures proposed in the EU under the Code of Conduct (European Commission, 1998) and measures fighting harmful tax practices (European Commission, 2012).

### **3. THE INTERNATIONAL AND EU PROJECTS AND MEASURES REGARDING TRANSPARENCY**

As mentioned at the beginning of our research paper, "bigger business - bigger risk", but also bigger abuse. MNEs doing business in numbered countries, even at different continents, are inclined to make more abuse in their business operations and to avoid majority of their duties, of which the tax duties are the mostly avoided. From the aspect of international and global/regional/national consequences of tax avoidance, projects initiated and realized by international organizations have the larger influence on business activities of the MNEs around the globe.

#### **3.1. The OECD work**

Speaking about the international projects, the OECD projects are the most important for different tax issues, and related with that, have the biggest impact on the issue of tax transparency. Here, we should underline two above mentioned projects: Project on Harmful Tax Regimes (initiated in 1996) and BEPS Project (initiated in 2013). One of its first projects dealing with the mentioned problems had been the Project on Harmful Tax Regimes (OECD, 1998, 2001, 2004, 2006, and 2009), which continued with projects focusing on transparency and EOI for tax purposes<sup>3</sup>. Today, the most important body working on the issue of transparency is the Global Forum on Transparency and EOI for Tax Purposes. The Project on Harmful Tax Regimes was, originally, initiated to establish measures for prevention and tackling the influence of harmful tax competition on investment decisions and tax consequences appearing in the economy of the states of investment. Having in mind decisive influence of the corporate tax regimes (especially, the tax rate and benefits), international actors realize that something must be done to prevent further actions of the national governments that have harmful impact on the neighboring economies. The OECD has started research and made the whole list of the measures that should be undertaken to tackle the problem<sup>4</sup>, but parallel to those actions, the EU has undertaken measures to tackle the same problem limiting its realization within the borders of the Common Market. Here, the problem of non-transparent regimes was the significant one and many of the proposed measures were directed to its elimination. There are, also, other projects and documents done by the OECD dealing with the issue of tax transparency: the Guidelines for MNEs (OECD, 2011), Declaration and Decisions on International Investment and Multinational Enterprises (OECD, 2012), Multilateral Convention on Mutual Administrative Assistance in Tax Matters (OECD, 1998&2011) and Model Agreement on EOI on Tax Matters (OECD, 2002) Guide on the Protection of Confidentiality of Information Exchanged for Tax Purposes (Keeping It Safe) (OECD, 2012), an update of the Article 26 of the OECD Model Tax Convention (OECD MC) and its Commentary (OECD, 2012), the Study into the Role of Tax Intermediaries (OECD, 2008), and finally, the project that is currently dealing with – the BEPS Project (OECD, 2013).

<sup>3</sup> Cf. Remarks by Angel Gurría, OECD Secretary-General delivered at a high-level ministerial meeting on transparency and EOI for tax purposes organized by the German Federal Minister of Finance, Peer Steinbrück and French Minister for Budget, Public Accounts and Civil Service, Eric Woerth, Berlin, 23 June 2009

<sup>4</sup> In its publication *Harmful Tax Competition: An Emerging Global Issue*, (Paris, OECD Publishing, 1998), the OECD recommended to its countries to undertake three group of measures to tackle the problem of harmful tax competition and harmful tax regimes: (1) recommendations concerning domestic legislation with a goal to increase its effectiveness; (2) recommendations concerning tax treaties mostly directed to the effectiveness of the exchange of information between tax administrations and tax benefits given only to the residents of the treaty partners; (3) recommendations for intensification of international cooperation.

The last and, certainly, the most significant one project of the OECD dealing with tax issues is the BEPS project. As mentioned, it was originally initiated by the G-8, continued by G-20, which asked the OECD to do research and make proposal on the actions that should prevent and eliminate tax avoidance and other abuses of the MNEs conducting the business around the globe. The project is focused on development of new set of standards for prevention of double non-taxation; closer national and international cooperation, greater transparency in reporting and disclosure of certain data; development of multilateral instrument to amend bilateral tax treaties. The Action Plan was fully endorsed by the G20 in 2013. BEPS consists of 15 actions which, at the first glance, look like separated and independent one of another, but actually all of them are closely related and have a common aim - to make companies pay taxes where they do business and make profit. The actions are as following: 1. Addressing the tax challenges of the digital economy; 2. Neutralizing the effects of the hybrid mismatch arrangements; 3. Designing the effective controlled foreign companies rules; 4. Limiting base erosion involving interest deductions and other financial payments; 5. Countering harmful tax practices more effectively taking into account transparency and substance; 6. Preventing the granting of treaty benefits in inappropriate circumstances; 7. Preventing the artificial avoidance of permanent establishment status; Actions 8-10. Aligning transfer pricing outcomes with value creation; 11. Measuring and monitoring BEPS; 12. Mandatory disclosure rules; 13. Transfer pricing documentation and country-by-country reporting; 14. Making dispute resolution mechanisms more effective; 15. Developing multilateral instrument to modify bilateral tax treaties. The BEPS project is one of the most important OECD's tax project that is currently under realization. Between 15 actions, as already mentioned, the Actions 12 and 13 refer to the transparency considering it from the aspects of certainty and predictability. "The Action 12 refers to the mandatory disclosure rules for taxpayers' aggressive or abusive tax planning arrangements, transactions or structures (OECD, 2013) and the Action 13 refers to the re-examination of transfer pricing documentation and importance to develop rules which "will include a requirement that MNEs provide all relevant governments with needed information on their global allocation of income, economic activity and taxes paid among countries according to a common template" (OECD, 2013). In accordance with this action, the OECD published a White Paper on Transfer Pricing Documentation and the report Memorandum on transfer pricing documentation and country by country reporting, where it calls that reporting by MNEs on country-by-country basis should be a part of global master file and separated in three key points: income earned in a country, taxes paid by a country and measures of economic activity in each country where the MNEs operate.<sup>5</sup> Disclosure of the (tax) information is, also, important for the relationship between tax authorities and tax intermediaries, mainly tax advisors. The tax advisors play significant role in fulfillment of tax obligations and education of the taxpayers about their tax duties and undertaking strategies in their business and tax planning. Many countries have adopted statutory rules that authorize tax administration to require disclosure of large business tax planning by their tax intermediaries. Different countries apply different methods: advance disclosure, compliance agreements, horizontal monitoring, etc. (OECD, 2012) (Stojanović, 2014)"

### 3.2. The work of the other international organizations

"Not only the OECD, but also other international organizations are working on the issue of the transparency - not only tax transparency, but also other aspects of the transparency in the operations of the MNEs: there are the projects and actions undertaken by the Extractive Industry Transparency Initiative (EITI) and the World Bank (WB), as the most important, but also, the work of the International Monetary Fund (IMF) and United Nations (UN) throw Global

<sup>5</sup> This means that reporting by each MNE should be part of global master file and local file for transparency. See: <http://www.iasplus.com/en/othernews/global/oecd>

Reporting Initiative (GRI). "The EITI is "a global initiative established in 2002 to promote and support improved governance in resource-rich countries to full publication and verification of company payments and government revenues from extractive resources (oil, gas, and mining)" (WB, 2008). Since 2004, the World Bank Group (WBG) has become "the primary source of technical and financial assistance for countries implementing EITI" and manages a Multidonor trust fund (MDTF) that supports the EITI implementation<sup>6</sup>. The EITI is dealing with transparency in two ways: (1) reporting of the financial and non-financial data by the companies involved in extractive industry (data on payments; certifications that the data submitted in the reporting are based on company financial statements audited to international standards; explanations to the reconciler/administrator if there are any unexplained discrepancies, etc.) and (2) the governments should make publicly available their arrangements with MNEs, which means that the governments make transparent and available their arrangements to the citizens. "The EITI is implemented at the country level, but extractive corporations are encouraged to support the initiative at an international level. To do so, companies need to make a statement in which they endorse the EITI principles and criteria and make it available on their websites, contribute to implementation in candidate countries, and make a voluntary financial contribution to the international management of the EITI. However, being a supporter of the EITI does not require any reporting or disclosure requirements in addition to those for all companies operating in the relevant sectors in countries implementing the EITI." (Ölcer, 2014) Related with BEPS and newly introduced country-by-country reporting, in 2013 the EITI has developed a new standard for disclosure framework: the companies should publish what they pay in each country of its business operations and each government should disclose what it receive from the company doing business in certain country (country-by-country reporting, CBCR) (PWC, 2013). This is the measure that should provide transparency in payments and prevent tax avoidance by the companies, but also would prevent and eliminate the corruption by the government officials. Although, the EITI is a voluntary process some initiatives calls for EITI reporting to become mandatory<sup>7</sup>, because of many non-transparent activities in the sector of extractive industry."<sup>8</sup> In relation with the issue of tax transparency, the work of the IMF comprised the following: publication of the Code of Good Practices on Fiscal Transparency<sup>9</sup>, the Manual on Fiscal Transparency, and the Guide on Resource Revenue Transparency<sup>10</sup>. These publications are dealing with the transparency from the aspect of the taxpayers and from the aspect of governments<sup>11</sup>. An important role in shaping the MNEs' reporting has the Global Reporting Initiative (GRI), an international non-profit organization with a network-based structure. After establishment, it has been intensively working on development of its guidance, which "became a Sustainability Reporting Framework, with the Reporting Guidelines at its heart". The first version of the Guidelines was launched in 2000, the second one in 2002 (G2), the third one in 2006 (G3), and the last, fourth one, in May 2013 (G4).<sup>12</sup> The Guidelines gives a model for the companies and organizations (regardless of the size) to disclose financial and non-financial information on their business operations and other material information. Further, the Guidelines provide certain principles that each entity should respect in making a report, and general and specific standards for the disclosure of information. (GRI, 2013) In 2017, the GRI published the Guidance for corporate reporting and in 2019 launched the "tax standard"<sup>13</sup>.

<sup>6</sup><http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/EXTOGMC/EXTTEXTINDTRAINI/0,,menuPK:3634777~pagePK:64168427~piPK:64168435~theSitePK:3634715,00.html>

<sup>7</sup> This is in the focus of the campaign "publish what you pay" (PWYP) [www.publishwhatyoupay.org](http://www.publishwhatyoupay.org)

<sup>8</sup> The biggest part of the text is undertaken from the publication Stojanovic, S. (2014).

<sup>9</sup> The *Code* has several versions: the first one was published in 1998, followed by the versions of 2001 and 2007

<sup>10</sup> The first version of the *Guide* was published in 2005, and in 2007 it was revised

<sup>11</sup> In the *Code* the IMF refers to the four pillars of fiscal transparency: (1) clarity of roles and responsibilities; (2) open budget processes; (3) public availability of information; and (4) assurances of integrity.

<sup>12</sup> <https://www.globalreporting.org/information/about-gri/what-is-GRI/Pages/default.aspx> (8 November 2021)

<sup>13</sup> <https://www.globalreporting.org/about-gri/mission-history/> (8 November 2021)

The UN Global Compact Project (UN GC) has been launched in 2000. Since then, it has become the largest corporate sustainability initiative in the world. It is “a call to companies everywhere to voluntarily align their operations and strategies with ten universally accepted principles in the areas of human rights, labor, environment and anti-corruption, and to take action in support of the UN goals and issues.” (UN, 2013) Although these principles are not related to the disclosure of financial information, they are closely linked with financial data of the companies and achieving corporate sustainability. Comparing with GRI, the UN Global Compact Project is more oriented to the MNEs, because they are more inclined to be non-transparent in their operations (Stojanović 2014).

### **3.3. The projects and measures in the EU**

The EU, mostly, regulated the issue of transparency in its Directives, such as: the Accountings Directives (the Fourth and the Seventh Directive and its amendments adopted in 2013. In 2011, the European Commission made a proposal for amending those Directives regarding disclosure of non-financial and diversity information by certain large companies and groups, which makes significant step in providing more transparency of the operations of the large companies operating in the EU Common Market. The proposal was focused on changes in Articles 46 (1) of the Fourth Directive and 36 (a) of the Seventh Directive, with an aim “to improve companies’ transparency and performance on environmental and social matters in order to ensure a level playing field across the EU.” (Federation of the European Accountants, 2013): companies whose number of employees exceeds 500 and which have a balance sheet exceeding € 20 million (or have a net turnover exceeding € 40 million) would be obliged to disclose material information related with environment, social policy, employees, respect of human rights, anti-corruption and anti-bribery policy. The information should be given in the non-financial statement of the annual report, and could be based on the EU or internationally accepted standards and principles (clearly specified). Furthermore, in 2013 are adopted: the Transparency Directive of 2013 amending the Transparency Directive of 2004; then the IV Capital Requirements Directive (CRD IV) and Capital Requirements Regulation. All listed documents are oriented to the large companies that should disclose certain information on a project-by-project and/or country-by-country basis. The exchange of information is another aspect of transparency - transparency of the tax information delivered from one tax administration to another. Here, the observation is on the Directive on Administrative Cooperation in the Field of Taxation, but also the Directive regarding mandatory automatic exchange of information in the field of taxation. There are and other documents and recommendations regarding the transparency of the operations of the MNEs conducting business in the EU Common Market, but further exploration of the EU documents would take too much space in our paper focused on the tax transparency in the operations of the MNEs in the era of COVID-19.

### **4. TAX TRANSPARENCY IN THE ERA OF COVID-19 - GLOBAL MINIMUM TAX**

The breaking out of the COVID-19 pandemic at the very end of the second decade of the 21st century resulting with significant drop of the factual business and financial activity and close of the national borders has speed up the already started digitalization of the business operations. Companies that have been already conducting their business *online* profited, others had “to become digital”. Small or non control by the national governments and slowing the realization of the international projects (mainly BEPS), have given the large companies space to evade their tax duties around the globe. However, the most powerful economies decided to stop such a behavior of the MNEs and prevent breaking out new global financial and economic crisis: endorsed by the G-20 the OECD proposal on global minimum tax: “the countries would apply the minimum tax to nearly any multinational company making more than €750 million (\$870

million), though some kinds of income will be exempt from that calculation". Primarily, the rules will allow a country where a company is headquartered to "top up" its taxation of the company if it's paying less than 15% in another country (Bloomberg, 2021)<sup>14</sup>. Adoption of this solution is a part of the Action 1 of the BEPS project which is focused on digitalization - the global locks of the factual cross-borders and doing almost all the business online just speed the realization of the BEPS Action 1. On the 8th October 2021, totally 136 countries have joined the two-pillar solution<sup>15</sup> to reform the international tax rules and to ensure that multinationals pay tax where they make profit. Adoption of these pillars, especially pillar two would have significant effect to global base erosion and, certainly, would distract large companies to hide their profits in low-tax jurisdictions, made different tax and business arrangements using base and conduit companies to evade their tax duties.

## 5. CONCLUSION

Transparency of the operations undertaken by the multinationals is the issue that is in the focus of international public and the biggest economies for a long time. As the world economy becoming more globalized, the activities of the largest companies have become more non-transparent; crossing national borders have become faster and easier; many business operations are doing online without need to have factual presence in certain country, etc. The globalization has speed digitalization of the business operations, but also many activities of the individuals have become digital and are doing online. However, the advantages and benefits of such a way of business activities have the biggest disadvantage in the modern era, looking from the aspect of tax abuse and tax evasion. The breaking of the global COVID-19 pandemic has brought to the surface global problem of the tax evasion by the MNEs, but also made the international community to work harder and more decisive to solve and put an end to this global problem. Finally, in October 2021, the sign of this action appeared: the agreement on the global minimum tax reached between almost 140 countries, of which almost all are the OECD countries. Having in mind fatal consequences of the global pandemic at the one side, at the other side - global pandemic has brought benefits and lights in the world of international taxation and fight against global tax evasion by MNEs.

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# THE IMPACT OF ORGANIZATIONAL FORMS OF THE COMPANY ON ITS INVESTMENT STRATEGY

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## **ABSTRACT**

*Company as an organisational system establishes appropriate interactions and relationships, both with the environment and within the system itself. The organizational structure of the company is influenced by many factors, the most important being the size of the company, business strategy, technology, age of the company and the immediate environment. Due to the above, businesses need to be flexible in order to respond quickly to changes in competition and the market. The key problems of development of each company include rational investment activities which are undertaken in order to ensure the growth and development of the company, as well as to improve its competitive position. Investment strategy represents a basic strategy that defines the development behavior of an enterprise and it is largely related and interdependent with its organizational structure. Only the strategies and organizational structure thus set out bring about successful and long-term sustainable growth and development of the company. An efficient system of decision making, data collection and processing is a prerequisite for the survival, functioning, growth and development of the organisation. The organisational system is the bearer of a certain economic activity. It is, in fact, an independent, complex, economic unit, composed of people, technical means and organized activity, which performs a particular activity. The system is therefore an independent framework into which the parts are placed. This means that the internal organization of the system is very important.*

**Keywords:** *company, organisational strategy, investment strategy*

## **1. INTRODUCTION**

The organizational structure of the company is formed so as to enable the overall task of the company to be achieved. The tasks of an enterprise are set by specifying goals that can be defined as future states that an enterprise intends to achieve in order to realize the basic purpose of its existence. Its appearance form is a certain organizational model which reflects the relationships in the production and management process of the enterprise. It is designed under certain conditions and for a relatively long time this interrelationship is formulated so that the goal defines the tasks and the tasks shape the organization. A prerequisite for development of an enterprise and therefore one of the most important strategic goals is investment. Implementation of an investment strategy requires adaptation of the enterprise in terms of changing, refining and adapting its organizational structure. Organizational structuring should be operating, both in the efficient management of the business activities of the enterprise and in the efficient management of investments. From the point of view of the enterprise, investments represent the only way to realize the goals of growth and development and thus maintain and improve the competitive advantage.

## **2. CHARACTERISTICS OF AN ENTERPRISE AS AN OPEN ORGANISATIONAL SYSTEM**

Changes in business conditions also require new approaches in strategic management and organization of enterprises, which are based on contemporary theories, as well as on the experience of validated attitudes. The organisational structure of the enterprise, as an essential element of its potential, is a system of connections and relationships between the elements in

the organization of the enterprise. It is formed under the given conditions and under the influence of certain factors. In a market economy system, a particular enterprise exists independently, but at the same time also exists as a subsystem of the overall macroeconomic system. The enterprise is at the same time a separate open organizational system. The most significant role in the theory of organisation was given by system theory, by means of analyzing and considering the methodological approach, not only connections and relations of internal parts of the system, but also connections and relations of parts of the system as a whole, with other systems in the environment. According to Ansoff, McDonnell, (1990) two factors have impact on the openness of enterprises, namely: the continued survival of an organization depends on its ability to secure rewards from an environment that will renew the resources involved in the conversion process; the organisation constantly maintains its social legitimacy, resulting from the fact that, in addition to products and services, organisations often produce other side effects that may be undesirable from a social point of view (such as air pollution, etc.). An efficient system of decision making, data collection and processing is a prerequisite for the survival, functioning, growth and development of the organisation. The organisational system is the bearer of a certain economic activity. It is, in fact, an independent, complex, economic unit, composed of people, technical means and organized activity, which performs a particular activity. The system is therefore an independent framework into which the parts are placed. This means that the internal organization of the system is very important. An enterprise is an organisational system that establishes appropriate interactions and relationships with both the environment and within the system itself. The influence of numerous internal and external factors on the choice and shaping of the organisation of a modern enterprise is on the rise. Particularly significant are the size of the company, the type of activity it engages in, its goals and objectives, location, etc. However, the influence of factors called "contingency factors" is gaining presence in literature. A number of factors exert influence on the organisational structure of the enterprise. The most significant of them are: the enterprise environment, the size of the enterprise, business strategy, technology, the age of the enterprise, its powers and the immediate environment. The environment of the modern enterprise has the strongest influence on the choice and design of the organization of the enterprise. The environment with which the company comes into contact is constantly changing, and thus strongly influences the organizational structure of the company. Enterprise must respond to the dynamic changes in the environment by choosing an appropriate organizational structure. Therefore, the organisational structures of enterprises in a stable environment differ from those in a dynamic environment. Modern businesses need to define the dominant type of environment in order to design an organisational structure that will serve the purpose of achieving the goals of the enterprise. According to Porter (1996), businesses need to be flexible in order to respond quickly to changes in competition and on the market. They must continually benchmark the activity of comparing individual processes or results with the best practices of successful companies in order to create their own incentives and business advancements. In such circumstances, businesses need to respond to several core competencies in order to stay ahead of their competitors in the race. A modern enterprise in developed market economies behaves extrovertly, designs and uses organisational structure as a component of its strategic capabilities. In this sense, the structure must be aligned with the strategies, that is, with the strategic plans as ways of establishing and achieving long-term business goals. Strategic planning helps to develop a clear attitude, that is, the concept of organization (Todorovic, Milisavljevic, 1991). The successful implementation of a formulated strategy depends on how the activities of the organization are divided, that is, on the structure of the organisation. The organisational structure of the company is designed to enable the overall task of the company to be accomplished. Technology also affects the organisational structure of an enterprise from two aspects: the broader (general development of technology and technology) and narrower

(the impact of technology applied by the enterprise). For enterprises with stable technology, traditional functional organisational structure is more appropriate, while companies with flexible technology are more suited to some of the more flexible forms of organizational structure (Todorovic, Djuricin, & Janosevic, 1997). The age of the company significantly affects the organisational structure of the company. Young businesses are more flexible and prone to change. They have clear and firmly set goals, but they are not firmly structured. The size of the company also has a significant impact on its organizational structure, so as the size of the business increases, the need for structural differentiation increases. As the size of the enterprise increases, the degree of centralization decreases, and the degree of standardization increases. The organisational structure of enterprises is influenced by the power and control of numerous interest groups. There are several forms of organisational structures and configurations of power within a company: hierarchical, technocratic, professional, modern and expert. The goals of dominant groups within and outside of the company influence the form of control within the enterprise, and each form requires an appropriate form of organisational structure. Besides the above, many other factors influence the organisational structure of the company. In order to develop a modern enterprise, it is necessary to monitor not only the influence of certain factors on the organizational structure, but also their interaction. Due to the different effect of these factors, companies have to change the organisational structure more often, to improve and adapt it to the specific situation and need.

### **3. INTERDEPENDENCE OF ORGANISATIONAL FORMS OF ENTERPRISE AND ITS INVESTMENT ACTIVITIES**

Investments in the expansion or renewal of enterprise's productive potential continue on to the strategic management process and represent one of its most important strategic goals. The investment activity of the company is the only way and means for finding new sources of profit, penetrating new markets and producing new content relevant to customers. The initiator of new investment ventures is the changed desire of customers and increasingly fierce competition, because successful investment gives the enterprise a certain competitive advantage in the demanding market. Organisational structure is an essential element of a company's potential that determines its strategic position. In this sense, the structure must be aligned with the strategies as the goals of the enterprise business. The organisational structure determines which options will be subject to deciding, which options will be compared, in what order these comparisons will be made, as well as the criteria by which they will be evaluated. The options that managers consider must be based on current activities of the company and information on current market conditions (Besanko, et al, 1996). Strategic management, as a process of developing a clear attitude or concept of organisation in relation to the capabilities of the environment, enables the formulation of plans and activities that will bring the enterprise closer to its goals. It enables systematic and purposeful action to be taken to achieve the set goals. Or, as P. Drucker (1988,) points out, the end result of a strategic management process is not knowledge but strategy. Problems of rational investment and realisation of appropriate investment projects are among the key problems of development of each company. Investment failures have major negative consequences for the company as well as for the wider district or branch in which it operates. The development of each company is related to the proper choice and efficient realisation of investments, because investment comes as the final act of the entire development process (Jovanovic, 2008). The investment policy defines specific programs whose realisation brings achievement of the development goals. The basic principles underlying the investment policy are: compliance with the basic goals of the enterprise as a whole, compliance with the basic goals of the enterprise and complete consistency with the development policy of the enterprise (Milisavljevic, 1977). The amount and structure of investments determine the dynamics and intensity of economic development.

The interdependence of investment and economic development is complex and multidimensional: it is reflected in the interdependence of accumulation and investment, the interdependence that is achieved in changing the structure of productive funds, the interdependence that is achieved through increasing the technical equipment of work and the application of modern techniques, the interdependence that is achieved by increasing the overall social products (Malesevic, E., Malesevic, Dj., 2011). Investment decisions can be tactical and strategic. Tactical investment decisions do not represent significant deviations from previous business practices of the company and do not require significant financial resources for their realization. In contrast, strategic investment decisions, for the most part, result in major changes relative to what the company has been in the past (Bierman, Smidth, 1975). Strategy and structure are interdependent, and in doing so affect one another. The expression of the organisational structure as a component of the strategic capabilities of the company is achieved through influencing its behavior. The strategy defines the content of structural parameters such as division of labor, grouping of units, decentralization, coordination, etc. The company must adapt its structure to changes in the environment and strategy. Structure is, in fact, a means of achieving the strategic goals of an enterprise. Strategy, as a product of strategic management, depends on a number of factors and changes under the influence of changes that occur in the environment. Structural changes come as a consequence of the need to adapt the structure to the new strategy. It is safe to redefine the structure to realize a new strategy, but the choice of any new strategy depends on the reality and potential of the existing structure. Enterprise must be observed as a living organism exposed to external and internal influences, because it is a business system created by humans that determine its behavior, determine the directions of actions, means, methods and style of behavior. Some companies change their structure first and then change strategy. The goal of changing the structure is the need to strengthen organisational potential. With the improvement of the structure, the business capacity of the enterprise is strengthened, which may cause a change in strategy. The structuring process has a significant impact on an enterprise's ability to accomplish a task or mission for two main reasons:

- organisational structure defines the specific actions that are being taken to implement the strategy;
- organisational structure sets the degree of autonomy that each individual, working group, department or division has in executing activities that are planned to implement the strategy (Higgins, Vincze, 1993).

Structuring of an enterprise requires sometimes subtle tuning and sometimes major changes to the existing structure. The organisational structure defines the lines of authority and communication between different executives on the one hand and the flow of information and data through the communication lines on the other. In order to achieve this, a formal division of the activities is carried out and the persons who will perform them are designated. Each new strategy requires a new or modified structure if it is to achieve its goal and successfully manage the business. The organisational structure of the company is a development category. With the change of environmental conditions there is a transformation into a new structure. Historically, the following structure models have been differentiated in the enterprise development to date: unitary (functional) structure or U-form, divisional structure, matrix structure and network structure (Besanko, et al, 1996.). Each structure has its own strategy, and over time as the structure evolves, the strategy is modified. These processes of subtle tweaking or major changes to the organisational structure enabled the structure to support the strategy. One of the most important strategic choices is the investment strategy. It is a basic strategy that defines the development behavior of an enterprise and which, like other strategic alternatives, interacts with the organizational structure of an enterprise. The essence of an enterprise's prosperity lies in adapting to changes, through investments in the sense that, based on the chosen strategy, capital

is managed in a way that balances the price of equity with the price of borrowed capital. Investments lead to a change in the resource mix and a change in position towards competitors. Changes are not always positive and investments do not always end in the desired outcome. It happens that, after investing, companies not only fail to raise capital, but also lose it (Djuricin et al, 2011). Numerous changes, and above all the globalization of business, have led to the development of businesses, the emergence of new organizational structures and management methods. The presented organizational structures are the basis by which strategists will be determined in building a structure through which they can realize the defined strategy, and with it, set long-term strategic goals, primarily related to the allocation of funds and resources of the company. The company must adapt its structure to changes in the environment and strategy. The decision on the type of structure is one of the most important preconditions for the successful implementation of a business strategy. The choice of the investment strategy, which defines the development behavior of the company, should be based on the analysis of the driving forces in the branch and the identification of limiting factors of investment. It is necessary to create such an organizational structure that will enable the success and implementation of a formulated and adopted investment strategy. Strategy and structure are interconnected and interdependent so that neither structure can be created without knowledge of strategy, nor have effective strategies without adequate structure. The wave of business diversification has led to the creation of relatively independent organisational units with the status of profit centers. Such structuring of business units based on a strategic vision assumes the presumption of an appropriate degree of responsibility for the business results of each. This, again, it assumes the presumption of the coordination of activities on the basis of the strategic vision of the company, as well as the establishment of benchmarks for the performance of individual departments, so that the assigned factors of production can be used effectively (Todorović, Milisavljević, 1991). There is no perfect organization. The organizational structure does not evolve on its own, nor intuitively. Implementation of the best organizational structure models does not guarantee success, but this is why wrong, inadequate and insufficiently professional application of the organizational structure leads to poor business performance and failure to meet the set goals. Adequate organisational structure is a prerequisite and prerequisite for any meaningful and efficient business (Cvetković, 2002). Defining the organisational form and structure of a business requires analytical thinking and a systematic approach. The company strives for the organisational structure that enables the greatest business success. None of the existing forms of organisation is "universal" because each has serious structural weaknesses and limited applicability to particular types of work and specific tasks. The best solution is the structure that will enable the employees to perform the assigned tasks and contribute to the realization of the established goals, among which the allocation of funds and resources of the company, that is, the investment engagement of capital, is particularly emphasized.

#### **4. ROLE AND SIGNIFICANCE OF WORKING CAPITAL IN THE COMPANY**

The total capital which a company has at its disposal, depending from its characteristics, is divided into two groups, namely:

- 1) Fixed assets include: intangible assets, property, plant and equipment, biological assets, long-term financial placements and long-term receivables;
- 2) Working assets include: inventories, receivables based on sales and other receivables, long-term financial placements, cash equivalents and cash, entry VAT and prepayments and accrued income

Working assets represent a part of operating assets which, as a rule, transfer their value at once to the product of the new value in use (Rodić, et al, 2015). Working assets are those assets which are, within one reproduction cycle, transformed from initial form – money (N) – into

final form – money (N1). The length of the reproduction cycle mostly depends from the length of the technological process. In most cases, it lasts less than a year, and since the other stages of the reproduction cycle (purchase stage and execution stage) are much shorter, it can be concluded that transformation of working assets from initial into final form is performed within one year. Some of the most important characteristics which differentiate working assets from fixed assets of the company are the following (Aragon, 1989, Gitman, 1991.):

- Working assets are more liquid than fixed assets;
- Investments into working assets provide lower income than the investments into fixed assets;
- Financing from short-term sources bears higher risk degree than financing from long-term sources;
- Funds from short-term sources can be obtained much faster than the funds from long-term sources and financing from short-term sources is more flexible in comparison with financing from long-term sources.

Fixed assets will be transformed to cash by means of depreciation or sale at much slower pace, so the working assets are more liquid, and the higher the share of working assets in total operating assets of the company is, the smaller is the risk from company's insolvency and vice versa (Ivanišević, 2008). As opposed to liquidity, increase of ratio of working assets in relation to total operating assets, i.e. increase of share of working assets in total assets, influences decrease of total rentability, because investments into working assets, as a rule, provide lower income rate than investments into fixed assets. Pursuant to paragraph 4.5. of the International Financial Reporting Standards for small and medium companies, the entity should classify capital as working capital if (Group of authors, 2014.):

- It is expected that it will be executed, or if it is kept for sale or consumption, during regular business cycle of the entity;
- It is kept primarily for trading purpose;
- It is expected that it will be executed within twelve months from the statement date; or
- If it is cash or cash equivalent, except if its exchange or use for settlement of liabilities is limited during at least twelve months from the reporting date.

Needs for working capital vary depending from the company's activity, and they depend from production dynamics, conditions for raw material supply, dynamics and amount of sale, scope and dynamics of services and other. Adequate management of working assets should provide optimal level of net working assets of the company as an interrelation between working assets and short-term liabilities. Ratio of profitability and risks conditioned by the scope of net working assets with which the company operates depends from working capital management. It should also contribute to choice of the most favorable strategy for financing working assets. Each individual item of working capital has its own specificities and requires special analysis by adequate company services. For example, the company must strive towards optimal level of inventories which enable undisturbed performance of activity with the lowest costs. On the other hand, the appropriate level of inventories is always necessary for normal operation of the company, but inventories cause costs of keeping, adjustment and holding and bear the risk from statute of limitations and loss of value. The key aspects in terms of receivables management relate to the policy of credit financing of the buyers, loan conditions and policy for collection of receivables, which are subject to very fast changes due to sharp competition on the market. Efficient management of cash and securities should secure balance between profitability and liquidity in sense that the surplus cash is profitably invested without endangering liquidity. Sudden oscillations in net cash flow can be most depreciated by sale and purchase of short-term securities.

The companies in which short-term liabilities are disproportionate to cashable working capital encounter insolvency problem and all of the negative consequences caused by that problem. Due to the above-mentioned, timely reaction is necessary in order to overcome insolvency, and the companies have numerous options for doing that, such as pre-structuring of assets, increase of asset turnover and extension of deadlines for payment of liabilities. Besides the above-mentioned, additional cash assets can be achieved from sale of unused fixed assets, sale of raw materials which exceed minimum inventories, lowering prices of finished products and other measures. In order for the liquidity policy to be properly managed, work of all company functions needs to be harmonized (financial, purchase and sale, investment), controlled indebtedness, optimum level of inventories, appropriate level of liquid reserves, plan for cash inflow and outflow, as well as choice of method of financing of working assets. In order to achieve optimum level of liquidity, the company has to know well and control the length of its operating and cash cycle. Business cycle represents average time which passes from the moment of purchase of materials until the moment when receivables are collected from the buyers, and cash cycle is the average time which passes from the time when the cash is separated (payment of liabilities to suppliers and worker earnings) until cash is received, i.e. collection of receivables from buyers. Basic objective of the company in terms of liquidity is the shortening of the cash cycle, i.e. increase of coefficient of cash turnover. The higher the coefficient of cash turnover, less cash is used in operations and costs related to cash keeping are decreased. These effects can be achieved by means of strategies for cash management, such as faster collection of receivables from the buyers, extension of deadline for payment of liabilities to suppliers and other short-term liabilities, as well as more efficient management of inventories. Financial management is significantly more complex in international business environment due to action of the following factors (Besley, Brigham, 2015.): different currency denomination, differences in economic and legal environment, language and cultural differences, role of the government and political risk. Business decisions are more difficult to adapt, i.e. change, when the rules, regulations and business culture significantly differ in various business environments.

## 5. CONCLUSION

Implementation of an investment strategy requires adaptation of businesses in terms of changing, refining and adapting their organisational structure. Organisational structuring should be in the function of both efficient management of the business activities of the enterprise and investment management. Organisational structure is an essential element of a company's potential that determines its strategic position. In this sense, the structure must be aligned with the strategies as well as with the goals of the enterprise. Strategy and structure are interconnected and interdependent so that neither structure can be created without knowledge of strategy, nor have effective strategies without adequate structure.

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## THE KEY COMPONENTS OF THE INTERNAL FINANCIAL SYSTEM IN THE PUBLIC SECTOR – AN OVERVIEW IN SERBIA

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### ABSTRACT

*The development of internal financial control in the public sector (PIFC) of the Republic of Serbia is extremely important for the reforms of public administration and public finances in order to efficiently and effectively manage public resources and form a management culture in accordance with European Union requirements - Chapter 32. In the article, the authors analyzed the annual reports of the Central Harmonization Unit of the Ministry of Finance of the Republic of Serbia and the reports of the State Audit Institution on the functioning of the PIFC system in the public sector of Serbia for the last three years. The aim of this paper is to assess the current state of the established mechanisms of internal financial control and the progress of public sector institutions in establishing an appropriate legal and institutional framework to support the internal financial control system. The results of the analysis contribute to the identification of key barriers and weaknesses in the internal control system and provide recommendations for their improvement.*

**Keywords:** *internal control, financial management and control, risk management, public sector*

### 1. INTRODUCTION

Internal control system is one of the most important and fundamental concepts, which includes all processes aimed at successful development of the operation, always regarding achieving objectives, eliminating obstacles and avoiding ascertained violations by taking the necessary measures against them (Ujkani & Vokshi, 2019). Any system of internal control has a number of components. Firstly the system has to be established through financial and procedural rules, the system has to be operated by responsible and appropriately trained personnel, and subjected to independent review to ensure and assess whether procedures are working as intended. Usually this checking and monitoring role will be undertaken by an internal audit unit. The effective system of Internal control can provide reasonable but not absolute assurance use of resources and safeguarded of assets, also that transactions are authorised and properly recorded in a way that allows for the timely identification and correction of material errors. Internal control is vital to ensure that resources are properly managed, which at the same time strengthens the responsibility for managing these resources (IFAC & CIPFA, 2013). Internal control is based upon a system of management information, financial regulations, administrative procedures and a system of accountability as well as strong formal project management. Internal control also provides a framework for risk management, to allow organisations to both identify and mitigate risks. Internal control is vital to ensure that resources are properly managed, and that accountability is maintained. Internal control systems also contribute towards the regularity and probity of public expenditure and provide assurance that money has been spent and activities

have been carried out in accordance with any regulations governing them. Public Internal Financial Control (PIFC) is a term and concept developed by the European Commission to assist in understanding and implementing well-developed and effective internal control systems in the process EU accession.

- P - Public Sector - public sector;
- I - Internal to the organization - internal to the organization;
- F - Financial systems mainly but not exclusively - mainly, but not exclusively financial systems;
- C - Control based on internationally accepted and recognized standards - control based on internationally accepted and recognized standards.

Internal financial control in the public sector consists of: financial management and control, internal audit and the Central Harmonization Unit. The analysis of the issue of established internal controls in the public sector in Serbia in the article the authors are considered starting from the results of the Consolidated Annual Report of the Central Harmonization Unit of the RS Ministry of Finance in comparison with the findings of the State Audit Institution.

The research is based on the following hypotheses:

- H1 that there is a significant correlation between the level of the established system of financial management and control viewed from the perspective of the COSO framework and the functioning of internal controls among users of public funds
- H2 that there is a significant correlation between the improvement of the financial management and control system in a way that its functioning provides achieving the set of business goals

The aim of the article is to processing this topic by perceiving the quality of management and through reviewing the established processes of internal control mechanisms based on audit findings in relation to identified weaknesses but also the recommendations of the Central Harmonization Unit to increase the efficiency of control mechanisms. The basic research question and research problem starts from the fact that the introduction of modern models of internal control mechanisms and their establishment through the complete structure of the organization, helps managers in performing tasks, providing support to the organization in achieving goals. The authors wanted to point out that there is a significant correlation between the level of established systems of internal control mechanisms and the achievement of business goals.

## **2. REVIEW OF THE PROBLEM**

Internal financial control in the public sector includes all measures through which state revenues, expenditures, assets and liabilities are controlled and represents internal control in a broader sense. Financial management and control encompasses the entire system of financial and other control, including organizational structure, methods, procedures, and internal audit, established by the organization's management. It supports the achievement of corporate goals through support in conducting business in the organization in a correct, economical, efficient and effective manner. These are the reasons that the internal control represents an area of interest for all users of public funds, as well as for the external auditor when providing conclusive audit evidences, necessary for underlie the audit opinion (Briciu et.al, 2014). Financial management and control cover all aspects of an organization - all for business, processes and infrastructure.

They are the basic element built into one organization, not its added feature. It is effected by people at every level, not merely policy manuals and forms and also include the qualities of good management (Shambrok, 2015). They are effective when all employees and the appropriate environment function together. Financial management and control implies the entire system of financial and other controls, including organizational structure, methods, procedures, and internal an audit established by the management of the organization. It provides support in achieving corporate goals by helping to lead affairs of the organization in a correct, economical, efficient and effective manner. Internal control is a process, which benefits the organization by providing reasonable, not absolute assurance, it's a means to an end, not an end in itself that is geared toward the achievement of objectives (Shambrok, 2015). Internal control consists of five interconnected components. These components are derived from the way management conducts business, and are integrated into management processes. Although they apply to all organizations, small and medium-sized organizations can implement them differently than large organizations. No matter what the controls in small organizations can be less formal and less structured, it can still have effective internal control.

The FMC (*Financial Management and Control*) system includes the following, interconnected, elements defined in accordance with international internal control standards, which includes the COSO (COSO, 1992) framework:

- control environment;
- risk management;
- control activities;
- information and communication;
- monitoring (supervision).

It is important to emphasize that the FMC system is based on the managerial responsibility of managers at all levels who are, in turn, responsible for the proper functioning of the FMC system in the organization they manage. The control environment refers to the defined standards, processes and structure in the organization (Simpson et.al., 2016). It creates internal organization and discipline, and thus represents the foundation of the overall system of internal controls, because it reflects the "tone at the top" which also outlines the structure and flow of authority and directives within the organisation and reporting procedures (Gluer, 2012). Also, the development of financial management and control, require public companies to pay more attention to the risks and their impact on the overall business. How much the process will be developed depends on the support of the management of the public companies, but also on the established regulatory framework (Stamatović et.al, 2020). Risk assessment is a systematic process for identifying and evaluating events (i.e., possible risks and opportunities) that could affect the achievement of objectives, positively or negatively. Such events can be identified in the external environment (e.g., economic trends, regulatory landscape, and competition) and within an organization's internal environment (e.g., people, process, and infrastructure). When these events intersect with an organization's objectives—or can be predicted to do so—they become risks. Risk is therefore defined as the possibility that an event will occur and adversely affect the achievement of objectives (Coopers, 2008). Control activities are mechanisms, ie written policies and procedures in the form of procedures and measures, which should reduce the risks, which may affect the achievement of objectives, to an acceptable level. To be effective, control activities must be: appropriate, functioning consistently according to plan throughout the period; cost effective, comprehensive, reasonable; and directly related to the control objective (Shambrok, 2015). It is necessary to identify relevant information that will be presented to employees in such a form and within a time frame that allows them to perform their duties.

Information systems provide reports containing operational, financial and compliance data, which enable business management and control. In the DBSA 2013 Internal control policy (DBSA, 2013), the key principles relating to information and communication include: relevant quality information to support the functioning of the internal control system; internal communication of information, including objectives and responsibilities for internal control, necessary to support the function of the internal control system, and communication with external stakeholders regarding matters affecting the functioning of the internal control system. Monitoring and evaluation implies the introduction of a system for monitoring role, assessing the adequacy and efficiency of its functioning. Monitoring ensures that the internal controls operate as intended over time, and is accomplished through routine (on-going) activities, separate evaluations or a combination of both. Monitoring occurs in the course of everyday operations, it includes regular management & supervisory activities and other actions personnel take in performing their duties. The entire internal control process must be monitored and the quality of its performance assessed as a part of regular management and supervisory activities. Corrective actions must be taken whenever the system does not perform as intended (University of Delaware, 2012). It is important to emphasize that the system of internal controls is based on the managerial responsibility at all levels who are and that the key to the operation of effective system of internal control is the attitude of the people who are responsible for its operation (INTOSAI, 2016). The result of the control should be the confirmation that the current state is in compliance with established norms or detected deviations from such norms (OECD/SIGMA, 2017). Since internal control is not an event nor a circumstance but an array of activities that check a organizations performance and since it is established and implemented by people, the board managers expect it to provide a reasonable, not absolute, assurance that the organization's goals are achieved. The goal of control is to ensure good management and economic control of public funds, providing taxpayers with "value" for money (Ministry of Finance, 2019). The essence of internal control is a comparison that enables evaluation of the current state in respect of an accepted base for comparison which may consist of tasks, regulations or instructions. Key to the operation of effective internal control is the attitude of the people who are responsible and accountable for its operation. Among the fundamental requirements to eliminating internal control deficiencies and weaknesses particularly in the public sector is information and communication, that focuses primarily on disseminating management policies, laws, procedures and regulations relating which must be obeyed (Asiedu & Deffor, 2017). With the setting goals, financial and operational plans and other expectations, public sector organizations define control criteria (Stamatović et.al, 2020). The control exists to maintain activities at the level of expectations. Its role is to manage and reduce risk, not to eliminate it (Todorović-Dudić et.al., 2016). Therefore, the internal control system aims primarily to reduce the likelihood of a risk event occurring

## **2.1. Research questions**

Related to the problem, the research tried to answer the questions what are the key elements of an effective internal control function in the public sector of the Republic of Serbia by analyzing the annual reports. The information is based on the process of reviewing the quality of financial management and control in the comparasion with the reports of the state audit institution on the status of established control mechanisms and identified irregularities during controls enforcement. The authors of the article describe the primary insight into the obtained research results by analyzing the consolidated annual reports in order to analyze the assumptions that there is a significant relationship between established efficient FMC and audit reports. The idea of the article is based on the concept that efficient internal control system will provide more accurate business in audit reports.

Also that the establishment of financial management and control systems is important for business of public sector in Serbia. As the definition of internal control system indicates, a proper internal control system will ensure (COSO, 2013):

- Orderly and efficient running of the business
- Adherence to management policies
- Safeguarding the assets and securing as far possible the completeness and accuracy of the records
- Considering of the likelihood of error in the system of internal control.

The purpose of the Consolidated Annual Report (Ministry of Finance, 2021) is to publish the collected information on implemented activities and achieved results of users of public funds in the process of implementation and development of financial management and control system and internal audit function, and the purpose of the report is to point out recommendation for its further development and improvement. The analyzes of the controls established in the report present detailed examinations of activities within key business systems, in order to determine whether appropriate control measures exist, are being implemented and are they effective. The Consolidated Annual also contains information related to the follow - up of the recommendations made in within the framework of the annual Reports of the European Comision on the progress of the Republic of Serbia in the process of accession to the European Union and the achieved results and monitoring the recommendations made in the Consolidated Report for the previous one year. For 2020, a total of 2578 public beneficiaries submitted an annual report on the Financial Management and Control system and all received reports are included in the analysis (Ministry of Finance, 2021). The annual report on the FMC system in the part of self-assessment, consists of 74 issues grouped in five areas from the perspective of the COSO framework for internal controls. Compulsory social security organizations, public companies and ministries with administrative bodies have clearly positioned themselves as leaders when it comes to the level of assessment of the FMC system. There is a need for improvement when it comes to individual users of public funds at the local level. The assessment of the level of establishment / implementation of the FMC system is based on the 2013 COSO framework (COSO, 2013). Overall, the results for the five elements of the FMC framework, the segments of the control environment, control activities and especially the information and communication system deserve solid marks. Key areas that require additional engagement in a larger number of users of public funds are monitoring and assessment, as well as risk management. The following figure gives the average score for the elements of the FMC system by categories of users of public funds.

*Figure following on the next page*

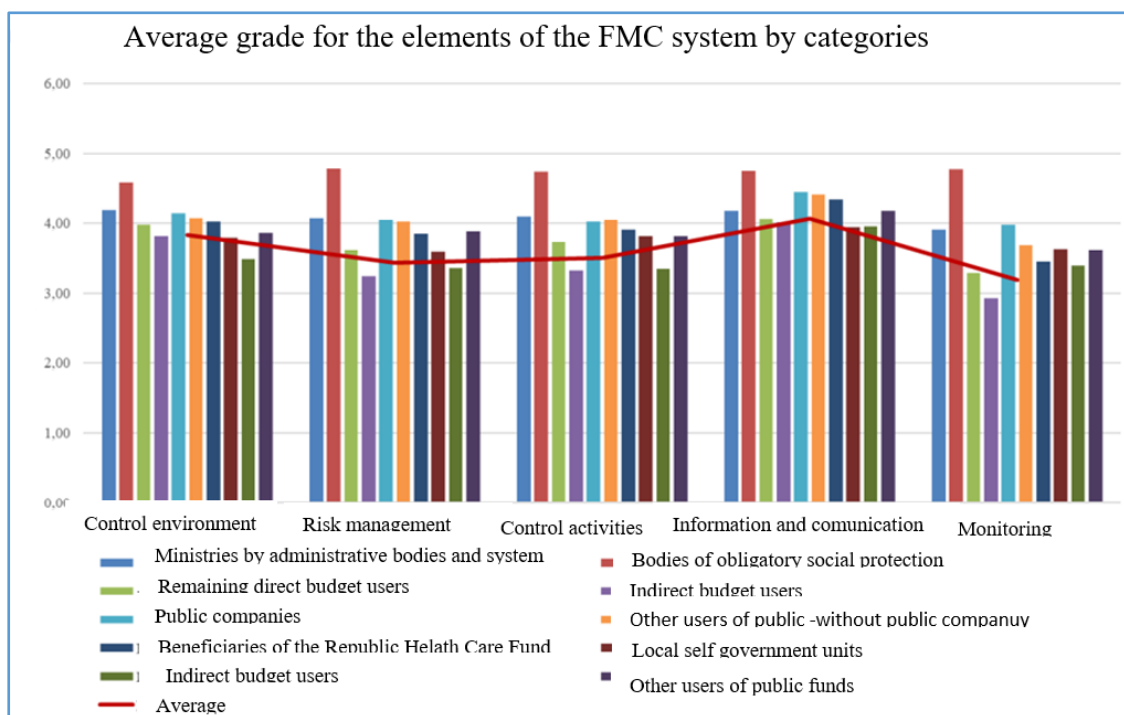


Figure 1: Average score for the elements of the FMC system by categories of users of public (Source: Consolidated annual report for 2020 (Ministry of Finance, 2021))

The analysis of results by levels and categories of users of public funds shows that at the central level in most cases better results are expressed compared to the local level. This outcome is not surprising, especially when it comes to indirect budget users who show unsatisfactory results in all categories. The mentioned findings can certainly be connected with the insufficient confidence of the management of indirect budget users that the system of financial management and control creates value - the central level 3.69 and the local level 3.79. (Ministry of Finance, 2021). We can conclude that key aspects of the control environment have been largely applied (integrity and ethical values, mission and vision as essential prerequisites, effective organizational structure, as well as clear lines of reporting). The control environment is in second place as the best applied element, with an overall average score of 3,83 (Ministry of Finance, 2021). In the area of the risk management, with an overall average score of 3.44, it is certainly necessary to make additional efforts, especially at the local level - the average score 3,38 (Ministry of Finance, 2021). It is important to point out that the results suggest that local authorities and services pay insufficient attention to the principle of identification and analysis of potential events that may negatively affect the achievement of goals. This also applies when it comes to updating the risk register. The average values of the assessments of different groups of users of public funds indicate that risk management is the second weakest element of COSO and that it is necessary to further improve it. When it comes to the principle of defining and implementing control activities through policies and procedures, most users of public funds at the central level achieve relatively good results. The link between risk and control activities is significant, so lower results on these issues may indicate the existence of errors in work, overlapping or duplication of business processes, lack of attention to these segments in the overall management of the organization by managers, as well as insufficient awareness and knowledge of these areas. Organizations with a relatively large number of employees have been shown to apply control activities better than smaller ones, and one possible, but not the only, explanation is the lack of capacity to adopt written procedures in small entities. There are reasons for progress in the areas of defining control activities, as well as in the area of project planning of IT (*Information Tehnology*) infrastructure and perception of IT security.

It can be concluded that, although some control mechanisms are already built into business processes, updating and improving business processes, or reviewing control activities that are in the function of risk management, in practice are not performed regularly. Information and communication systems represent the best segment of FMC ( *Financial Management and Control*), with an overall average score of 4,07 (Ministry of Finance, 2021). The area of monitoring and evaluation of the FMC system is the worst rated aspect - the overall average score of 3.19 and within which the highest range of average values was registered (Ministry of Finance, 2021). The total average score for all elements of the FMC system is higher by 2.14% in 2020 compared to 2019 (Ministry of Finance, 2021). The overall average score of the risk management component records the highest growth rate - 4.10%, while the lowest level of growth of the average score is expressed by the COSO element of information and communication -0.43%, which is understandable, given the high initial value. The score for the control environment recorded a growth of 1.93%, while for the element of monitoring (supervision) and assessment, the growth is 2.40% and is almost identical to the previous year (Ministry of Finance, 2021).

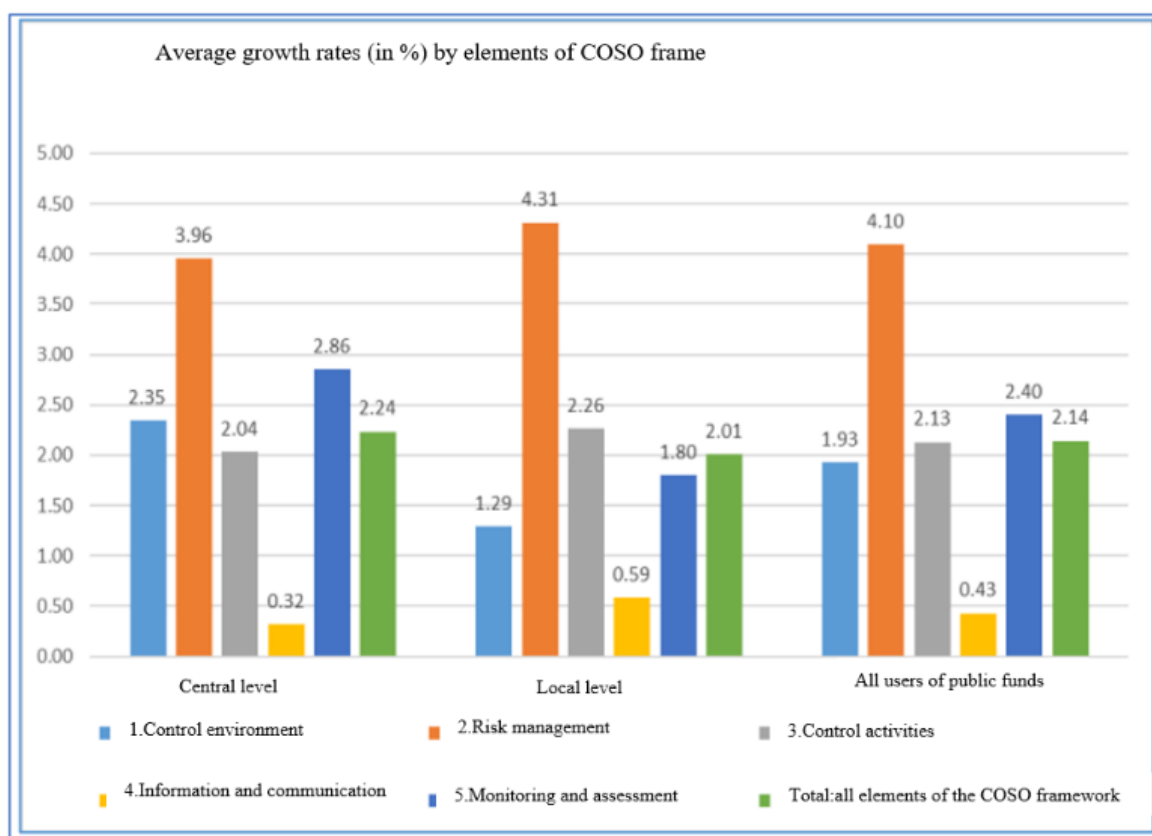


Figure 2: Growth rates of average grades by elements of the COSO framework (2019-2020)  
Source: Consolidated annual report for 2020 (Ministry of Finance, 2021)

The report points to problems when analyzing the degree of acceptance and implementation of internal auditors' recommendations. In the implementation of external audit recommendations, there is a difference in the implementation of recommendations that is present in all categories of users of public funds. The presented assessments show that the recommendations of the external audit are being implemented more at the central level with users of public funds. This information may indicate / lead to the conclusion, among other things, that some of users of public funds do not have a sufficiently developed awareness of the benefits of internal audit as a function that "adds value" to the organization (Ministry of Finance, 2021).

### 3. ANALYSIS AND DISCUSSION

Information on the state of the financial management and control system of users of public funds, in annual reports, is based on self-assessment. Users of public funds report in accordance with their vision of the financial management and control system in their organization and in relation to the information they have. In order to get a more realistic picture of financial management and control of the system in the prefix, it is necessary to take into account the external verification of the system. So the authors compared the assessments given in the previous chapter from the perspective of the state audit institution, based on their annual reports. On this basis, research questions were also asked. It is important to point out that the state audit and budget inspection test the application of financial management and control from their own angle, as well as that their recommendations continuously encourage users of public funds who are subject to audit, to dedicate themselves to improving their financial management and control systems. In 95 out of 173 of controlled entities, it was determined that there are shortcomings in the system of internal controls - 55%, as well as that internal audit was not established in an appropriate manner in 53% of entities (Ministry of Finance, 2021). The audit of annual financial statements and final accounts covers, among other things, the functioning of the system of financial management and control and internal audit. The highest number of irregularities was found in the area of control activities, and the area of information and communication was ranked second in the number of detected irregularities.

An overview of the most significant identified findings by users of public funds under the COSO framework, shows the following types of irregularities:

- non-existence or incomplete internal acts, ie procedures are not regulated or control activities are not determined, which results in irregularities;
- non-compliance of internal acts with acts of higher legal force, which is a consequence of insufficient monitoring of regulations and their amendments;
- established control activities were not carried out (eg lack of established supervision, failure to compile minutes, payment without formal and substantial confirmation of accuracy, no census was conducted);
- inconsistency of internal acts with each other.

The implementation of the recommendations of the state audit institution implies the improvement of the financial management and control system in order to have effects of control and increase compliance with regulations, which proves the first hypothesis of this article that there is a significant relationship between the levels of the financial management and control and functioning of internal controls. In addition, based on the examination of the functioning of internal controls in most entities, the reports of the state audit institution do not provide assurance that the system of financial management and control is established in such a way as to ensure business operations in accordance with the aims of the FMC. All this indicates the need to improve the system of financial management and control in all elements of the COSO framework, and it is especially important to regularly update and revise control activities, especially in the segments where the most common occurrence of irregularities in business processes (Maksimović&Stamatović, 2021).

### 4. CONCLUSION

Reviewing the quality of the financial management and control system, the annual reports aim to assess the existing system of established control mechanisms, to conduct an evaluation and support users of public funds in meeting the standards of Public Internal Financial Control (PIFC) an appropriate method.



In this paper, the authors intended to look at the way in which internal controls are integrated into the management processes of users of public funds based on the five interconnected components of the COSO framework. During the process of reviewing the quality of financial management and control, practical problems in implementation are noticed, along with proposing recommendations for further development and improvement. Taking into account the individual results and conclusions reached during the review of the quality of financial management and control systems of users of public funds in Serbia, the conclusion is that the current phase in the process of establishing a systems of internal control mechanisms is mostly at a satisfactory stratum. The main weaknesses and shortcomings were identified in the segments of risk management, human resource management, and appropriate recommendations were given. There are reasons for progress in the areas of defining control activities, as well as in the area of project planning of IT infrastructure and perception of IT security. It can be concluded that, although some control mechanisms are already built into business processes, updating and improving business processes, or auditing control activities in the function of risk management, in practice are not performed regularly, as confirmed by reports of the state audit institution. It is important to note a very positive attitude about sound financial management, and there is a high level of awareness of management responsibility. Without the commitment, support and positive example of managers in the organization who set the "tone at the top", it is difficult to successfully implement a system of financial management and control among users of public funds. There is room for improvement, by continuously improving the knowledge and skills of employees. In addition to improving the competencies of employees in this way, the organization is much easier to adapt to changes in the environment. The importance of this study cannot be overemphasized, as it primarily aims to reveal how an effective and efficient internal control function positively affects good governance and accountability in public sector organizations. It is also the intention of the authors to point out the negative impacts of inefficient internal control mechanisms on the management of public sector entities. This helps policy-makers and decision-makers in public entities become familiar with the type of good governance policy instruments that will help them shape their organizations and institutions to make them more efficient and sustainable and more focused on achieving the set goals.

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# NEW FINANCIAL FUTURE: DIGITAL FINANCE AS A KEY ASPECT OF FINANCIAL INOVATION

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## ABSTRACT

*The world of banking and finance, with the new fourth industrial revolution, in addition to the previous turn to regulations and legislation conditioned by the last financial crisis, is entering a new stage and / or epoch of development. It is about the digitalization of services and services as a higher novelty than the level of electronic services and the establishment of an alternative parallel virtual world of finance. In addition to the controversies that are still going on academically, we can state that the new world of finances casts a shadow over academic debates and establishes a new way of thinking. Modernizing banking and new services is a global process and certainly a challenge for many financial systems. The key is the scope of regulatory initiatives, the comprehensiveness and scope of the central regulator with regard to supranational and national forms of action in the growing internationalization of banking, on the one hand, and the very dynamic relationship of conflict between innovation and regulation. Taking into account the increasingly sophisticated criteria of financial consumerism and multiple differentiation of banking clients' preferences, then the question of open banking, leads us to hypothesize whether banking strives for even greater regulation than the existing one or is slowly slipping "into the hands of individual clients"? The research in this paper will provide an overview of global trends in the field of affirmation and partial regulation of digital services and banking services with a special focus on the EU, USA and Serbia. Comparative analysis of regulation in different financial systems will remain an open question for future research.*

**Keywords:** digital financial services, financial transformation, regulation

## 1. FOREWORD: GLOBAL TRANSFORMATIONAL TENDENCIES IN BANKING INDUSTRY

In the context of transformational tendencies in banking, we primarily focus on distribution channels (technologies and services) as new ways of establishing contact with clients and in that sense new fields of banking business. The traditional distribution channel, which is basically personal contact, is understood as the basis of banking, but bearing in mind that every contact with the client implies incurring high operating costs so that today's client profile increasingly differentiates personal preferences, banking abandons traditional marketing mix concepts and its business is made more efficient by applying the concepts of digital business transformation. It used to seem that the economic justification of reducing operating costs makes the banking business more profitable, but today's digital tendencies in the financial industry in general make business more competitive and thus more sustainable. Bradić Martinović, A. (2017) points out that in the past decade, dramatic improvements and cost-effective networking have enabled a far greater possibility of communication. These technologies have enabled banks to deploy services through all available channels, whereby the need to provide a single corporate network, of adequate capacity, without interruptions in work and delays in data flow is a condition for technology adaptation. Changes in customer behavior pose both a chance and a threat to a bank. Every bank that has started migrating to digital channels, transforming its physical distribution network and constantly working on improvement of its market strategies, has the opportunity to significantly improve its efficiency ratio. (Bradić Martinović, A., 2017).

In this sense, in order to meet the growing number of customer requirements, creation of new distribution models is based on the following imperatives:

- *a transition must be made from a linear funnel approach (sales funnel approach) to a multichannel approach in rendering services;*
- *it is necessary to re-design the business network in order to achieve the optimal offer through the use of different types of formats and channels;*
- *Banks must improve and amplify direct communication of high quality with clients, because this is so-called "front line".*
- *follow the trend of multi-channel integration, with the aim of acquiring clients who will be able to use each individual channel, without exclusive choice (so-called channel-agnostic).*
- *differentiate clients*
- *ensure the security of transactions" (Bradić Matrinović, A., 2017, p. 132)*

Former alternative channels take the initiative and become direct and primary channels. Banks are increasingly migrating their products to the digital arena. (Ranković, M, 2017) This reduces costs, increases the speed of distribution and the reach of offers, and users have more and more advantages and benefits because prices are lower and the possibilities of using banking products are greater (Ranković, M., 2017). However, the tendency of digital transformation of business based on innovation represents an additional challenge of adjustment for many financial and banking sectors, in terms of the volume and dynamics as well as a dilemma about the depth and comprehensiveness of digitalization of certain operational activities. For some systems, innovation is the key to success, for others it may be a path to wider macroeconomic asymmetries and distortions. Therefore, at this moment, certainly the key issue is regulation, which is the sine qua non of the global tendencies that we have mapped. The problem gets even bigger since all the relevant financial innovations and initiatives "operate on the bottom up principle", thus they start from the market and needs or represent the result of following the trends on a diffuse basis. If we were to apply such services at later stages it could create problems that we cannot always fully anticipate and thus necessarily create conditions for financial vulnerability and intervention of the central regulator. In the following overview, we will provide the framework for the regulation of initiatives and innovations in the field of digitalization of banking services that currently exist in certain banking systems.

## **2. DIGITAL BANKING IN THE EU AND REGULATORY FRAMEWORK "DIGITAL FINANCE PACKAGE"**

European banking as well as the general market of financial services is one of the highly regulated areas of economic and financial functioning of this package. However, despite these regulations, the capacity, depth and breadth of the EU financial market, the level of development of European society and economy generates innovations that exist in and out of the regulatory framework, in correlation with the latest trends in financial innovation and contribute to further development in general. The above primarily refers to the world of digital services and services in the field of finance honoring the latest technologies, as well as the increasingly sophisticated concept of consumerism of financial services. In this context, and based on extensive public consultations and discussions on digital finance, the EU Commission adopted a digital finance package late last year, including a digital finance strategy and legal proposals on crypto-assets and digital resilience for a specific financial sector of the EU that gives consumers access to financial products, while ensuring consumer protection and financial stability. The package supports the EU's ambitions for a recovery that encompasses the digital transition. This strategy "lies" in the view that digital finance can help modernize the European economy in all sectors and turn Europe into a global digital player.

This strategy supports a set of measures and steps that anticipate the dynamics, speed and guidelines of the digital transformation in the coming years, including risk analysis and consumer protection in the first place. The strategy defines four main priorities in the field of supporting the digital transformation of financial operations, namely:

- 1) removing fragmentation in the single digital market,
- 2) adapting the EU regulatory framework to enable digital innovation,
- 3) promoting data-driven financing and addressing the challenges and risks of digital transformation, and
- 4) increase the digital financial resilience of the financial system.

Acceptance of digital finance would free up additional space for further financial innovation, greater social compatibility, possible reduction of potential market asymmetries and moral hazard, and greater social inclusion. The biggest effect would be in the field of financing small and medium enterprises, which are the focus in the concept of development of the EU economy defined by the Europe 2030 strategy, support the idea of "greening" EU finances and expand the scope of EU industrial development strategy (Ristić K., 2021). As digital finance accelerates cross-border operations, they also have the potential to improve the integration of the financial market into the banking union and the capital market union, and thus to strengthen the European Economic and Monetary Union. A strong and vibrant European digital finance sector would strengthen Europe's ability to strengthen our open strategic autonomy in financial services, and thus our capacity to regulate and supervise the financial system to protect European financial stability and our values. Legislative proposals on using the opportunities offered by cryptocurrencies serve to mitigate investor risk and maintain financial stability. In this regard, the Commission therefore proposes a framework for cryptocurrencies to enable innovation in a way that preserves financial stability and protects investors. Crypto-assets are digital representations of values or rights, which are transmitted and stored electronically. They can serve as a key to accessing the service, could facilitate payments or can be designed as financial instruments. The Commission distinguishes between those crypto assets that are already regulated by EU legislation and other crypto assets. The former will remain subject to existing laws, but the Commission is proposing a pilot regime for market infrastructures that opt to trade and settle transactions by means of such financial instruments in the form of crypto assets. This should allow market participants and regulators to gain experience in using DLT exchanges to trade or record shares or bonds on a digital book. For previously unregulated cryptocurrencies, including "stable coins", the Commission is proposing a tailor-made regime. The proposed regulation sets strict requirements for cryptocurrency issuers in Europe and cryptocurrency service providers wishing to apply for authorization to provide their services in the single market. Safeguards include capital requirements, safekeeping of assets, mandatory complaint procedure available to investors, and investor rights vis-à-vis the issuer. The EU aims to further develop the European payments market so that Europe can fully benefit from the innovation and opportunities offered by digitalisation. (Ristic K., Petrovic P, 2018). The strategy focuses on: creating conditions to enable the development of current payments and payment solutions across the EU; consumer protection and providing secure payment solutions; and reducing Europe's dependence on major global actors in this field. (Ristic K., Petrovic P., 2018). Digital banking options and decentralized payment systems are appearing everywhere and offering investors, travelers, freelancers, small business owners a completely different experience in money. As a result, the number of banks they can choose from has become huge, and many people are at the crossroads of choice, trying to decide what is best for them. European challenger banks differ in terms of fees, security and support for different funds and investment services. Given the initiatives are always first ratified by the EU Commission, the impression is that the ECB does not play any role formally or substantially in the regulation of these

matters. Such practice is evident throughout the entire history of the functioning of the ECB, which almost always appears in the final phase as the mere "last reactor". However, it is also possible to defend the neoliberal bastion in the functioning of the ECB as a "last resort" bank.

### **3. NEW PAYMENT TENDENCIES: PROPOSAL ON OPERATIONALIZATION OF „QUANTUM FINANCE“ AND „DATA MANAGEMENT“ IN THE USA**

In addition to the controversies that are still going on academically in the United States, we can state that a new world of finance is "blooming" in parallel. A new system is emerging which, with the appropriate structure, returns financial control to the hands of the people (Zonenfeld, 2021). The Quantum Financial System (QFS) is building a Virtual Private Network (VPN) for the Cross-Border Interbank Payment System (CIPS). It is a network based on sovereignty and trade. To coordinate national research efforts involving federal agencies, academia, and industry leaders that are already underway, the National Office for Quantum Coordination at the White House released the Strategic Vision of U.S. Quantum Financial System Networks in February last year (2020). In short, QFS provides "inviolable integrity" in the movement of funds from central bank sources to destination accounts. This means that the key benefit of QFS is to protect all parties from corruption, loan-sharking and manipulation within the banking system and to ensure that banks are supervised and protected with respect to the agreed transfer agreement. As this author also stated, the whole system can support economic development that does not include banks, speaking of the so-called global financial sovereignty (the predecessor is found in the system of "open banking" (Goncavles CP, 2012, Zonenfeld, 2021, Popovic, Lukic, Zivkovic, 2020). It is crucial to note that with an appropriate accounting system, national banks, regional banks and umbrella banks (banks that provide all types of financial services) can play a key role in large infrastructure projects (design of roads, schools, towns and villages, etc.), while independent groups can incorporate their own components into vital infrastructure that are not burdened by financial intermediaries, such as small agricultural cooperatives, alternative energy networks, and alternative supply chains. Quantum finance is an interdisciplinary field, in which theories and methods developed by quantum physicists and economists are applied to solve financial problems. It represents a branch known as econophysics. Although quantum computational methods have been around for quite some time and use the basic principles of physics to better understand the ways to implement and manage cash flows, it is mathematics that is actually important in this new scenario (Bagarello F., 2014). In the case of an interest-free system, it must be established that an appropriate "reset" means that there is no dependence on credit or debt that results in the excessive conversion of assets into financial instruments ("overfinancialization"). In other words, we do not have to add unnecessary units and zeros to our transactions or the ways in which we create or produce the assets that we want to redistribute and from which we independently generate income. This brings us back to the use of artificial intelligence (AI). AI-applied automation can be used to more efficiently use cost-saving gains in supply chain production, and AI calculations can be used to amortize the risk of adverse effects (externalities) arising from assets created, converted into financial instruments and distributed for market needs. In short, financial assets are treated in such a way that they are not separated from their sustainable real-world utilities, in order to cover all the changing environmental values that ultimately determine its value. (Faccia A., et al, 2014). As the author pointed out, there is a potential lack of tokenized digital currencies in this monetary ecosystem, and that is that they generally have to be designed to be entirely quantum tolerant. In other words, the goal is to monitor and preserve the natural value of each asset by amortizing the risk in real time. At this point, it is not clear how exactly QFS is booked and in which specific book-keeping system. Meanwhile, the institutional redemption of bitcoin stocks is a signal that a real battle is taking place to control the financial system. Regardless of how this will play out, it is clear that there are many options for booking and structuring assets

that are commensurate with the changing conditions we face around the world. The author believes that the set of emerging global currencies may respond to these socioeconomic and socioecological variants. QFS is claimed to be the "undisputed ruler" in photon technology at 3.5 trillion frames per second. This replaces the outdated dynamic IP routing with real physical authentication using GPS between sender and receiver, while maintaining "100% financial security and transparency for all currency holders". As mentioned, the AI component is a cause for concern, as AI systems — whether through deep learning, natural language processing, or quantum imaging — mimic human and biological behaviors.<sup>1</sup>

#### **4. REACH OF NBS REGULATION – PURPOSE, PROPOSALS AND PERSPECTIVES: WEB SERVICES OF NBS**

Based on the current sentiment in the NBS, we find that the scope of support for digital business transformations is focused primarily on helping legal entities and not so much on the regulation of digital services in banks. Moreover, this is not negligible given the capacity of our banking market and that the decisions of the NBS "cover" the key fields of business policies of banks in Serbia. In that sense, the NBS designed and operationalized the WEB service. Through a web service system, the National Bank of Serbia enables legal entities to automate access to the offered data and to use them in their information systems in a way that best suits their needs. Thus registered users of the web-service system get the opportunity to access the public data of the National Bank of Serbia through a consistent set of program interfaces. In this way, these users are enabled to integrate the offered data into their information systems and to use them with the help of a wide range of programming technologies. It is important to note that the web service system does not allow access to data through ready-made visual interfaces. This service allows users to develop their own application modules and use the data in a way that best suits their business needs, primarily for business analysis and projection. The web service system of the National Bank of Serbia consists of a set of services:

- 1) Service for access to basic codebooks
- 2) Exchange rates list service
- 3) Service for access to the current exchange rate list
- 4) Service for access to exchange rates for foreign exchange transactions
- 5) Service related to the investment units' value of voluntary pension funds
- 6) Service for access to effective overnight rates
- 7) Service for access to the register of account holders
- 8) Service for access to the register of received unexecuted forced collection orders
- 9) Service for access to the register of participants in the insurance market
- 10) Service related to the usage statistics
- 11) Service for access to the list of entities registered in forced collection

The advantages of using the service are certainly simple integration of NBS public data into software systems of service users, constant (24 x 7) access to data from each computer of any user who has Internet access, reduction of risks caused by human factors and cost reduction (automation of data access process). The right to access and usage of the system services is provided to legal entities and entrepreneurs who have successfully completed the process of joining the web service system of the National Bank of Serbia. By joining the system, the user automatically acquires the right to use both free-of-charge and payable services from the web service system of the National Bank of Serbia. We find that such a step forward of the NBS is tracing faster integration of data on market participants with data management systems in commercial banks in accordance with applicable regulations and thus faster adaptation to the challenges of business digitalization.

<sup>1</sup> <https://medium.com/our-new-nature/quantum-finance-de47b8b046a8>

This step-by-step approach seems to be an adequate way to consistently build a controllable banking system and financial market in general, especially since it is a small open economy amidst highly regulated banking sector, shallow and narrow financial market and restrictive monetary policy.

## 5. CONCLUSION

Digital transformation is certainly a global process, making this "pathway" inevitable. The pace along this pathway and adaptation to change will depend on the capacity of national economies, the stability of the financial system and the capacity of institutions. Digitization is based on the mechanisms of inclusion, innovation and efficiency and thus allows the assumption of impact on the broader context of economic and sustainable development, but reviewing certain institutional solutions, practices and proposals in this paper we find different approaches based on different opportunities and macroeconomic diversity. It is obvious that such conditions are inevitable, unavoidable and increasingly present in the future, given the stated differences in positions in the global race. Hence, we conclude that regulation will have to have a global tone, given that in a real context we live in a world of integrated financial systems.

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## RETURN ON GREENFIELD INVESTMENTS IN HOTELS AND RESORTS IN CROATIA

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### ABSTRACT

*After Croatia achieved its independence, its tourism underwent a twenty-year process of transition laden with all the problems and contradictions of the economic and social development of the state. Tourism and the hotel industry mostly ran its business using the existing inherited infrastructure, usually investing into the renewal and reconstruction of business objects. The only significant change in the tourist offer was the notable increase in the number of accommodation units in the so called "private accommodation sector." Since the establishment of the Croatian state there have almost been no larger greenfield investments in tourism, and there is still a large number of unrestored accommodation units in the hotel industry of the Croatian coastal area. Moreover, alongside the Croatian coast there is a number of built locations, such as former military barracks and industrial plants, which have a tourist potential, but are currently waiting to be given a function. Besides, the investments in Croatian tourism are far lower than expected, whereas the global capital to be invested in tourism is passing by Croatia. The reasons for the insufficient investment in the Croatian tourism in the former period can be divided into two groups of limitations: administrative barriers and investment cost-effectiveness. Administrative barriers are an issue linked to the advancement of the process of investment into tourism and political will, and are therefore obvious and solvable. The return on investments into tourism is a more complex question linked to a number of influences coming from the internal and external business environment. Consequently, the feasibility of investments into the hotel industry is extremely dependant on the economic and tourism system it belongs to. It is thus very important to understand the key factors of influence and the return on investing into the Croatian hotel industry in order to make the investments sufficiently attractive to the capital. The defined problem and research subject lead to the hypothesis which will be tested in the present research: H1: Greenfield projects (investments) in hotels and resorts show a low return on investment.*

**Keywords:** greenfield projects, return on investments, feasibility, tourism, hotels, resorts

### 1. INTRODUCTION

The Croatian Parliament has ("Sabor") unanimously adopted the Strategy for the development of the Croatian tourism until 2020 with the aim to make a step forward in the development of its tourism. The Strategy presumes the realisation of total investments in tourism of 7 billion euros in the named period, while the hotel industry as the key initiator of the investment cycle is seen as one of its developmental principles.

The strategy suggests that two types of investment projects in the hotel industry are planned:

- *Brownfield* projects (investments) relating to the modernisation of the existing, but time-worn accommodation offers and the touristification of the unused state asset (military barracks, industrial plants, etc.)
- *Greenfield projects* (investments) represented by newbuilds, but mostly oriented toward the already employed areas and/or urban spaces.

On the other hand, the analysis of the Croatian tourism and the Strategy for the Croatian tourism clearly show the need to attract investments in the hotel industry in order to advance the accommodation structure. The global investment in hotel transactions has been estimated in the amount of 60 billion dollars which represents a growing trend in the last few years especially in Europe, so a key question is why this capital is passing by Croatia. According to the information given by the Croatian Ministry of Tourism, in 2018 the overall sector investment amounted to the record-breaking 940 million euro, the sum of 425 million relating to investments in the public sector, and 626 million euro in the private sector. Such an investment dynamic is still insufficient to achieve the aim set by the Strategy. Besides, almost all the planned investments are done in *brownfield* projects, while there are no new *greenfield projects* realised. The defined problem and research subject lead to the hypothesis which will be tested in the present research: H1A: *Greenfield projects (investments) in hotels and resorts show a low return on investment*. Literature gives a good theoretical base to understand the problem area and construct a model for the assessment of cost-effectiveness. However, each business environment demands for a specific approach. The topic about investments in the Croatian tourist industry has still not been scientifically covered, while the hotel practice has different approaches to it. Since the future growth of tourism in Croatia significantly depends on investments in the hotel industry, understanding the problem area and finding solutions which would increase the return on investments has consequently become extremely important for the Croatian tourism. Former research and articles deal with general models of analysis of investment into the hotel industry and cover investments into the hotel industry in the global business environment. The hotel practice in Croatia often discusses the low return on tourism investments, especially in greenfield investments, but a research which would factually support these viewpoints has not been conducted.

## 2. METHODOLOGY

The notion of low or high economic cost-effectiveness will be determined so to establish the acceptable rate of return of long-term investments in Croatia based on the expected rate of return for similar investments in developed countries and the calculation of the premium for states of risk. The premium for states of risk is an additional risk linked to investments in international companies compared to investments in domicile companies. The premium for states of risk is higher for developing countries than for developed ones. Low economic cost-effectiveness will be the one which is lower than the expected cost-effectiveness for investments in Croatia, whereas high cost-effectiveness is the one with higher cost-effectiveness taking into consideration the weighted average cost of capital. Various scientific and research methods are used in the research. The methodology includes the critical analysis of recent domestic and foreign scientific and professional literature covering the field of tourism, the hotel industry and finances. Special attention is paid to the secondary research of the touristic sector of the Republic of Croatia so as to offer an adequate description of the hotel industry and the need for investments in the accommodation facilities of the Croatian tourism. Furthermore, all the actual available secondary data which contribute to better understanding and presentation of the structure, business performance and need for investment in the accommodation facilities of the Republic of Croatia have been studied.

To understand the analysis of investments in the hotel industry, special attention was paid to former scientific knowledge specifically linked to the analysis of investments in tourist projects. The paper presents the application of general methods of project investment analysis in the tourism sector. The data necessary for the empirical part of the research were collected in the primary research using the questioning method, with a semi-structured reminder of the interview with a target sample of professionals in the field of hotel industry and investments in the hotel industry. The data were used for the needs of the assessment of greenfield investments in the Croatian littoral. To better understand the distribution of the value added, i.e. rate of return on investments, it is necessary to identify the key indicators of success in doing business (KPI – Key Performance Indicators) which are the main “creators” of the value added for a certain economic activity. Each industry has its specificities, and therefore differences in the key business indicators. In the analysis of hotel companies’ businesses, it is important to analyse the overall key indicators for the hotel company (income, operative earning – EBITDA, the share of pay checks costs, market capitalisation, the company net debt, etc.), as well as the operative indicators of the success of a single accommodation unit in the company portfolio (RevPar, TRevPar, GOP, GOP%, etc.).

### 3. CALCULATION AND ANALYSIS OF THE RATE OF RETURN ON GREENFIELD INVESTMENTS IN THE HOTEL INDUSTRY

To come to the data necessary for the assessment of return on *greenfield* investments, which there were almost none in the observed period, semi-structured interviews with a convenient sample of experts in the field of hotel industry were conducted. According to the panel of experts, the parameters which needed to be assessed and defined in order to assess the return on *greenfield* investments are:

- The estimated construction value of an accommodation unit for:
  - a) hotels and resorts with averagely 4 or 5 stars
  - b) 5-star hotels and resorts
  - c) camp sites with averagely 4 or 5 stars
  - d) 5-star camp sites.
- The estimated structure of investment costs (land and infrastructure; preparation of the project; construction of the accommodation facility) for:
  - a) hotels and resorts, and
  - b) camp sites.
- The estimated ratio of debt and capital during structured investments.

The panel of experts with whom individual, semi-structured interviews were conducted was a targeted one and it included five experts in the Croatian hotel industry. The employed research instrument was a semi-structured reminder for the interview. Besides the parameters important for the assessment of greenfield investments, the experts were asked to answer open-ended questions and:

- Name the reasons why in Croatia there are no significant *greenfield* investments in the hotel industry
- Suggest possible national measures to enhance *greenfield* investments
- Estimate the space for future potential *greenfield* investments in the Croatian littoral, and
- Suggest measures to prevent the further “apartmanisation” along the coast.

To calculate the rate of return on investments in the touristic asset it is important to understand the value of the tourist real property before investments, make projections of the business during a certain period, and estimate the value of the real property after investments and business

stabilisation. Although there are three methods of estimating values, in the hotel industry the base for the estimation of the real property value is usually calculated by the income method which is based on business results projections and the calculation of the asset economic value. The model of the calculation of the tourist real property economic value was applied to calculate the return on investments in the hotel industry of the Croatian littoral. The model is adapted so that it can simply calculate the rate of return on investments as part of the currently prevailing mode of management and investments in the hotel industry sector in Croatia where currently the largest investments are done by Croatian hotel companies which are at the same time property owners and operation companies. Figure 1 is a graphic representation of the model for the calculation of return on investments in the hotel industry of the Croatian littoral. Two projections are made for each project: the "Investment" scenario and the "No investment" scenario. After the conducted analysis their estimated operational profit (EBITDA), investment maintenance (FF&E – Fixture, Furniture & Equipment) and fixed costs are calculated as to gain free cash flow for the year prior to investments and for the ten-year period after investments. The operational profit (EBITDA) represents the difference between all the income and costs of business running, fixed costs and investment maintenance are identified as the key indicators necessary to calculate the net cash flow for each business year. In the tourism business the basic means or assets never "disappear" but change their value. The model employs a ten-year period to do business estimations, while the fifth business year is seen as the year for the stabilisation of the business after investments. The model allows for the calculation of the investment amount in one or more years (depending on the business event). The terminal value is calculated in the tenth business projection year, and has an important role in the calculation of investment cost-effectiveness, especially in the calculation of the internal rate of return for investments.

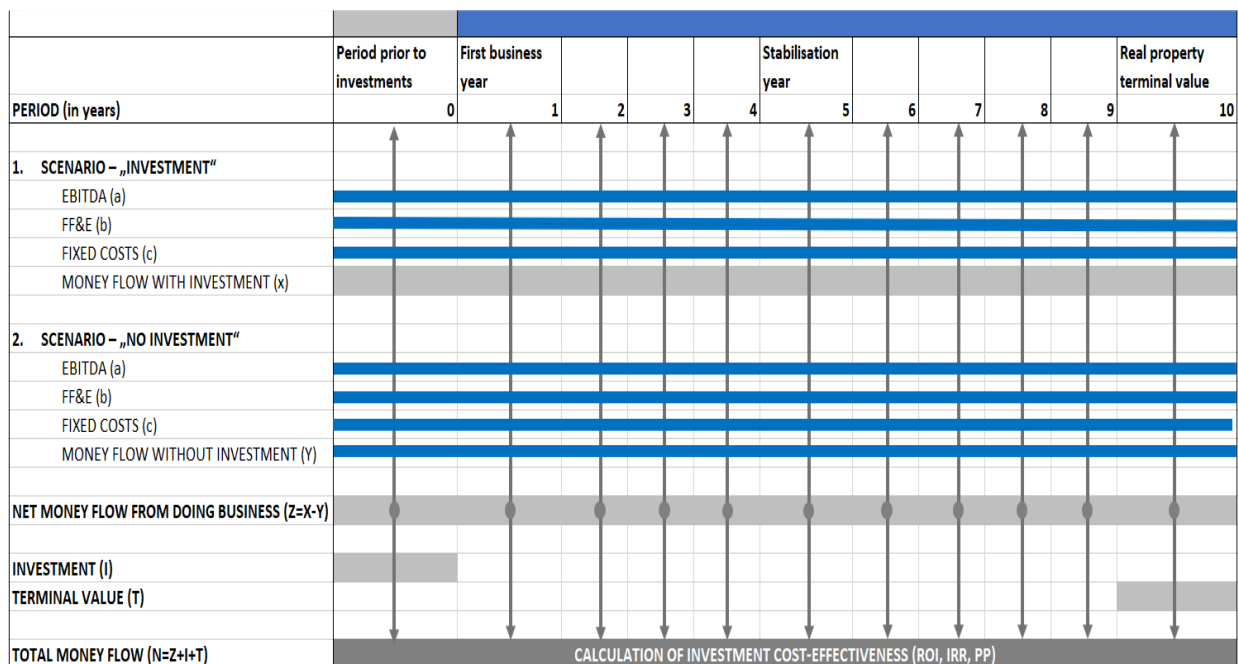


Figure 1: Graphic representation of the model for the calculation of investment cost-effectiveness in the hotel industry  
(Source: author's work)

After data are collected, the analysis conducted and the parameters for the calculation of results determined, the calculation of the investment cost-effectiveness is done using the model. It is of key importance to calculate the free cash flow (N) in the project for each business year.

The free cash flow (N) in a certain period is calculated according to the following model equation:

$$Nt = Zt - It + T = ((xat - xbt - xct) - (yat - ybt - yct)) - It + T$$

Where:

$xa$ = EBITDA (operational profit) gained from doing business in the “Investment” scenario

$xb$ = investment maintenance (FF&E – Fixture, Furniture & Equipment) in the “Investment” scenario

$xc$ = Fixed costs in the “Investment” scenario

$ya$ = EBITDA (operational profit) gained from doing business in the “No Investment” scenario

$yb$ = investment maintenance (FF&E – Fixture, Furniture & Equipment) in the “No Investment” scenario

$yc$ = Fixed costs in the “No Investment” scenario

$Z$ = net cash flow from doing business, i.e. the difference between the estimated net cash flow in the “Investment” scenario and the “No Investment” scenario

$I$ = Total investment in the project

$T$ = Terminal value or estimated value of asset in the tenth business year

$t$ = number of business year

$Nt$ = cash flow in total (calculated for each  $t$  business year)

After the net cash flow of the project for each business year is calculated, starting from year zero before investments to year ten after investments, the above formula is applied to calculate the indicators of investment cost-effectiveness. To do a quality cost-effectiveness analysis of investments into the hotel industry the following indicators of investments cost-effectiveness are used:

- 1) Internal rate of return on investments (IRR)
- 2) Rate of return on investments (ROI)
- 3) Investment payback period (PP)
- 4) Tourist asset value (AV)

What follows is the presentation of equations for the calculation of indicators of investment cost-effectiveness.

### 3.1. Internal rate of return (IRR)

$$0 = NPV = \sum_{t=1}^T \frac{Nt}{(1 + IRR)^t} - I$$

Where:

$Nt$ = net cash flow during period  $t$

$I$ = total investment in the project

$IRR$ = Internal rate of return on investments

$t$ = number of business years

To calculate the IRR with an equation, an NPV equal to zero should be set and a discount rate ( $r$ ) determined, which is, in fact, the internal rate of return (IRR). However, due to the nature of the equation, the IRR cannot be analytically calculated, but has to be calculated by the method of trials and errors or via a software programmed for the calculation of IRR. Broadly speaking,

the higher the project income, the more attractive the project. The internal rate of return is especially used when the attractiveness of an investment wants to be compared to other investments. With regard to this, the internal rate of return on investments is the key indicator for the determination of a certain tourism investment cost-effectiveness compared to the investors' expectations, since IRR can be compared to referent alternative investments. Thus, the conclusion about the attractiveness of investing into hotel projects can be drawn.

### 3.2. Return on investments (ROI)

The return on investments (ROI) is a measure of success used to estimate the investment effectiveness or to compare the effectiveness of a number of different investments. ROI tries to directly measure the amount of an investment return compared to the investment amount. To calculate ROI, the investment return has to be divided by the investment amount. The result is expressed as a percentage or ratio.

$$ROI = \frac{N5}{I}$$

Where:

*N5* = net cash flow in the fifth (stabilisation) business year

*I* = total investment in the project

*ROI* = rate of return on investments

### 3.3. Payback period (PB)

The payback period is the number of years necessary to return the investment. In other words, the period of the return on investment is the length of time in which the cumulative return on investment is equal to the investment amount. The shorter the return on investment, the more attractive the project. The equation applied to calculate the return on investment period depends on whether the periodical cash income from the project is steady or inconsistent. Regarding investments in the hotel industry, they are usually inconsistent regarding periods, so PP is calculated applying the following equation:

$$PP = ta + \frac{Ntb}{Ntc}$$

Where:

*ta* = the last period *t* where the cumulative cash flow is negative

*Ntb* = the absolute value of the cumulative negative cash flow in the period\*

*Ntc* = net cash flow in the period after the *tb* period

\**Ntb* is calculated without a negative sign.

### 3.4. Terminal tourist asset value

The terminal tourist asset value will be calculated by the direct capitalisation of future cash flow.

$$T = \frac{Zt10}{K}$$

Where:

*T* = estimated asset value in the tenth business year

*Zt10* = annual net cash flow obtained in the tenth business year

*K* = capitalisation rate

In the estimation of the terminal value the capitalisation rate is calculated on the basis of the average achieved return on investments in tourist assets. The estimation of the capitalisation rate height is very important for the calculation of the terminal value of asset, and in general for the calculation of the asset value (AV) in any business period. The lower the expected rate of return on investments in tourist asset, the higher the multiplier (capitalisation factor) and value of tourist asset, while the higher the rate of return, the lower the multiplier and asset value. After the indicators for the return on investments into the hotel industry of the Croatian littoral are calculated, it is necessary to reach the conclusion whether an investment is cost-effective or not. The same percentage of return on investments in a project is not equally cost-effective for each individual investor because it depends on the weighted average cost of an investor's capital (WACC). In other words, the rate of return on investments has to be equal or higher than the total cost of capital (weighted) of an investor. The cost of capital for a hotel industry investment project is calculated as the weighted cost of capital of the project structured financing or as the investor's cost of capital. According to Orsag<sup>1</sup>, a single cost of capital, whether it is the cost of the principal ( $kS$ ) or the cost of debt ( $kB$ ), is usually presented as the function of the risk-free interest rate ( $kF$ ) and the risk premium ( $kR$ ):  $kS$  (or  $kB$ ) =  $kF + kR$ . The risk-free interest rate represents the income of the risk-free asset where there is no change in the income, i.e. price. This means that at least two characteristics of risk-free asset are present, that there is no default risk and re-investment risk. Risk-free asset exists in the condition of a perfect market, but not in real-world conditions. Therefore, there are certain substitutes for risk-free asset used in practice. Among the substitutes, state securities are dominant. They are considered to be free of a more significant default risk, since the state, as the safest debtor, can easily re-finance its debts, while as a last resort it can also service its debts by the power of its monetary authority. The cost of debt can be seen as the demanded income on debts of the joint stock company in the moment when the capital cost is calculated. One of the ways in which it is determined by the investor is the historical cost of debt, but there are other methods, too. Since the cost of capital for a specific project of investment in the hotel industry depends on the investor and the model of structured financing of the project, the investment success should first be analysed on the bases of profitability before the financing cost so as to neutralise the impact of capital cost. Equally so, in practice, when there is a hotel industry investment, the first to be analysed is the rate of return on investment, and only after that the possible way of financing the project is discussed, keeping in mind to maintain the cost of capital of a project as low as possible, and the projected profitability for the investor as high as possible. According to Orsag, S. and Dedi, L.<sup>2</sup>, since there is a problem of determining the risk premium for the whole Croatian stock market, the risk premium should be determined starting from the risk premium of mature, big and transparent capital, or stock markets. Such a risk premium is lower than the one that should be applied to determine the capital cost on capital markets which do not meet the conditions to be placed among mature, big markets. Therefore, to estimate the capital cost ( $kR$ ) more precisely, the risk premium of mature markets ( $kRM$ ) should be magnified by the risk premium of the country which includes along with the default risk other risks on the capital market ( $kRZ$ ). In such a way the overall risk premium can be noted:

$$(kR): kR = kRM + kRZ.$$

Orsag, S. and Dedi, L.<sup>3</sup> explained that the risk premium of a mature market, i.e. the risk premium of the principal, should be sought for on the American stock market due to its size,

<sup>1</sup> Orsag, S., Poslovne financije, Avantis, Zagreb, 2015., p. 553.

<sup>2</sup> Orsag, S., Dedi, L.: Elaborat o izračunu omjera zamjene dionica (u postupku pripajanja društava Hoteli Makarska d.d. društvu Imperial d.d.), Ekonomski fakultet Zagreb, 2019., pp. 45.-46.

<sup>3</sup> Orsag, S., Dedi, L., pp. 45.-46.

trading tradition and a very good statistical base. Moreover, the risk premium of a mature market can be found in a number of other traditional markets such as, in European conditions, the British and German markets. In that sense, it can be founded on the premium of just one market or the average risk premiums of a mature market can be used. The methodological approaches differ regarding the chosen market index, time horizon, use of historical or implicit measures, etc. For the needs of this paper it has been decided that it is best to use the recommended sizes. The risk premium of a mature market calculated according to Damodaran (2019) was used. His risk premium of a mature market is set at **5.96%**.<sup>4</sup> Damodaran's statistics is available on his personal web page<sup>5</sup> (2019) and it offers the estimated risk premiums in different countries. Such an estimation was also made for the capital market, i.e. the stock market of the Republic of Croatia. This risk premium equals to **4.17%** and relates both to the default risk and to the risk premium of the sole market in the sense of a higher risk of investing in a market which is not sufficiently developed, sufficiently deep and wide, where the liquidity level is not satisfactory and which is not transparent enough. In such a way the total risk premium for the Croatian stock market equals **10.13%** as the price of the principal risk, and it has the structure:

$$10.13\% = 5.96\% + 4.17\%.$$

For the needs of this research, the price of the principal risk of 10.13% for the Croatian market is used as the return and represents the cost-effectiveness limit of the return on capital for investments in the Croatian hotel industry. Such a premise starts from the assumption that capital which can be invested in any part of the world achieves a return of 5.96%, but if the same capital is invested in Croatia the risk premium of 4.17% should be added, which leads to a total of 10.13%. The return of 10.13% relates to the minimal wanted return on capital investment in Croatia. Investments in the hotel industry are ensured by the tourist asset and are rarely financed by a 100% capital investment. Most of the projects of investing in the Croatian hotel industry is financed by structured financing, i.e. a combination of debt and capital. In regard to that, to determine the limit of the project cost-effectiveness, the achieved IRR should be compared to the weighted cost of capital of an average investor in the hotel industry of the Croatian littoral. It has already been explained that each investor has its own weighted cost of capital which depends on the ratio between debt and capital and the cost of the debt and capital. For the needs of this research the definition of the cost-effectiveness limit was determined by the weighted average cost of capital of the investor in the hotel industry based on the expected cost of the principal and the average share and cost of the debt of an investor in the Croatian hotel industry. The same was done after the desk research and interviews with professionals in the hotel industry which led to the average share of debt and cost of debt. The cost of capital for a project of investment in the hotel industry can be simply expressed as a weighted sum of the average cost of debt and the cost of a regular principal:

$$kI = (D/I) \times kD + (G/I) \times kS$$

Where  $kI$  = weighted cost of capital,  $kD$  = cost of debt/credit interests,  $kS$  = cost of the principal. The value of the debt ( $D$ ) and the principal ( $G$ ) correspond to the total value of investment ( $I$ ).

The research has shown that the largest part of investment projects in the hotel industry is financed with a share of debt of 50% to 70%, and that the average cost of debt, i.e. the interests and correlated costs of financing after taxation amount to 2% to 4%.

<sup>4</sup> Web stranice Aswath Damodaran: <http://pages.stern.nyu.edu/~adamodar/>

<sup>5</sup> Web stranice Aswath Damodaran: <http://pages.stern.nyu.edu/~adamodar/>



To calculate the weighted average cost of capital for investments in the Croatian hotel industry the ratio of debt and capital of 40%:60%, the cost of debt of 3% and the return on principal/capital of 10.13% were taken. The mentioned assumptions led to the calculation of the weighted cost of the total capital for investments in the hotel industry which represents the minimal satisfactory limit of cost-effectiveness:

$$5,8\% = (0,6 \times 3\%) + (0,4 \times 10,13)$$

In other words, all projects which achieve the return on investments measured via the internal rate of return which is lower than **5.8%** are not satisfactory cost-effective projects, whereas those which achieve this or a higher rate of return on investments are satisfactorily cost-effective. To make a simulation of *greenfield* investments cost-effectiveness for the estimation of the business value, the average achieved income and the average operative profit per accommodation units for 4 and 5-star hotels were considered. The average business value of hotels and resorts was calculated as the average business of 4 and 5-star hotels and resorts, and it equals: TRevPar=34.384 EUR, EBITDAPar=10.968 EUR. To calculate the return on investments in better facilities the average business of 5-star hotels and resorts was considered, and it equals: TRevPar=52.123, EBITDAPar=16.249, while the estimate of the best projects regarded the top performers in the sample (TRevPar=75.068, EBITDAPar=21.582). The estimation of the value of *greenfield investments* in hotels was done based on the interview done with the experts. According to them, an average investment which includes purchasing the plot of land, preparation of the project, cost of infrastructure and construction of the accommodation facility is as follows:

- 4 and 5-star hotels and resorts – on average 150,000 EUR per built accommodation unit
- Hotels and resorts of a higher quality (5 stars) – on average 220,000 EUR per built accommodation unit

The calculation of the defined inputs related to business and height of investment per accommodation unit shows that the return on greenfield investments of investment in hotels and resorts of the littoral which have 4 and 5 stars is in the range of 3.0% to 3.3% of the internal investment rate of return (IRR). The projected number of years needed to make a return on investments is 13.0 to 13.5, with a return on investments in the stabilisation year of 6.3% (ROI). It is a positive fact that top performers can achieve a satisfactory internal rate of return on investments (IRR) of 7% and the return on investments in the period of 10.6 years. In other words, in the current environment, the average business led by hotels and resorts is not sufficient to justify the height of the necessary average investment per accommodation unit of 150,000 EUR for 4-star hotels and resorts and 220,000 EUR for 5-star hotels and resorts. It is important to note that according to experts the cost of the land plot and infrastructure is relatively high considering that the hotel business does not justify it. To put it simply, the averagely achieved results in the Croatian hotel industry are still lower than those in the Mediterranean primarily due to the impact of a high seasonality, the construction costs are almost at the level of European prices, the land is relatively expensive, while the taxes imposed on the hotel industry and investments are relatively unfavourable when compared to the competition. Such a mix of inputs results in greenfield investments of investment in the hotel industry being relatively unfavourable and unprofitable. The good news is that the best Croatian projects show a satisfactory cost-effectiveness which indicates that investments should be stimulated and motivated. A positive step forward has already been seen in the best hotels and resorts. A simulation of the impact of a lowered VAT rate on investment cost-effectiveness has been done (what was simulated was the diminution of the current tax rate of 25% on the catering industry and 13% on accommodation to an overall 10%).

On average, the diminution of the VAT rate will increase the investment cost-effectiveness measured by the internal rate of return (IRR) **by 1.7 percentage points**, in the range of 1.3 to 2.1 percentage points. The equalisation of the Croatian VAT on tourism with those on the Mediterranean can increase the return on investments, but still not sufficiently enough to say that the average investment in hotels and resorts is profitable. An additional simulation of the impact of incentives on investments has been made pursuant to the Investment Promotion Act. The model considered the highest possible incentives on investment for large companies of the total amount of 25% for the first 50% of overall investments, and an additional 25% on the other 50% performed investments. The achieved incentives are realised by corporate tax exemption in the period of 10 years, while in the model they are calculated in the maximal amount achieved in the terminal value. Investment incentives may increase investment cost-effectiveness measured by the internal rate of return on investments (IRR) for an **additional 1.6 percentage points**, in the range of 1.3 to 1.5 percentage points.

Indicators of investment cost-effectiveness								
Hotels and summer resorts		IRR	ROI	Return years	Investment per accommodation unit	TrevPar	EBITDARar	Tourist asset value per accommodation unit (10,25xEBITDA/SJ) EUR
Total average		3.0%	6.3%	13,0	150.000	34.384	10.968	112.422
Average 5*		3.30%	6.3%	13,5	220.000	52.123	16.249	166.552
TOP performer		7.00%	8.2%	10,6	220.000	75.068	21.582	221.216
Indicators of investment cost-effectiveness – VAT effect								
Hotels and summer resorts	+IRR p.p.	IRR	ROI	Return years	Investment per accommodation unit	TrevPar	EBITDARar	Tourist asset value per accommodation unit (10,25xEBITDA/SJ) EUR
Total average	1.7%	4.7%	7.3%	11,9	150.000	34.384	12.370	126.795
Average 5*	1.3%	4.6%	7.0%	12,6	220.000	52.123	17.761	182.047
TOP performer	2.1%	9.1%	9.6%	9,7	220.000	75.068	24.643	252.594
Indicators of investment cost-effectiveness – the effect of tax incentives on investment								
Hotels and summer resorts	+IRR p.p.	IRR	ROI	Return years	Investment per accommodation unit	TrevPar	EBITDARar	Tourist asset value per accommodation unit (10,25xEBITDA/SJ) EUR
Total average	1.6%	4.6%	6.3%	11,0	121.875	34.384	12.370	126.795
Average 5*	1.6%	4.9%	6.3%	11,4	178.750	52.123	17.761	182.047
TOP performer	1.3%	8.3%	8.2%	9,0	178.750	75.068	24.643	252.594

*Table 1: Simulation of the return on investments in greenfield 4 and 5-star hotels and resorts (Source: author's work)*

The simulation of the impact that the diminution of the VAT rate has on tourism and the inclusion of tax incentives indicates a seriously high impact these measures have on the investment cost-effectiveness. The combination of these two measures can practically double the internal rate of return on investments in hotels and resorts. The simulation of greenfield investments in hotels and resorts based on the conducted research on the amount of investments and the average business results shows an average internal rate of return on investments (IRR) of 3.0% or 13 years necessary for the return on investments. The conducted research has proved that *greenfield* investments in hotels and resorts are not profitable. The H1 hypothesis is confirmed because the internal rate of return of 3.0% is significantly lower than the minimally expected internal rate of return of 5.8% on investments in Croatia. The limitation of the conducted research is the precision of the simulation in studying the investments in *greenfield investments*. Namely, since there were no true greenfield investments in Croatia, the calculation of the internal rate of return on investments (IRR) had to be done based on the simulation which included as inputs the average business results of 4 and 5-star hotels and resorts on the one

hand, and the cost of investment per hotel or summer resort accommodation unit obtained by experts during the interview on the other. Such an approach is a simulation of the possible return on investments which does not represent the real situation, but a calculation based on assumptions. This should be taken into consideration when interpreting the results.

#### 4. CONCLUSION

Considering that in 25 years' time there has been no *greenfield* investment, and that in the Croatian spatial plans there are almost 600 tourist locations which have not been invested in, the problem of the economic return on investments in the hotel industry comes as obvious. Furthermore, the number of built hotels and resorts in Croatia per citizen and per square kilometre is below the average when compared to similar tourist destinations. Therefore, it is important to understand the key elements of the Croatian hotel industry business, the cost of accommodation facility construction and expected returns in order for the public sector to create better conditions and equalise the business and investment conditions for the hotel industry with competitive destinations, thus stimulating the development of high-quality tourism for which there is obviously a high potential. The development of *greenfield investments* in the hotel industry is extremely important for the future development of tourism in Croatia. *Greenfield investments* of investments into new hotels, resorts and camp sites of a higher quality can diminish seasonality, increase expenditure, improve working conditions in the tourism sector and open year-long jobs, initiate investments, increase the multiplicative effect of tourism – especially in relation to agriculture, civil engineering, small entrepreneurship and crafts. This research has shown that the key limitation to the implementation of *greenfield investments* is the low investment cost-effectiveness. The possibility for a change in the tax policy should be investigated. The changes should be oriented toward the creation of “investment packages” with tax and other reliefs for investors in the hotel industry, such as tax reliefs on capital profit, investments into infrastructure (electricity, water, sewage, roads, beaches) necessary for the development of the hotel project, labour tax reliefs in the hotel industry, and all the other measures which can increase the return on investments in the current business market conditions, thus making *greenfield investments* cost-effective.

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## THE IMPACT OF THE PANDEMIC ON THE FREE MOVEMENT OF PEOPLE IN THE EU: CAN SCHENGEN SURVIVE COVID 19?

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### ABSTRACT

*The Schengen area of freedom of movement refers to the unique area of freedom of movement of persons within the territories of 22 EU member states and four non-member states, between which the internal borders have been abolished, whereas the flow of goods within the EU single market has been accelerated. In the near future, this area should include all EU member states and thus equate the area of freedom of movement without internal controls with the area of freedom of security and justice of the EU. The abolition of the internal borders implies the abolition of control barriers and police controls on the movement of people and goods at the internal borders of EU member states, without jeopardizing interstate agreements on the demarcation of state borders. The reintroduction of border controls at the internal borders is a measure envisaged by secondary legislation, i.e. the provisions of the Schengen Borders Code. Despite clear rules and criteria for their re-establishment, member states often use this measure as a universal means of resolving crisis situations, which confirms the survival of introduced controls at internal borders since the outbreak of the migrant crisis in 2015 and especially the reaction of the member states since the COVID-19 pandemic. Under EU law, after the Treaty of Amsterdam, and especially after the Treaty of Lisbon, internal border controls became a thing of the past by establishing guarantees of the absence of any kind of control at the internal borders. In reality, we are witnessing the reintroduction of internal border controls by EU member states applied as a "magic wand" for resolving crisis situations. The research in this paper is focused on the freedom of movement of people and the reintroduction of border controls at the internal borders, with special emphasis on the consequences of the pandemic on freedom of movement. The topic of the research is of national importance as well, since the Schengen and the external borders are an integral part of the harmonization of national legislation with Chapter 24 (Justice, Freedoms and Security) of the *acquis communautaire* in the process of EU accession.*

**Keywords:** *The Schengen area of freedom of movement, COVID-19 Pandemic, Internal and external borders, Schengen *acquis*, EU institutions*

### 1. INTRODUCTION

The Schengen area of freedom of movement is synonymous with Schengen integration including the specificity of its origin, development, and the achieved level of functioning. Initiated within the framework of the political dialogue between the member states of the European Community (hereafter “the EC”) at the time, the primary goal of its establishment was to remove obstacles to the full enjoyment of the right to freedom of movement and facilitate the movement of goods within the single market.

This required the abolition of internal border control in all EC member states that were, however, prevented from fully exercising the freedom of movement of EC citizens within the territory of all member states due to the fear of an increase in crime and the preservation of sovereignty over security issues. In general, the very idea of abolishing and transferring national border controls from internal to certain external borders of other member states and thus consequently involving risks to national security was considered a "nightmare" that prevented reaching a unanimous agreement of all member states and establishing stronger relationships within the EC legal framework at the time. Freedom of movement of people within the common economic space, as one of the four fundamental freedoms, was guaranteed by the founding treaties; however, it was not available to all categories of people. This prompted France, Germany, and the Benelux countries to establish closer cooperation in areas such as border controls, migration, issuing of visas, police and judicial cooperation (Agreement and Convention, OJ L 239) partially and formally outside the EC legal order by special agreements (The Schengen Agreement of 1985 and the 1990 Convention on the gradual abolition of checks of the movement of member states' citizens at their common borders, hereafter "the Schengen integration").

## **2. THE SCHENGEN AREA OF FREEDOM OF MOVEMENT IN EU LAW**

Initially, it was rather difficult to assume that a separate, non-institutional, security form of cooperation of a small number of EU member states based on international agreements could become a single area of freedom of movement that includes 22 states today. The Schengen area of freedom of movement owes its origin, expansion, and development to the inclusion of Schengen integration in the EU legal framework (Vasilkov 2017, 86). The introduction of Schengen integration into the EU legal order was carried out by Protocol No. 2, adopted by the Treaty of Amsterdam (TEU 1997). The Protocol and the provisions of the TEU establish closer cooperation open to all Member States and link it to the development of an area of freedom, security, and justice, offered by the Union to its citizens as a new goal. Under the new legal regime, all decisions passed within the Schengen integration have become the Schengen *acquis*; the obligation of accession for all future EU member states has been established, as well as the obligation of both old and new member states to abolish border controls at their borders to ensure freedom of movement of people and goods within the EU. The abolition of border controls at common borders is often referred to as the abolition of the internal borders and is performed after fulfilling the technical and operational criteria, while simultaneously increasing the level of protection and strengthening the security of the external borders (EU) of member states. The institutions of the EU, primarily the Council of the European Union (hereafter "the Council") and the European Commission (hereafter "the Commission") have acquired new competencies. The Council (composed of the Ministers of Justice and Home Affairs) has replaced the Schengen Executive Committee in the management and enactment of legislation and taken over the future development of the Schengen *acquis* in the areas of the external borders, police, and criminal justice cooperation within the third (intergovernmental) pillar of the EU. By amending the founding Treaty of Amsterdam, the Council gained a competitor in the shaping of the Schengen area legislation, since the Commission that had been previously entirely excluded from this type of integration, obtained authorization to take the initiative in proposing legislation on freedom of movement and monitoring the implementation in member states. The competence of the Commission extends to the Schengen *acquis* related to freedom of movement integrated into the EC law (the first pillar) as well as to its future development. Thus, freedom of movement and other policies regarding freedom of movement have become part of a supranational form of cooperation, qualified majority voting in the Council, and co-decision with the European Parliament in the adoption of all future EU legislation.

At the time of the entry into force of the Treaty of Amsterdam, the Schengen integration consisted of 13 EU member states. Following the largest enlargement of the Union in 2004 and the fulfillment of the special conditions for the accession to the Schengen area by nine new member states (Council Decision 2007/801/EC), as well as the inclusion of non-member countries, first Norway and Iceland (Council Decision 1999/437/EC), and later Switzerland (Council Decision 2004/860 / EC) and Liechtenstein (Council Decision 2008/261/EC), the Schengen area has become a unique, recognizable area of freedom of movement in a global context. The mechanism of joining the Schengen area for future members of the Union has changed since 1999 and consists of two phases of accession (Peers 2013, 14). The first phase is the acceptance and implementation of the Schengen acquis and accession to the Schengen area by a special agreement. The second phase is related to the abolition of internal border controls and the full enjoyment of freedom of movement. In this phase, the new states must provide evidence of the capacity to 1) take responsibility for external border control on behalf of other Schengen member states, including the issuance of visas and personal data protection. 2) efficiently cooperate with other member states of the Schengen area to ensure a high level of security and police cooperation after the abolition of controls at the internal borders, 3) fully apply the Schengen border control rules on land, sea, and air (airports) and 4) ensure the efficient functioning and use of the Schengen Information System and the Visa Information System. By the time of the adoption of the Treaty of Lisbon on the EU, the Schengen area had already undergone the largest enlargement. The entry into force of the Treaty of Lisbon (TEU 2016) which consists of the Treaty on European Union (hereafter “TEU”) and the Treaty on the Functioning of the European Union (hereafter “TFEU”), guarantees the absence of internal border controls and the implementation of common policies in the areas of asylum, migration, and external border controls, which are based on the principle of solidarity between the member states and the financial distribution of responsibilities (TFEU 2016, Art. 67). Essentially, Chapter 2 (Policies on border checks, asylum, and immigration), Title 5 “Area of Freedom of Security and Justice”, of the TFEU, aims to ensure the absence of any control on persons crossing the internal borders regardless of nationality i.e. to protect freedom of movement within the Schengen area, which depends on the security of the external borders and the control of people at the external borders. The Schengen area of freedom of movement is thus, under the norms of primary law, linked to and, as a special part, included in the broader EU area of freedom, security, and justice. The Treaty of Lisbon has enabled this by the abolishment of the division and pillar structure deeply rooted in the legal order of the Union since its founding. Consequently, the supranational model of decision-making and cooperation has been extended to the policies of the former third pillar, within which the member states firmly adhered to intergovernmental cooperation. Due to these amendments, the freedom of movement of people within the single market and the Schengen area has been completely removed from the embrace of state sovereignty by the EU law, whereas the primary EU law guarantees EU citizens’ right to the cross-border movement (Thym 2020, 3). All restrictions on freedom of movement are therefore subject to legal review and judicial control by the Court of Justice of the European Union. Protocol No. 19 on the inclusion of the Schengen acquis in the EU framework (former Protocol No. 2) has been attached to the Treaty of Lisbon. The implementation of the Treaty of Lisbon led to the enhancement of the Schengen acquis and amendments to the existing legal framework for freedom of movement of persons. A Union Code on the rules governing the movement of persons across borders (Regulation EU 2016/399), or the Schengen Borders Code (hereafter “the SBC”) has been revised. The SBC is an Act of secondary legislation, adopted in the form of a Union Regulation the legal force of which implies its mandatory implementation into national legislation of the member states. In addition to the area of border controls and movement outside the external borders of the member states, the SBC also contains provisions that define the conditions for restrictions on freedom of movement of persons and the re-

establishment of border controls at the internal borders. The reintroduction of border control at the internal borders is a last resort, in cases where member states face serious threats to public policy or internal security, in case the threats are foreseeable or imminent, or arise from serious deficiencies in the carrying out of external border control (Articles 25 to 29, EU Regulation 2016/399). Upon reintroducing internal border controls, the member states are not permitted to interchangeably, at their discretion, change the legal basis and use the Articles 25 and 28 SBC to extend the duration of border control (Carrera and Luk 2020, 50). The member states of the Schengen area attempted to prevent the migrant crisis in 2015 by introducing border controls at the internal borders and restricting the freedom of movement. Enormous pressure at the external borders has led to many years of regained control at the internal borders of the countries lying on the migration route in response to irregular crossings at the external borders, smuggling of migrants, a large number of requests for international protection, and secondary movements of irregular migrants within the Schengen area (Carrera et.al 2018, 13). Some member states, such as Austria, six years later, still refer to the migrant crisis as a basis for imposing restrictions on freedom of movement. Moreover, freedom of movement and secondary movement have been linked to terrorism and threats to national security; hence, the endless extension of internal border controls is considered a universal solution to the problem by many member states in which restrictions on freedom of movement have become the "new normal".

### **3. WILL THE SCHENGEN AREA OF FREEDOM OF MOVEMENT RECOVER FROM THE CONSEQUENCES OF THE COVID-19 PANDEMIC?**

The outbreak of the COVID-19 pandemic at the beginning of 2020 caused a panic reaction of the EU member states aimed at protecting both the population and the public health systems. The initial reaction was the use of a "magic wand" and a unilateral introduction of internal border controls as the first step in attempts to prevent the spread of the virus within a state's territory. The member states considered the COVID-19 pandemic a manifestation of a threat to public policy and internal security and a legal basis for the suspension of and restriction on the freedom of movement of EU citizens within the Schengen area. By reintroducing border controls at the internal borders, the freedom of movement of persons was sacrificed, as a substitute for a greater degree of the protection of public health and the population in the conditions of the pandemic spread. It should be noted that EU law permits a limited application of the member states' national powers in cases of serious threats to public policy. Such powers have a legal basis under Articles 72 and 347 TFEU which permit derogations from supranational legal norms. In order to coordinate and control the pandemic as well as to give subsequent legitimacy to member states to suspend and restrict the freedom of movement of citizens within the EU, the Commission has put forward two types of recommendations. The first allows member states to introduce a temporary restriction on non-essential travel into the EU (COM /2020/115), whereas the second proposes Guidelines for the introduction of border management measures to protect health and ensure the availability of goods and essential services that would mitigate the impact of the pandemic on public health and the single market (COVID-19 Guidelines, 2020). To reduce the impact of the pandemic at the external borders, primary (carried out by border police) and secondary (carried out by health workers) screening of all EU citizens and third-country nationals has been introduced, with the possibility of refusing entry to third-country nationals who present symptoms or have been particularly exposed to risk of infection. Thus, freedom of movement, as a fundamental common value of the EU guaranteed by the founding treaties, has become the "first victim" of the pandemic (EPRS Ideas Paper 2020, 2). One of the attempts to preserve freedom of movement within the EU and to harmonize the chaotic measures imposed by the member states included the adoption of the Joint European Roadmap towards lifting the containment measures caused by the spread



of the COVID-19 pandemic.<sup>1</sup> The aforementioned plan of the Commission and the European Council was intended to enable the gradual abolition of restrictions on freedom of movement in two phases. The first phase involved the abolition of border controls at the internal borders to mitigate the impact of measures on freedom of movement and the single market in accordance with the epidemiological situation and the particularities of each member state. The abolition of restrictions on non-essential travel at the external borders, i.e. for third-country nationals, was the second phase following the abolition of internal border controls or occurring simultaneously with the abolition of these controls. The criteria for and phases of lifting the restrictions were related to monitoring the epidemiological situation and the possibility of maintaining certain measures, primarily social distancing, testing, possession of negative tests, and electronic monitoring of passengers. Phased lifting of the restriction of movement ranges from the establishment of freedom of movement by gradual, partial lifting of restrictions and controls at the internal borders to the complete lifting of restrictions and controls at the internal borders in case of a favorable epidemiological situation.<sup>2</sup> Gradual lifting of internal border controls started in June, whereas easing of bans and restrictions at the external borders for third-country nationals started in July 2020 with mandatory monitoring of data on the number of newly infected cases per 100,000 residents, an increase or a decrease in infection rates compared to the previous period of 14 days, and the overall response of the state to the fight against the pandemic (the number of tested, monitoring, contact tracing, limiting the spread, treatment, and reporting) (COM /2020/399). A coordinated approach within the Union sought to control the introduction of restrictions within member states (COM/2020/499) since, during the pandemic, most EU member states introduced local and national measures restricting freedom of movement together with the reintroduction and maintenance of internal border controls.<sup>3</sup> To date, the EU Council, at the proposal of the Commission, puts forward recommendations to member states for easing and lifting travel restrictions in the EU that specify the criteria for applying these measures to third countries and updates the list of third countries to which the easing measures will be applied.<sup>4</sup> Restrictions on free movement of people, which despite easing are still in force, are subject to legal analysis, debate, and review, both at the level of the EU and within national frameworks. According to national approaches, the crisis concerning the COVID-19 pandemic proves the necessity for and the efficiency of a national crisis management model, emphasizing that the EU clearly lacks competence in the field of public health and does not possess mechanisms for uniform disease control. Furthermore, it should be noted that it is rather difficult to explain to the citizens they are obliged to accept mass restrictions on freedom of movement at the local level, whereas free movement within the Schengen area and outside the external borders should function normally. Risk management in the conditions of the pandemic at the international level, or, regarding the EU, at the supranational level, must include and be based primarily on national and local measures since the nation-state with its organization and systems of government still remains the primary frame of reference for citizens to voice their demands and needs for personal, individual protection, as well as for the protection of the society as a whole (Bossong, 2020, 2).

<sup>1</sup> See: Joint European Roadmap towards lifting COVID-19 containment measures, retrieved 25.09.2020. from [https://ec.europa.eu/info/sites/info/files/communication\\_\\_a\\_european\\_roadmap\\_to\\_lifting\\_coronavirus\\_containment\\_measures\\_0.pdf](https://ec.europa.eu/info/sites/info/files/communication__a_european_roadmap_to_lifting_coronavirus_containment_measures_0.pdf).

<sup>2</sup> See: Communication from the Commission COVID-19 Towards a phased and coordinated approach for restoring freedom of movement and lifting internal border controls Brussels, 13/5/2020 C(2020) 3250 final, retrieved 15.10.2021. from [https://ec.europa.eu/info/sites/info/files/communication\\_freemovement.pdf](https://ec.europa.eu/info/sites/info/files/communication_freemovement.pdf).

<sup>3</sup> To prevent the pandemic currently only France has imposed internal border controls, see: <https://ec.europa.eu/home-affairs/what-we-do/policies/borders-and-visas/schengen/reintroduction-border-control>, retrieved 15.10.2021.

<sup>4</sup> See the list of the countries and complete recommendations in the Council Recommendation (EU) 2021/1782 on the temporary restriction on non-essential travel into the EU and the possible lifting of such restriction OJ L 360/128, 11/10/2021, retrieved 16.10.2021. from <https://eur-lex.europa.eu/legal-content/HR/TXT/PDF/?uri=CELEX:32021H1782&from=EN>.

On the other hand, supporters of the supranational Union governance model point out that the pandemic has demonstrated the need for greater competence of the Union in the field of public health, that national crisis management models need to be better coordinated and publicly explained while the pandemic must not be utilized for political abuse, whereas reducing the scope of proclaimed human rights must be absolutely necessary and of limited duration. The clash between the national and supranational models of governance of the Union continues, whereas the consequences of the pandemic will greatly affect the future reform of the EU and the amendments to the founding treaties within a new Intergovernmental Conference.

#### 4. CONCLUSION

After the Treaty of Lisbon, under EU law, internal border controls became a thing of the past due to established guarantees of the absence of any kind of control at the internal borders. In reality, we are witnessing restrictions on freedom of movement and the reintroduction of border controls between EU member states, applied as a "magic wand" for resolving crisis situations. Freedom of movement within a single space with no internal borders and the single market is considered one of the most important achievements of the EU institutions since its establishment. Hence, imposed restrictions on and sacrifice of such freedom by member states in crisis situations indicate this achievement is vulnerable, fragile, and subject to exceeding member states' powers in order to protect public (health) policy and internal security. Conflicts between the national and supranational vision of the EU development are reflected both in the current and future challenges confronting the member states and EU institutions. The Schengen area of freedom of movement is a project providing significant benefit to the citizens, economic operators, and economies of the member states within the single market. However, its development and achievements, as well as the challenges it faces suggest that, despite advances in legislation, the implementation of measures and standards, and bringing undoubted benefits to the EU and third-country nationals, the survival of the Schengen area is nevertheless threatened by frequent imposing of restrictions on freedom of movement and reintroduction of internal border controls. It is difficult to believe that the mistrust created between the member states and the EU institutions will disappear on its own after the pandemic. Establishing an adequate balance between the supranational powers of the EU and the national competencies of the member states remains a priority for the future comprehensive EU reform. Freedom of movement, i.e. the enjoyment of four fundamental freedoms both the EU and the single market have been established on, is deeply linked to the absence of internal border controls. Thus, any threat to the Schengen area, directly and indirectly, affects human rights and fundamental freedoms, reduces economic potential and is a step backward in the achieved level of economic and political integration within the EU.

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# APPLICATION OF MORTALITY LAWS ON THE POPULATION IN SLOVAKIA USING NONLINEAR REGRESSION

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## ABSTRACT

*The mortality pattern is similar in the most countries. The infant mortality is considerably high, significantly decreasing in early childhood, sharply starting to increase in the adolescence, exponentially increasing and the rate of increase in old age gradually decreasing. The aim of parametric models is to represent this pattern using a mathematical model with a limited number of parameters. Knowing age-dependent mortality of the population is, for example, extremely important in the life insurance. The more precisely insurance company is able to estimate the mortality rate of its policyholders, the less risk of misrecital of the premiums or the incorrect deposit of funds must be borne. Based on the mortality pattern of population, insurance companies carry out many actuarial calculations (e.g. premiums, technical provisions). The source of these mortality data are life tables. The aim of this article is to use selected parametric models, known as mortality laws, to model and to compare the mortality of the Slovak population in years 1993 and 2017. Three mortality laws (Gompertz-Makeham, Heligman-Pollard and CoDe law of mortality) are applied to data of Slovak population. The subject of modelling is an age interval from 0 to 100 years divided into two parts due to accuracy of models and also higher informative value. Age-specific mortality rates for males and females ranging from 0 to 100 years in 1993 and 2017 are modelled by methods of nonlinear regression (Gauss-Newton method, Gradient method and Levenberg-Marquardt method) in the SAS Enterprise Guide software.*

**Keywords:** *Gender, Mean Squared Error, mortality laws, nonlinear regression*

## 1. INTRODUCTION

Mortality laws describe mortality through mathematical continuous functions of age. The most commonly mortality laws are expressed by the mortality rate  $q_x$ , force of mortality  $\mu_x$  and central death rate  $m_x$ . The number of parameters usually vary from two to nine. Some laws apply to the entire age range, others apply only to specific age ranges. They are used in graduation of mortality rates and reduction of the statistical error, in the construction of life tables. They are also suitable for a completion of incomplete data and they are very often used to predict the population mortality. A great source containing an overview of many mortality laws is written by Gavrilova and Gavrilov (2011) along with older literature (Gage and Mode, 1993) researching fit of some mortality models. In this paper, the database consists of the number of deaths at age 0 to 100 obtained from The Human Mortality Database (mortality.org), that provides an open, international access to detailed mortality and population data of 41 countries. We have excluded deaths over 100 years old, as there are relatively few people who live to this age.

We divided the age range into two intervals (from 0 to 50 years, from 51 to 100 years) for more accurate results and for the better graphical representation. Subject of analyses is not usually whole life span of population. Mathematicians often focus on a briefer age interval, with the most discussed being infant mortality (Andreev and Kingkade, 2015) and mortality of elderly people (Thatcher, Kannisto and Vaupel, 1998). The aim of this article is to analyse applicability of mortality laws on Slovak population and also comparing the suitability of models in years 1993 and 2017. Mortality laws are chosen to represent various aspects such as complexity and year of origin. One of the oldest is the Gompertz-Makeham law, which was the subject of countless studies. Gompertz and Makeham (G-M) models, used separately in the case of advanced age groups, assumed that the mortality rate will increase exponentially with age and the second one adds a constant, age-independent component to exponential growth. The suggestions of these authors provided good results for data from the late 19th and early 20th centuries. Interesting proposition of how this law could evolve was made by Golubev (2009). Over time a mortality pattern evolved with an increase in mortality among the young and a relative hump among the middle-aged, such that it was difficult to model the mortality with the Gompertz or Makeham law. This led to the introduction of new models known as Heligman and Pollard laws. These laws have been used by various countries (England, Sweden, Germany, Spain, United States of America and Australia) since the UN promoted the fitting of mortality through Heligman and Pollard's first law. Heligman and Pollard adjusted a new mortality law to post-war Australian data. In the more recent literature by Olivieri and Pitacco (2015) is a section devoted to the Heligman-Pollard (H-M) mortality model, Ibrahim et al. (2017) used this model in his article to forecast the mortality rates of Malaysian population and Debón et al. (2005) applied this law of mortality to the mortality data for the Valencia Region in Spain. Lastly, we look at CoDe model, which was contrived by de Beer and Janssen (2016). The CoDe model have been proposed to capture mortality delay and mortality compression. De Beer et al. (2016) used this model for age-specific probabilities of death for Japanese, French, American, and Danish men and women between 1950 and 2010 and it was applied for the mortality of Japanese women in the article of de Beer et al. (2017).

## 2. MORTALITY LAWS

Mortality laws have evolved and were modified over time. Scientists who were involved in the development of these laws often form mortality laws based on the older original mathematical functions. By adding or adjusting the parameters, they were also able to get rid of some deficiencies thanks to better knowledge about the population mortality. In addition to these, however, new mortality laws were created, based on other assumptions.

### 2.1. Gompertz-Makeham mortality law

One of the first and most successful attempts to mathematically express correlation between mortality and age was B. Gompertz in 1825. The law is based on the general assumption that a person's resistance to death decreases with increasing age. In other words, the mortality increases exponentially depending on age and the force of mortality is formulated by

$$\mu_x = B \cdot c^x \quad (1)$$

where the force of mortality is determined by two real parameters  $B$  and  $c$ , to which apply  $B > 0$  and  $c > 1$ .

A few years later, in 1860, another actuary, W. Makeham, added an age-independent element to Gompertz's formula. This component, usually referred to as  $A$ ,  $A > 0$ .

A formula has been uncovered, now known as the Makeham law of mortality

$$\mu_x = A + B \cdot c^x \quad (2)$$

This parameter shifts the curve of  $\mu_x$  by the constant  $A$ . Because it is a generalization of an already existing Gompertz relationship, it is often referred to as the G-M law of mortality. Both Gompertz and Makeham realized that their formula (2) certainly did not match the mortality pattern of the population at all ages. They already considered it to be the most precise description of the mortality behaviour of the population ranging from 20 to 60 years of age.

## 2.2. Heligman-Pollard mortality law

In 1980, Heligman and Pollard proposed several parametric mortality models that were capable of modelling the trend in the mortality pattern of the human population for all ages except the zero year and have biological interpretation. At first, they introduced the model that had 8 parameters and can be written as follows

$$q_x = A^{(x+B)^C} + D \cdot e^{-E(\ln x - \ln F)^2} + G \cdot H^x \quad (3)$$

where  $A, B, C, D, E, F, G, H$  are estimated parameters.

H-P model can be divided into 3 components. First element  $A^{(x+B)^C}$  represents the mortality of children, in which parameter  $A$  represents infant mortality and parameter  $B$  reflects the mortality rate of children at age 1 year. Parameter  $C$  mirrors a mortality rate up to the beginning of adulthood. All three parameters  $A, B, C$  take values from interval  $\langle 0, 1 \rangle$ . The second component  $D \cdot e^{-E(\ln x - \ln F)^2}$  represents mortality mainly due to accidents and as a result was given the name accident hump. Parameter  $D$  measures the height of an accident hump, taking values from  $\langle 0, 1 \rangle$ .  $E$  indicates its width and its values are positive. Parameter  $F$  represents the location of the accident hump on the age axis. The last part consists of the Gompertz mortality law and represents the mortality of adults. Parameter values are in the range  $\langle 0, 1 \rangle$  and  $\langle 0, \infty \rangle$ , respectively. Parameter  $G$  measures the baseline adult mortality and  $H$  reflects the rate of increase in mortality or otherwise the slope of the Gompertz curve.

## 2.3. CoDe mortality law

The CoDe model is one of the youngest laws of mortality. The name consists of two English terms Compression and Delay, because it allows us to distinguish the effects of densification and mortality delay of the human population. The CoDe model includes 10 parameters, of which five vary over time. The five interpretable time-varying parameters reflect delay of mortality and changes in mortality in infancy, adolescence, middle age, and old age.

Formulation of this model, where  $I(*)$  is an indicator function,  $b_1$  determines the slope of the curve of the mortality rate before age  $M - h$ ,  $b_2$  between ages  $M - h$  and  $M$ , and  $b_3$  above the modal age at death  $M$ , is as followed

$$q_x = \frac{A}{x+B} + \frac{a \cdot e^{x-m}}{1+e^{x-m}} + I(x \leq M-h) \left[ \frac{b_1 \cdot e^{b_1(x-M)}}{1 + \frac{b_1}{g} \cdot e^{b_1(x-M)}} \right] + \\ + I(M-h < x \leq M) \left[ \frac{b_2 \cdot e^{b_2(x-M)}}{1 + \frac{b_2}{g} \cdot e^{b_2(x-M)}} + c_1 \right] + I(x > M) \left[ \frac{b_3 \cdot e^{b_3(x-M)}}{1 + \frac{b_3}{g} \cdot e^{b_3(x-M)}} + c_2 \right] \quad (5)$$

Parameters  $c_1$  and  $c_2$  are constants that are introduced to avoid “jumps” in the fitted values at ages  $M - h$  and  $M$ . That is, it is required that the values of the third and fourth terms on the right side of (5) be equal at age  $x = M - h$  and the fourth and fifth terms be equal at age  $M$ . This implies that

$$c_1 = \frac{b_1 \cdot e^{b_1(-h)}}{1 + \frac{b_1}{g} e^{b_1(-h)}} - \frac{b_2 \cdot e^{b_2(-h)}}{1 + \frac{b_2}{g} e^{b_2(-h)}} \quad (6)$$

$$c_2 = \frac{b_2}{1 + \frac{b_2}{g}} + c_1 - \frac{b_3}{1 + \frac{b_3}{g}} \quad (7)$$

The CoDe model, therefore, consists of five components representing mortality in successive stages of life. The first two are used to model mortality at a young age and in an adolescence. The other three include terms that distinguish mortality in early adulthood, late adulthood and old ages. Since the adulthood is divided into three parts (young adulthood, late adulthood and old age),  $h$  is fixed at 30 years. As the average value of the modal age at death is around 80 years, choosing  $h = 0$  implies that  $b_1$  affects mortality below around 50 years (young adulthood),  $b_2$  affects mortality between around 50 and 80 years (late adulthood), and  $b_3$  affects mortality above around 80 years (old age). The  $g$  parameter is an approximate the mortality rate over age 110 years, which, according to mathematicians de Beer and Janssen (2016) is equal to roughly 0.7. We assumed the same, and thus, the resulting model after amendments to the equation (5) will look like this

$$q_x = \frac{A}{x+B} + \frac{a \cdot e^{x-16}}{1 + e^{x-16}} + I(x \leq 50) \left[ \frac{b_1 \cdot e^{b_1(x-80)}}{1 + \frac{b_1}{0.7} \cdot e^{b_1(x-80)}} \right] + \\ + I(50 < x \leq 80) \left[ \frac{b_2 \cdot e^{b_2(x-80)}}{1 + \frac{b_2}{0.7} \cdot e^{b_2(x-80)}} + c_1 \right] + I(x > 80) \left[ \frac{b_3 \cdot e^{b_3(x-80)}}{1 + \frac{b_3}{0.7} \cdot e^{b_3(x-80)}} + c_2 \right] \quad (8)$$

### 3. PARAMETER'S ESTIMATION OF NONLINEAR REGRESSION MODELS

Nonlinear parameter estimates can be obtained using different methods. The most common iterative methods for estimating nonlinear regression model parameters available in the SAS Enterprise Guide software are Gauss-Newton method, Gradient method and Levenberg-Marquardt method. They were described in depth by Aster, Borchers and Thurber (2018). Other great source (Archontoulis and Miguez, 2015) includes usage of these methods in various areas.

#### 3.1. Gauss-Newton method

The Gauss-Newton method is based on a linear approximation of the function  $f(x_i, \theta)$  by Taylor's development at a point  $\theta = (\theta_1^0, \theta_2^0, \theta_3^0, \dots, \theta_k^0)$  while maintaining only linear conditions. It gives us

$$f(x_i, \theta) = f(x_i, \theta^0) + \sum_{j=1}^k \left\{ \left[ \frac{\partial f(x_i, \theta)}{\partial \theta_j} \right]_{\theta=\theta^0} \cdot (\theta_j - \theta_j^0) \right\} + \varepsilon_i \quad (9)$$

If we denote  $f_i^0 = f(x_i, \theta^0)$ ,  $\beta_j^0 = \theta_j - \theta_j^0$ ,  $J_{ij}^0 = \left[ \frac{\partial f(x_i, \theta)}{\partial \theta_j} \right]_{\theta=\theta^0}$  we are able to rewrite nonlinear regression model to formula

$$y_i - f_i^0 = \sum_{j=1}^k \beta_j^0 J_{ij}^0 + \varepsilon_i \quad (10)$$



where  $i = 1, 2, \dots, n$ . By this modification we obtained a linear regression model. Vector  $\theta^0$  is usually called the vector of initial value of the parameters. We can also write the equation as

$$y^0 = J^0 \beta^0 + \varepsilon^0 \quad (11)$$

and so estimation of the vector  $\beta^0$  is vector  $\hat{\beta}^0$ , for which it applies

$$\hat{\beta}^0 = (J^{0T} J^0)^{-1} \cdot J^{0T} \cdot y^0 = (J^{0T} J^0)^{-1} \cdot J^{0T} \cdot (y - f^0) \quad (12)$$

and  $J^{0T}$  is the transposed matrix to matrix  $J^0$ .

Considering that  $\beta^0 = \theta - \theta^0$ , the next iteration (estimated vector of parameters)  $\hat{\theta}^1$  can be defined as

$$\hat{\theta}^1 = \hat{\beta}^0 + \hat{\theta}^0 \quad (13)$$

The procedure of expressing the dependence for other vectors is similar to (13), therefore we can write the general iteration rule using (12) this way

$$\hat{\theta}^{k+1} = \hat{\beta}^k + \hat{\theta}^k = (J^{kT} J^k)^{-1} \cdot J^{kT} \cdot (y - f^k) + \hat{\theta}^k \quad (14)$$

in which  $\hat{\theta}^k = (\theta_1^k, \theta_2^k, \theta_3^k, \dots, \theta_n^k)$ ,  $J^k = [J_{ij}^k]$ ,  $f^k = (f_1^k, f_2^k, f_3^k, \dots, f_n^k)^T$ .

The iterative process continues until the condition of convergence is fulfilled, that means until

$$\left| \frac{\hat{\theta}_j^{k+1} - \hat{\theta}_j^k}{\hat{\theta}_j^k} \right| < \delta \quad (15)$$

where  $j = 1, 2, \dots, k$  and  $\delta$  is small positive number, usually  $10^{-6}$ .

The Gauss-Newton method converges relatively well as long as at least one of the following conditions is true:

- Residuals are small, it means that the initial parameter estimation was very good.
- The regression function  $f(x, \beta)$  is almost linear.
- Residuals have alternating number signs.

### 3.2. Gradient method

The Gradient method (Steepest Descent Method) determines the global minimum function of the Sum of Square Errors  $S(\theta)$  by direct minimization. Its aim is to get from the starting point (vector of initial value of the parameters)  $\theta^0$  in the direction of the vector with the components given by the partial derivatives of the function of the Sum of Square Errors. It is a type of iterative method using a gradient of a function. The  $S$  function decreases rapidly in direction of the negative gradient. So, if we have a value of the function, then the direction of the function fluctuates in the direction of

$$\frac{1}{2} \frac{\partial S(\theta)}{\partial \theta^i} = -J^T [y - f(\theta^i)] \quad (16)$$

where matrix  $J$  is Jacobian of function  $f(x_i, \theta)$ .

Another iteration of the parameter vector  $\theta$  can be calculated by substitution into the general formula as follows

$$\theta^{k+1} = \theta^k + \lambda J^T \cdot [y - f(\theta^k)] \quad (17)$$

where  $\lambda$  represents a scalar chosen to apply

$$S(\theta^k + \lambda J^T [y - f(\theta^k)]) < S(\theta^k) \quad (18)$$

The steepest descent method is often used to determine the region most likely to reach the optimum in a procedure from the initial estimation of optimal conditions. One of the biggest disadvantages of the gradient method when solving a nonlinear regression problem is that it can sometimes converge very slowly. (Šoltés, 2019)

### 3.3. Levenberg-Marquardt method

Another popular method of estimating nonlinear regression model parameters is also the modification of simple linearization. From time to time, this method is referred to as the Marquardt compromise, because it seeks to combine the advantages of the already mentioned methods - the Gauss-Newton method and the Gradient method (see Gavin, 2019).

## 4. MORTALITY MODELLING FOR POPULATION OF SLOVAK REPUBLIC

The elementary problem of modelling the mortality rate or the force of mortality is that continuous theoretical mortality rates are estimated by statistical calculations from real data, sorted into relatively large age intervals. In other words, the instantaneous mortality rates are replaced by those calculated for the annual age range. This causes unsystematic irregularities. The mortality rates of men and women in Slovakia in 1993 and 2017 is characterized two facts. The first is the irregularities most visible over the age of 90, which can be explained by the small number of deaths and the large fluctuations in their quantity. Similar fluctuations are also at younger ages but are not so significant. So, practically throughout the whole age range, there are undesirable fluctuations that need to be eliminated in order to approach real continuous mortality rates. Such method is called graduation. The reason for graduation is also that the decreasing tendency of mortality rate is unrealistic, especially in old age. The second significant fact is the difference in the mortality rate according to sex. Throughout the age range, the mortality rate for women is lower than the mortality rate for men, which brings us to the question of whether it is fair to unify the mortality rate for men and women. Selection of the model that best describes the mortality pattern of population is one of the most important parts of modelling. There are several indicators that can be used to monitor the quality of model. One of them is the indicator Mean Squared Error (*MSE*) which we used in the article.

### 4.1. Comparison of mortality models in 1993

Neglecting of the gender factor in mortality modelling will cause an overvaluation of the female mortality and an undervaluation of the male mortality, resulting in a curve, which is sort of an average of the death rates of men and women. The mortality of men and women under 18 years old are comparable, so during this age omission of gender is acceptable. The fluctuations seen at higher ages of men's mortality curve are noticeably less volatile. Estimated parameters of selected models are record in tables 1 to 3. The results are illustrated in Figure 1. As expected, the best results for the age range under 25 years had the CoDe model. The reason is that it is the only one that is able to model infant mortality, so the *MSE* indicator was multiple times lower than with other models, exactly  $3.42474 \cdot 10^{-8}$ . In the graphs, the CoDe model is represented by a line corresponding to the CD.

At the following age interval  $\langle 26, 50 \rangle$ , the best model became the G-M model with an  $MSE$  value of  $MSE = 4.56125 \cdot 10^{-8}$ . At this interval, all of the selected models achieved very good results, which can also be seen in Figure 1. At the age range between 51 and 75 years, we can clearly consider the simplest G-M model with  $MSE = 2.36779 \cdot 10^{-6}$  as the best model again. This model is often used in mortality modelling for ages 30 to 70 years, which is also evident from Figure 1. The H-P model is considered the best model at the last observed age range of 76 to 100 years. This was also predictable because this model is known to show reliable results, especially at high ages, up to 120 years of age. Its  $MSE$  value at this interval is 0.000846197. The model that most accurately describes the mortality pattern of the Slovak population in 1993 is H-P model. Most contributed to by the fact that he had the best approximation results at high ages, which was the most problematic area for other models. The second-best model for this year is the CoDe model, followed by the G-M model. The differences in  $MSE$  for this year are very small, so all three can be considered as appropriate.

	1993		2017	
	Parametre 50-	Parametre 50+	Parametre 50-	Parametre 50+
<b>c</b>	0.000757	0.00364	0.000405	0.00497
<b>A</b>	0.000008113	0.000035	0.000004348	0.000004378
<b>B</b>	0.1359	0.0986	0.1364	0.1174

Table 1: Parameters of Gompertz-Makeham model in 1993 and 2017  
(Source: Own elaboration)

	1993		2017	
	Parametre 50-	Parametre 50+	Parametre 50-	Parametre 50+
<b>A</b>	0.0005934	0.0005934	0.0005934	0.0005934
<b>B</b>	0.010536	0.010536	0.010536	0.010536
<b>C</b>	0.9875	0.9875	0.9875	0.9875
<b>D</b>	0.000350049	0.000350049	0.000400492	0.000400492
<b>E</b>	0.9761	0.9761	8.9761	8.9761
<b>F</b>	21.568	21.568	21.328	21.328
<b>G</b>	0.0000421	0.000004906	0.000023091	5.967E-07
<b>K</b>	1.04243	0.98	1.4243	0.95
<b>H</b>	1.108	1.1327	1.1101	1.1545

Table 2: Parameters of Heligman-Pollard model in 1993 and 2017  
(Source: Own elaboration)

	1993				2017		
	Estimated parameters		Fixed parameters		Estimated parameters		Fixed parameters
<b>A</b>	0.000552	<b>m</b>	16	<b>A</b>	0.000204	<b>m</b>	16
<b>B</b>	0.0529	<b>h</b>	30	<b>B</b>	0.0462	<b>h</b>	30
<b>a</b>	-0.00029	<b>M</b>	80	<b>a</b>	0.000329	<b>M</b>	80
<b>b<sub>1</sub></b>	0.0798	<b>g</b>	0.7	<b>b<sub>1</sub></b>	0.11197	<b>g</b>	0.7
<b>b<sub>2</sub></b>	0.109	<b>c<sub>1</sub></b>	0.00308954	<b>b<sub>2</sub></b>	0.0752	<b>c<sub>1</sub></b>	-0.00392
<b>b<sub>3</sub></b>	0.1299	<b>c<sub>2</sub></b>	-0.0121639	<b>b<sub>3</sub></b>	0.1174	<b>c<sub>2</sub></b>	-0.036553

Table 3: Parameters of CoDe model in 1993 and 2017  
(Source: Own elaboration)

#### 4.2. Comparison of mortality models in 2017

The differences in mortality between men and women are getting smaller and smaller compared with the year 1993. In the future, it is possible that the differences will diminish so much that the gender factor will not really be relevant in modelling mortality of population.

Values of estimated parameters of individual models are remarked in Tables 1 to 3. Graphical comparison of selected models is displayed in Figure 2. Under the age of 25, the most reliable mortality model with  $MSE = 1.2569 \cdot 10^{-8}$  is again CoDe model and, therefore, can be considered the most appropriate at this age interval. At other ages, it does not perform as well because of its complexity, which has caused problems in finding optimal values of parameters. For this reason, it is only up to the insurance company whether to use the model as a whole or to simplify it and use it only for modelling mortality of young population until adulthood. Between the ages of 26 and 100, mortality pattern was best described by using the G-M law of mortality, which is considered to be the simplest and most used from the variety of other mortality laws. The characteristic  $MSE$  has value of  $1.84799 \cdot 10^{-8}$  on the interval  $\langle 26, 50 \rangle$ . Between 51 to 75 years its value is  $6.36436 \cdot 10^{-6}$  and finally 0.001709342 for old age.

*Figure following on the next page*

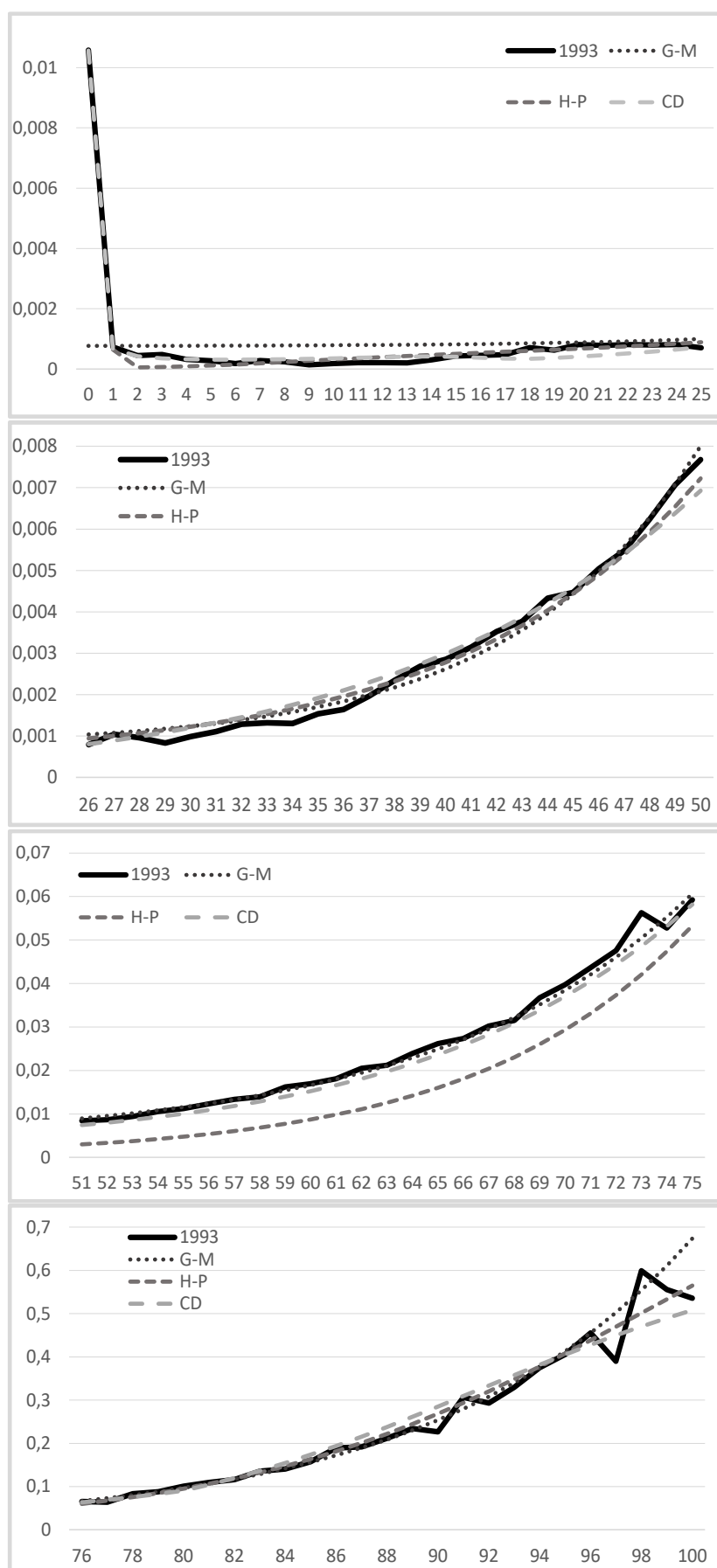


Figure 1: Comparison of models from birth to 100 years of old in 1993  
(Source: Own elaboration based on results of parameter estimation)

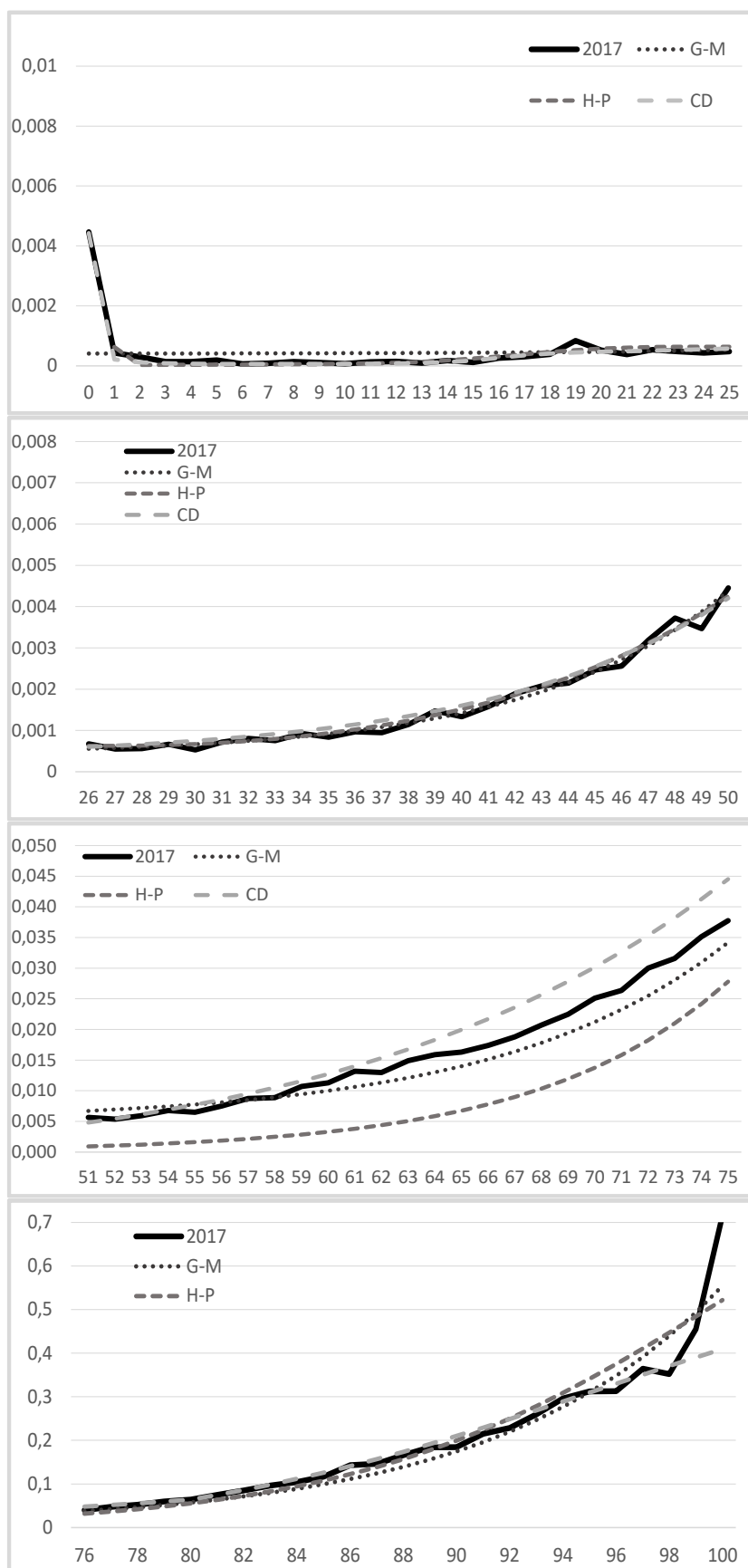


Figure 2: Comparison of models from birth to 100 years of old in 2017  
(Source: Own elaboration based on results of parameter estimation)

The G-M model had the best results throughout adulthood and at older ages, which contributed to a large extent to it being the most appropriate model over the entire age range. He outperformed more complex mortality models, which only confirms why is still used very often, although it is one of the oldest models. The second best in year 2017 was the H-P model, which showed slightly worse results. Finally, as the last of the mortality laws finished the CoDe model.

## 5. CONCLUSION

The main aim of the article was to model the mortality pattern of the population of the Slovak Republic by selected laws of mortality in 1993 and 2017 and their comparison. We analysed mortality trends between 1993 and 2017. The methods of nonlinear regression (Gauss-Newton method, Gradient method and Levenberg-Marquardt method) were used to estimate the parameters of models. The most effective method is the Levenberg-Marquardt method, which combines the advantages of the other two methods. The results of models were evaluated based on the model quality measure and accuracy of their forecast, Mean Squared of Error MSE. The subject of modelling was the age range from 0 to 100 years, which we divided into 2 parts (from 0 to 50 years, from 51 to 100 years) what contributed to precision of model valuation. For even more accurate results, it is recommend dividing the curve into more parts, where the first part would model infant mortality, the second part would deal with mortality under 20 years of age, the third part would be dedicated to so-called normal working population mortality and the fourth part would handle mortality in older years. At interval from 0 to 25 years, the CoDe model achieved the best results in each of the reference years. At other intervals, the order of the models has been changing. In 1993, the H-P model became the model that most accurately describes the mortality pattern of Slovakia's population. Most contributed to this was the fact that he had the most reliable approximation results at high ages, which was the most problematic area for other models. Finally, in 2017, the simplest and oldest G-M model had the best results. The main disadvantage of older models is a neglection of infant mortality. The CoDe model was the only one able to reliably estimate the mortality value within 1 year of life. Simpler models, compared to the more complex ones, have another weakness, the shape of the curve. Due to their unpretentiousness, they have a simple exponential shape of curve which could not be adjusted to the mortality pattern of the population in an accident hump, visible at around 20 years of age. However, no model could be considered as the best model or to be inappropriate at this age range for modelling purposes. The models competed very well with each other. Furthermore, it has been shown that it is possible to save a lot of work by using a simpler model, without significantly harming the result, if any. Although we did not determine which of the models is better, true is that we never know this in advance, but we can clearly identify the simpler one. The question for the insurance company is whether it is worth modelling mortality using complex mortality laws when those simple models reliably describe the mortality pattern of the population.

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## **PRIORITIZING AND RANKING OF INDICATORS FOR THE ENERGY EFFICIENCY MODEL IN THE SMART CITY**

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### **ABSTRACT**

*Our research is based on the concept development of the urban infrastructure system in smart cities by effectively incorporating the needs of the public authority, social and human capital, quality of life, economy, energy and environment, transport and ICT. A new model approach covers a range of influencing factors and makes a series of complex decisions. An integral approach based on the mathematical method fuzzy AHP has been used to group the whole system into different criteria/sub-criteria by experts. Using flexibility within the energy and environment is the ultimately sustainable development within the smart city infrastructure network. Key performance indicators ranked to achieve the energy conservation, emission reduction and optimization of distribution network through intelligence adjustments using data transmission, computation and analysis. New technologies can provide and make better use of existing infrastructure by attracting private investment. With proper management, planning and implementing the right renewable energy policy and model, the Republic of Serbia will be able to meet its target set for 2050 by far to provide energy and environmental demands. This model should be lead through measures means providing the energy efficiency infrastructure and sustainable development in the cities of Serbia.*

**Keywords:** *energy efficiency model, fuzzy analytic hierarchic process, renewable energy sources, smart city*

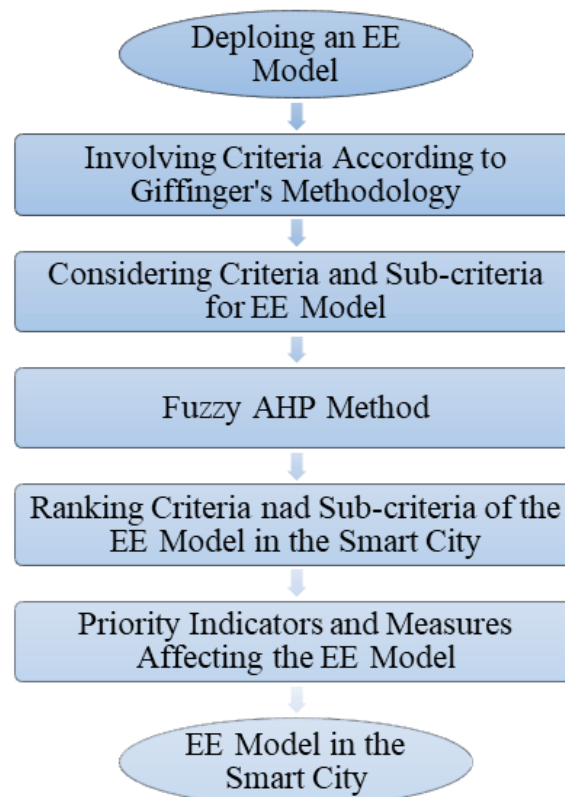
### **1. INTRODUCTION**

Urban cities need to acquire the designation of being a smart city as an icon of a brainy, compact and serviceable city [1]. However, the smart city label is a fuzzy concept, as definition and concept have neither a single framework template definition nor any commonly agreed definition which fits smart city development [2,3]. The smart city definition and conceptual framework depend on the system infrastructure to meet the growing needs of citizens while maintaining a healthy living environment and avoiding climate change [4]. By 2030, there is an expectation that the number has surpassed 2,122, with continuing growth to 2050 [5]. The need to move from coal to renewable energy is an absolute necessity, but it is equally important to examine which sources are accessible, renewable and based on energy efficiency [6]. Therefore, solutions have based on RESs, can change the quality of life, society, and economy. In that way, they can create new jobs and economically efficient activities and ensure energy independence for a wide range of regions worldwide so as for Serbia [7].

There is growing concern about environmental costs and the limited supply of fossil energy sources, and therefore, careful management of energy resources appears to be a significant factor [8]. A fuzzy analytic hierarchic process (fuzzy AHP) applies to several different types of energy problems. The fuzzy set theory introduced by Zadeh [9] and fuzzy hierarchical analysis developed by Buckley [10] has many applications in the different arrays. The most common known Giffinger definition of the smart city has given the possibility to assess the degree of smartness in 70 medium-sized European cities [11]. Energy supplies have been carried out to the power grid by a traditional top-down way, which should cope with decentralized renewable energy production [12]. In the early days of renewable energy development in Serbia, substantial potential has been recognized expectations that capacities will significantly increase in the future [13]. It has remained a gap in the financing of renewable energy and projects related to energy efficiency in the region. The mitigation of risk is significant for investors, and at the same time, limits costs for local authorities [14]. The current form of energy planning does not yet successfully address it from smart energy. Lack of local governance leads to a lack of clearly defined concrete framework conditions and guidelines for the complete energy system [15].

## 2. RESERCH METHODOLOGY

Many cities in Serbia have the potential for integrated urban development smartly, although there is still no city that may be smart. Logistics solutions of smart cities development have to consider different challenges, motivations, limitations and strategies [16]. Progress in science and technology has led to difficulties related to the city as an entity with a high concentration of population, motor vehicles and housing. The steps of an energy efficiency (EE) model are deployed and shown in Figure 1.



*Figure 1: Steps of deploying an EE model  
(Source: Authors)*

## 2.1. Involving Criteria According to Giffinger's Methodology

According to Giffinger's methodology based on six main pillars of smart cities - quantitative analysis, it is necessary to establish the assessment criteria [17]. General criteria and sub-criteria of the smart city, are shown in Table 1.

Public authority	Social and human capital	Economy	Quality of Life	Energy and Environment	Transport and ICT
support and strategic approach	openness-mindedness	local and global interconnectedness	cultural facilities	smart energy	ICT infrastructure
reliable user-friendly digital services	high level qualification	innovation	health requirements	urban planning control	local and national accessibility
transparency and using open-data	life long learning	productivity	personal safety	sustainable resource management	infrastructure availability
participation in decision making	flexibility, creativity	sustainable entrepreneurship	quality of housing	environmental protection	Sustainable and safe transport systems
public and social service provision	social and ethical identity	international cooperation	social cohesion	renewable energy resources	innovative mobility
policy making	participation in public life	labor market flexibility	tourist attractiveness	water and waste management	

*Table 1: Criteria According to Giffinger's Methodology  
(Source: Authors adapted from Albino, Berardi & Dangelico, 2015)*

The very definition of Giffinger allows it to deepen the research in this area and add a sustainability component within the environment.

## 2.2. Considering Criteria and Sub-criteria for EE Model

The public authority has helped distribution systems keep pace with integrating RESs into smart city concept. It explores how intelligent, integrated energy storage systems can support more RES online. The government adopted a Law on Utilization of Renewable Energy sources. Energy governance opens up the possibility for consumers who produce their energy to respond to prices and sell the excess to the grid [18]. These results should lead through carefully planned activities to the EE model in the urban city and give all participants a sense of something happening for a better future and that they are actors of these events. All participants expect a financial benefit, local employment, improved housing, and working comfort and environmental protection [19]. Considered criteria and sub-criteria of the smart city are in Table 2.

*Table following on the next page*

CRITERIA (G) – Grid planning				
G <sub>1</sub> - Energy monitoring and feedback	G <sub>2</sub> - Electricity services and tariffs	G <sub>3</sub> – Grid energy storage	G <sub>4</sub> - Transmission network extension	
CRITERIA (B) - Buildings construction/upgrades				
B <sub>1</sub> - Sustainable and energy efficient buildings	B <sub>2</sub> – RES electricity supply	B <sub>3</sub> - Heating and cooling systems	B <sub>4</sub> - Smart devices for building automation	B <sub>5</sub> - Passive and active solar systems
CRITERIA (T) - Contemporary Technologies				
T <sub>1</sub> - Sustainable energy technology market	T <sub>2</sub> - Sensor and surveillance technology	T <sub>3</sub> - Renewable electricity technology	T <sub>4</sub> - Involving ICT technology	
CRITERIA (C) - Climate change and low-emission				
C <sub>1</sub> - Climate change mitigation	C <sub>2</sub> - Energy access and energy security	C <sub>3</sub> - Low emission future	C <sub>4</sub> - City’s environmental footprint	
CRITERIA (W) - Water and Waste System				
W <sub>1</sub> - RES water pumping system	W <sub>2</sub> - Services for drinking water and billing	W <sub>3</sub> - Smart pipe system	W <sub>4</sub> - Generating energy from waste	W <sub>5</sub> – Global and local waste management

*Table 2: Criteria and sub-criteria for the EE model in the smart city framework  
(Source: Authors)*

Improving energy monitoring and feedback should be the point to aspects in energy management and solving problems with urban infrastructure such as monitoring, analysis, adjustment and consumption planning. Electricity costs have synchronized in real-time with demand response flows serving consumer profiles [20]. The electricity tariff policy is a key parameter affecting the economic performance of the grid system [21]. The electricity storage should be sufficient to store the planned electricity production from RES, and the electricity network has to take into account the critical surplus of electricity production [22]. Transmission network extension planning is a challenging issue, especially in the new restructured electricity markets environment. Traditional transmission extension planning needs to be revised to become more suitable [23]. Researches indicate that the AHP method applies in the decision-making process related to energy recovery and reconstruction of existing buildings through environmental protection, energy-saving and the need for sustainable ones. [24,25]. Electricity supply in urban areas has shifted to the centre of the debate on how to supply urban areas with renewable energy. Solutions based on nature, such as well-planned street vegetation, green roofs and walls have provided insulation and shade to buildings. It helps to reduce energy demand by limiting the need for heating and cooling and improving the energy performance of buildings [26]. Building automation and monitoring technical building systems have proven an efficient replacement for inspections and hold great potential to provide cost-effective and significant energy savings for both consumers and businesses [27]. Due to urbanization, climate change caused by global warming and rising levels of natural and built environmental pollution, contemporary urban and architectural practice is focused actively on the implementation of the principles of energy efficiency, construction of environmentally friendly buildings and cities, use of RES and revitalization of underused and contaminated sites [28]. At the same time, the overall progress of society has caused an increase in the needs of contemporary man and set a higher level of living standards in urban areas. Sensor and surveillance technology connects the city's entities with the network mutually and particularly. Networks have to communicate with the environment (e.g. distribution network) to optimize and adapt conditions with their behaviour. Sensors provide data collection to enable real-time resource management and public safety control information [29]. Spatiotemporal modelling of energy demands and renewable energy generation involving different technologies, decision-makers, planners and local communities are empowered to select networks of technological solutions as no-regret energy

strategies on the local and regional level [30]. As cities evolve, it is essential to evaluate improvements to infrastructure and services through climate change to promote long-term mitigation, adaptation and reduce the negative impact on the environment. Combined with an increased share of renewable electricity production, electric vehicles produce fewer carbon emissions resulting in better air quality. [10] There is a constant and growing interest in characterizing the net energy impact of ICT, which is the result of indirect effects that compensate the energy directly consumed by ICT equipment [31]. For the integrated management of water and energy in large water supply networks to reduce the energy costs of the energy-intensive water facilities via the installation of photovoltaic plants is proposed. Avoiding landfill emissions waste would be achieved to reduce emissions from fossil fuel power plants. Global and local waste management have to be used rising energy consumption through waste-to-energy technologies capable of electricity generation, heat, and biogas. The novelty of this paper is twofold. First, this study considers renewable energy sources integration in the smart city framework. Secondly, this study applies the FAHP to help energy model planning and suggests the measures affecting it.

### 2.3. Fuzzy AHP Method

A fuzzy AHP is a well-known mathematical method from before. For ranking the criteria, fuzzy AHP method has applied - the method is designed to assist in solving complex decision-making problems [32].

Let  $F(R)$  be fuzzy set on  $R$  and let  $M \in F(R)$ . If exists  $x_0 \in R$  such that  $\mu_M(x_0) = 1$ , for all  $\lambda \in (0,1)$ ,  $M_\lambda = \{x \mid \mu_M(x) \geq \lambda\}$  is the convex set,  $\mu_M$  is the membership function  $\mu_M: R \rightarrow [0,1]$  equal to:

$$\mu_M(x) = \begin{cases} \frac{x-l}{m-l}, & x \in [l, m], \\ \frac{x-u}{m-u}, & x \in [m, u], \\ 0, & \text{otherwise.} \end{cases} \quad (1)$$

For the matrix  $A$  the consistency index  $CI = \frac{\lambda_{max} - n}{n-1}$  and consistency ratio  $CR = \frac{CI}{RI}$  Value  $\lambda_{max}$  is the principal eigenvalue of matrix  $A$ . If  $CR \leq 0.10$ , assessed fuzzy elements of pairwise matrices have been accepted. For  $CR > 0.10$ , the consistency of matrices has to be improved.

In the first step of the algorithm, synthetic triangular fuzzy numbers have been calculated by using triangular fuzzy numbers from the matrix  $A = (\tilde{a}_{ij})_{n \times n}$ :

$$\tilde{S}_i = \sum_{j=1}^n \tilde{a}_{ij} \odot \left( \sum_{i=1}^n \sum_{j=1}^n \tilde{a}_{ij} \right)^{-1}, \quad i = 1, \dots, n. \quad (2)$$

To obtain an approximation of the weighting vector, it is necessary to compare the obtained synthetic triangular fuzzy numbers mutually  $\tilde{S}_i$ ,  $i = 1, \dots, n$ .

For two fuzzy numbers  $\tilde{M}_1$  and  $\tilde{M}_2$ , in case  $\tilde{M}_1 \geq \tilde{M}_2$ , the the degree of possibility is:

$$V(\tilde{M}_1 \geq \tilde{M}_2) = \sup_{x \geq y} [\min(\mu_{\tilde{M}_1}(x), \mu_{\tilde{M}_2}(y))]. \quad (3)$$

Triangular fuzzy numbers can be ranked by applying several methods. In this paper, it has been used by the total integral value method. For the given triangular fuzzy number  $\tilde{M} = (l, m, u)$ , the total integral value is defined as follows:

$$I_T^\lambda(\tilde{M}) = \frac{(\lambda u + m + (1 - \lambda)l)}{2}, \quad \lambda \in [0,1], \quad (4)$$

where  $\lambda$  is an optimism index. It explains the decision maker's attitude concerning risk: the smaller value of  $\lambda$  signifies a higher degree of risk (a lower degree of optimism). Values 0, 0.5, and 1 are represented by the pessimistic, moderate, and optimistic views of the decision-maker, respectively. If  $I_T^\lambda(\tilde{M}_1) < I_T^\lambda(\tilde{M}_2)$ , then  $\tilde{M}_1 < \tilde{M}_2$ ; if  $I_T^\lambda(\tilde{M}_1) = I_T^\lambda(\tilde{M}_2)$ , then  $\tilde{M}_1 \approx \tilde{M}_2$ ; if  $I_T^\lambda(\tilde{M}_1) > I_T^\lambda(\tilde{M}_2)$ , then  $\tilde{M}_1 > \tilde{M}_2$  [33].

According to this method, the authors have developed a software package appropriated to solve several problems of ranking indicators in process of the deploying renewables.

## 2.4. Ranking Criteria nad Sub-criteria of the Energy Model in the Smart City

The fuzzy set theory enables decision-makers to include incomplete information, unobtainable information, unquantifiable information and partially unknown facts into the decision model. The FAHP method represents an extension of the crisp AHP method, where are human assessments explained as fuzzy values. Experts have agreed with the obtained estimation and a comparison between these fuzzy numbers. Since  $CR < 0.10$  for all matrices, the assessed matrices are consistent and may be accepted. An optimism index  $\lambda$  represents an optimism index that expresses the decision maker's attitude toward risk. In practical applications, values 0, 0.5 and 1 are used respectively to represent the pessimistic, moderate and optimistic views of the decision-maker. The total integral values are  $I_T(\tilde{M}) = I_T(\tilde{M}_1) \times I_T(\tilde{M}_2)$ , but  $I_T(\tilde{M}_1)$  are values for criteria and  $I_T(\tilde{M}_2)$  are values for sub-criteria. All sub-criteria are presented by the indicators and ranked for energy model in a smart city framework such as in Table 3.

Ranking indicators	$\lambda = 0$			$\lambda = 0.5$			$\lambda = 1$		
	$I_T(\tilde{M}_1)$	$I_T(\tilde{M}_2)$	$I_T(\tilde{M})$	$I_T(\tilde{M}_1)$	$I_T(\tilde{M}_2)$	$I_T(\tilde{M})$	$I_T(\tilde{M}_1)$	$I_T(\tilde{M}_2)$	$I_T(\tilde{M})$
G <sub>1</sub>	0.3550	0.4180	0.1484	0.3392	0.4340	0.1472	0.3333	0.4399	0.1466
C <sub>3</sub>	0.2121	0.4447	0.0943	0.2131	0.4325	0.0922	0.2135	0.4276	0.0913
T <sub>1</sub>	0.2213	0.4195	0.0928	0.2358	0.3877	0.0914	0.2412	0.3747	0.0904
G <sub>4</sub>	0.3550	0.2758	0.0979	0.3392	0.2614	0.0887	0.3333	0.2561	0.0854
T <sub>2</sub>	0.2213	0.2493	0.0552	0.2358	0.2752	0.0649	0.2412	0.2858	0.0689
C <sub>4</sub>	0.2121	0.2770	0.0587	0.2131	0.2913	0.0621	0.2135	0.2971	0.0634
T <sub>4</sub>	0.2213	0.2351	0.0520	0.2358	0.2408	0.0568	0.2412	0.2432	0.0587
G <sub>2</sub>	0.3550	0.1607	0.0571	0.3392	0.1711	0.0580	0.3333	0.1749	0.0583
G <sub>3</sub>	0.3550	0.1455	0.0516	0.3392	0.1335	0.0453	0.3333	0.1292	0.0430
B <sub>1</sub>	0.1329	0.3137	0.0417	0.1325	0.3145	0.0417	0.1323	0.3148	0.0416
B <sub>2</sub>	0.1329	0.3048	0.0405	0.1325	.02930	0.0388	0.1323	0.2882	0.0381
C <sub>1</sub>	0.2121	0.1754	0.0372	0.2131	0.1768	0.0377	0.2135	0.1774	0.0379
B <sub>5</sub>	0.1329	0.1891	0.0251	0.1325	0.1988	0.0263	0.1323	0.2027	0.0268
W <sub>4</sub>	0.0788	0.3550	0.0280	0.0795	0.3392	0.0270	0.0797	0.3333	0.0266
T <sub>3</sub>	0.2213	0.0962	0.0213	0.2358	0.0963	0.0227	0.2412	0.0964	0.0232
C <sub>2</sub>	0.2121	0.1029	0.0218	0.2131	0.0994	0.0212	0.2135	0.0980	0.0209
W <sub>2</sub>	0.0788	0.2213	0.0174	0.0795	0.2358	0.0187	0.0797	0.2412	0.0192
W <sub>3</sub>	0.0788	0.2121	0.0167	0.0795	0.2131	0.0169	0.0797	0.2135	0.0170
B <sub>4</sub>	0.1329	0.1199	0.0159	0.1325	0.1247	0.0165	0.1323	0.1267	0.0168
W <sub>1</sub>	0.0788	0.1329	0.0105	0.0795	0.1325	0.0105	0.0797	0.1323	0.0105
B <sub>3</sub>	0.1329	0.0725	0.0096	0.1325	0.0690	0.0091	0.1323	0.0676	0.0089
W <sub>5</sub>	0.0788	0.0788	0.0062	0.0795	0.0795	0.0063	0.0797	0.0797	0.0064

Table 3: Ranking indicators

(Source: Authors based on data obtained from Mathematics)

The proposed method used all of the available data to define and assess the prioritization of activities in the smart city framework. Since for  $\lambda = 0$ ,  $G_4$  is of greater importance than  $T_1$ ,  $C_4$  of  $T_2$ , and  $G_2$  of  $T_4$ , the indicators of  $T$  are less significant than those of  $G$ , for  $\lambda = 0.5$  and  $\lambda = 1$ , the subcriteria have the same significance. The ranking revealed that  $G_1$  is the significant indicator related to improving energy monitoring and feedback, e.g. monitoring and adjusting to changes in consumption automatically.

## 2.5. Priority Indicators and Measures Affecting the EE Model

Based on the obtained  $I_T(\tilde{M})$  values - total integral values for  $\lambda = 1$  which represent the optimistic attitudes of the decision-makers, the top ten ranking indicators are identified. Ten priority indicators ( $G_1$ ,  $C_3$ ,  $T_1$ ,  $G_4$ ,  $T_2$ ,  $C_4$ ,  $T_4$ ,  $G_2$ ,  $G_3$ ,  $B_1$ ) are shown in Figure 2.

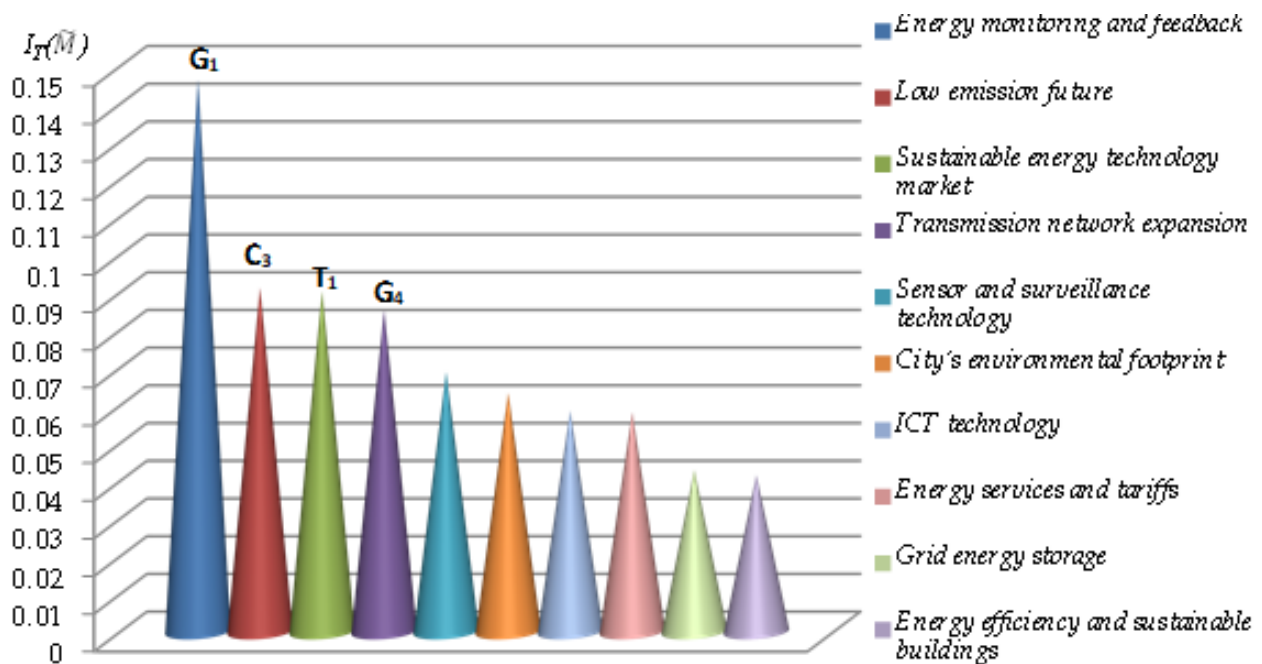


Figure 2: Priority indicators for EE model  
(Source: Authors)

Improving energy monitoring and feedback enables continuous improvement of the performances for energy grids. Renewable energy sources are involved in the system because of consume less energy and provide support to a low emission future. Since the market for RES is limited, its development is one of the priority indicators for a sustainable energy system. Serbia has undertaken for increasing new energy technology. The plan of the transmission network extension has to take its place in public programs in terms of subsidy incentives for long. Measures for top four indicators are shown in Figure 3.

Figure following on the next page

MEASURES AFFECTING ENERGY MODEL			
<b>Improving energy monitoring and feedback</b> <ul style="list-style-type: none"> <li>• Development of energy measurement and monitoring plan</li> <li>• Procurement and installation of measurement and monitoring devices</li> <li>• Collection of energy consumption data</li> <li>• Periodical analysis and interpretation of data against benchmarks</li> <li>• Feedback on energy conservation measures against expected targets</li> <li>• Recommendations for continuous improvement</li> </ul>	<b>Creating a low emission future</b> <ul style="list-style-type: none"> <li>• Transport strategy and travel planning</li> <li>• Land-use planning and development control of infrastructure</li> <li>• Development of connected ultra-low emission hubs and corridors</li> <li>• Electric pool cars and e-bikes</li> </ul>	<b>Developing sustainable energy technology market</b> <ul style="list-style-type: none"> <li>• Estimating market share</li> <li>• Facilitated cost reductions</li> <li>• Pressure on conventional assets and consolidation</li> <li>• Investor response</li> <li>• Centralized network operators</li> </ul>	<b>Planning transmission network extension</b> <ul style="list-style-type: none"> <li>• Pooling the RES from different locations</li> <li>• Favorable locations near to consumption areas</li> <li>• Declining renewable energy costs and implementing policies</li> <li>• Approving upgrades and extension to transmission lines</li> </ul>

Figure 3: Measures for 4 priority indicators  
(Source: Authors)

### 3. CONCLUSION

The approach to energy implies that the processes in the governance and the mobility, as well as in the life of citizens, take place with lower economic costs and a higher degree of social and ecological sustainability - a higher standard of the population with reduced pollution increasing protection of nature. In that sense, appropriate policies, such as energy, economic, social, environmental policies, which, with sustainable balances of natural resources and lower levels of pollution, will enable a sustainable energy system to emerge from the laws, regulations and action plans on renewable sources a more efficient economy and a better social life. Within cities, energy consumption is enormous. Large energy consumption affects all dimensions of a smart city. Energy governance is responsible for program implementation at the local, regional and national levels. The EE model had explored a smart city concept with the aspect of involving new technologies. The development of renewable energy production can contribute to solving many short-term problems in Serbia. To increase sustainability, enable energy security and stability in Serbia, it is necessary to create an EE model based on the assessment of the existing situation towards the creation of urban infrastructure. Defined many indicators for the EE model of the urban infrastructure through five sets of criteria, also twenty-two sub-criteria, have been considered by ranking themselves. In this research, the ranking of indicators based on the fuzzy AHP method, suitable for modelling uncertain situations because it allows the robustness and flexibility of the model. Progress in achieving these goals is possible by considering described criteria: grid planning, buildings construction (upgrades), contemporary technologies, climate change and low-emission, and water and waste, to find an optimal solution for urban infrastructure development. The case study has presented the priority indicators: energy monitoring and feedback, low-emission future, sustainable energy technology market, and transmission network extension. This result is consistent with long-term development for alternative energy and shows a clear direction for further the EE model in Serbia.

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## FINANCIAL ANALISE OF GLOBAL ORIENTED TRADE COMPANIES IN REPUBLIC OF SERBIA

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### **ABSTRACT**

*In the process of accession of the Republic of Serbia to the European Union, one of the most sensitive and complex economic tasks relates to the construction of a modern market and trade structure. It is certain that the approach to the market and trade should play a crucial role in future economic development and inclusion of the country in the single market of the European Union. This paper presents an analysis of the achieved level of trade development, business performance of trade of the Republic of Serbia, analysis of the market situation and current trends in trade of the Republic of Serbia.*

**Keywords:** *ratio analysis, Serbian trade, business indicators*

### **1. INTRODUCTION**

The business performance of trade in the Republic of Serbia is still weak, although it has recently improved slightly compared to the beginning of 2010. Despite some improvements in business performance, the trade of the Republic of Serbia still lags far behind the trade of the European Union. The goals of this research can be reduced to a few basic goals below, from which the sub-goals of the research will then be aggregated:

- Reviewing the structural and business performance of trade in the Republic of Serbia
- Establishing the advantages and disadvantages of trade of the Republic of Serbia

Basic data sources:

- Secondary external: statistical publications, professional journals, electronic databases  
In this paper, the desk research method was used. This analysis shall collect the so-called secondary data, i.e. all relevant data that already exist as such or which can be obtained by additional processing of collected data or suitable cross-checking of existing data. In this way, the following data shall be collected and analyzed:
- Characteristics of retail and wholesale trade in the Republic of Serbia
- Basic indicators (ratio analysis) of business operating of trade companies

### **2. OPERATING PERFORMANCE OF TRADE INDUSTRY IN THE INDUSTRY IN THE REPUBLIC OF SERBIA**

Productivity in trade of the Republic of Serbia, measured by all relevant indicators, is significantly lower than productivity in trade of the European Union. Labor productivity is twice as high in wholesale trade, and as much as three times lower in retail trade in the Republic of Serbia compared to the European Union trade.

Gross value added per employee in the entrepreneurship sector is lower by about 37% compared to economic entities in the field of trade. The overall financial position (liquidity, financial indebtedness, activity ratios, asset productivity and profitability) of the trade industry of the Republic of Serbia is significantly worse in relation to the financial position of the trade in the European Union. This especially refers to retail trade, with almost all indicators "in red", which practically means that it is actually making losses. Margins (differences in price) in the trade of the Republic of Serbia are as follows: total trade 24.34%, wholesale 26.24% and retail 20.13% and car sales 18.67%. It should be especially pointed out that the margins in wholesale trade are higher than in retail trade and that they are even significantly higher than the margins in wholesale trade in the European Union. This in itself indicates "disturbed flows" in the trade of the Republic of Serbia. Conversely, retail margins in the Republic of Serbia are almost at the same level, and even somewhat lower, in relation to the retail margins rate in countries with developed market economies. Thus, for example, the margin rate in specialized food stores is 23.1% in the European Union and 17.76% in the Republic of Serbia<sup>1</sup>. The reasons for this are high operating costs caused by a larger number of wholesale intermediaries, greater competition in retail and "fragmentation" of the retail network. In addition, in the trade of the Republic of Serbia, in the context of financial reporting, the categorization of the sector is done according to the "principle of predominance". The fact is that in wholesale trade, retail is also performed, and vice versa – wholesale is also performed within retail trade. Car sales often includes both wholesale and retail trade. Wholesale and retail trade is also partly performed in production. This certainly reflects on the "real" margin incorporated in the selling price within total trade and per individual sectors. This practically means that the margin of the selling price in the wholesale sector also contains in itself retail trade margin. By analogy, retail trade margin includes, in part, wholesale trade margin (Ristić, 2018). Consequently, the real wholesale margins are somewhat lower, and retail margins are higher than the ones presented here. This fact should certainly be taken into account during the final assessment of the sales margins in the trade industry of the Republic of Serbia in relation to the trade margin rate of the European Union and other developed market economies. A comparative analysis, therefore, shows that the gross margins in wholesale trade are higher, and in retail trade somewhat lower in our country compared to the situation in the European Union. Excessively high margin rates in wholesale trade have influenced the fact that the cumulative margin of total trade of the Republic of Serbia is slightly higher than the margin of total trade of the European Union countries. Investments in fixed assets per employee in the trade industry of the Republic of Serbia are multiple times lower compared to that of the European Union. Investments per employee in the Serbian trade industry are on average three times lower compared to the investments per employee in the trade of the European Union. Thus, for example, investments per employee in the retail trade of the Republic of Serbia amount to around 1,800 euros, and in the retail trade of the European Union around 3,200 euros. The inflow of foreign direct investments (FDIs) directed to the trade industry of the Republic of Serbia is at a very low level (7%-9% of the total FDIs). This is far less than the percentage of FDIs in almost all Southeast European countries during the first phase of transition. The increase in FDIs can realistically be achieved by a more intensive penetrating of foreign trade chains into the market of the Republic of Serbia. The precondition for that is the liberalization of the market through the acceleration of the procedure for issuing construction permits and through other processes of "opening" the local market. The trade sector of the Republic of Serbia is in a very unfavorable position compared to the trade of countries with developed market economies in terms of access to favorable loans for financing fixed assets and working capital. The fact is that bank interest rates are higher in our country than in the countries of the European Union (Ristić, 2018).

<sup>1</sup> <http://webzrzs.stat.gov.rs/axd/index.php>

The turnover ratio of trade receivables is higher than the turnover ratio of trade payables. Hence, the average collection of trade receivables is shorter than the average payment of trade payables (expressed in days), both in total trade industry and in its individual branches. The amount owed to suppliers is higher than the amount of inventories in trade, and especially in retail trade. Having in mind the above, it is characteristic of the trade of the Republic of Serbia that suppliers finance stocks, and even to a certain extent its current operations. This means that our traders do business with third party's goods and are essentially of the commission type, in terms of stock financing. If trade were to use very expensive bank loans to finance inventories and overall operations, instead of "interest-free" loans from suppliers, it would certainly result in significantly higher retail margins than they are now, as well as compared to the retail margins in developed market economies (European Union). The liquidity of trade sector in the Republic of Serbia is unsatisfactory. The current liquidity ratio shows the company's ability to meet its current obligations. It is calculated as follows:

$$\text{Current liquidity ratio} = \frac{\text{Current assets}}{\text{Short-term liabilities}}$$

The current liquidity ratio shows how many dinars of working capital covers each dinar of short-term liabilities of the company. The benchmark for most companies is for the general liquidity ratio to be higher than 1.

In essence, the trade sector of the Republic of Serbia has practically lost its net working capital. Net working capital is calculated as follows:

$$\text{Net working capital} = (\text{Inventories} + \text{Short-term receivables, Short-term investments and Cash}) - \text{Short-term liabilities}$$

Net working capital is the portion of equity and borrowed long-term capital used to finance current assets. Net working capital in all branches of trade of the Republic of Serbia is at a very low level, and in retail trade it is negative. This practically means that working capital is entirely financed from short-term sources of funds. For these reasons, as already pointed out, many traders keep goods in their facilities that are practically financed by suppliers. Therefore, "own" balance stocks are extremely low. In practice, this means that working capital of retail trade is entirely financed from short-term sources, and not in accordance with the fundamental financial rule: that permanent working capital (stocks) should be financed from long-term sources because they are permanently held for continuous sale. According to this indicator, retail trade is illiquid. In terms of liquidity, it is in a much more unfavorable position compared to other trade sectors of the Republic of Serbia. The pronounced problems of working capital deficit are partially solved by collecting receivables by classic barter (goods for goods), or by postponing the settlement of obligations to suppliers for goods and services. Financial leverage is high given the unfavorable economic circumstances influencing the trade of the Republic of Serbia in terms of acceptable "industry benchmarks". The share of own equity in total sources in 2006 was: total trade 45.1%, wholesale 46.6%, retail 41.4% and car sales 36.5%<sup>2</sup>. It is, therefore, the highest in wholesale trade and notably the lowest in car sales. Total leverage is an indicator of the sources structure.

<sup>2</sup> <https://www.informacionisistemtrgovine.gov.rs/mtu/IZV2N.aspx?IDIzvestaj=140>

It is calculated as follows:

$$\text{Total leverage} = \frac{(\text{Long-term liabilities} + \text{Short term liabilities})}{(\text{Capital} + \text{Long term provisions})}$$

This indicator informs us about the ratio of borrowed sources and equity. The higher this indicator, the higher the share of debt, which represents a higher risk for the creditor.

Indicators	2018	2019
1. Current ratio		
Retail trade, excl. vehicles	0.9	0.8
Wholesale trade	1.1	1
2. Own equity ratio		
Retail trade, excl. vehicles	0.3	0.3
Wholesale trade	0.3	0.3
3. Debt/assets		
Retail trade, excl. vehicles	0.7	0.7
Wholesale trade	0.7	0.7
4. Total leverage		
Retail trade, excl. vehicles	2.3	2
Wholesale trade	2.6	2.5

*Table 1: Liquidity ratios and debt indicators  
(Source: Ministry of trade)*

In the given economic conjuncture, the trade of the Republic of Serbia achieves very low gross profit rates (gross profit margin rate) from sales. Gross profit margin shows how much of the total income the company retains in the form of profit before tax, i.e. gross profit. The achieved margin expressed in percentages shows that the company, after covering the production costs, retains the stated percentages of income in order to cover the general costs of management and sales and financing costs, striving to finally post profit. This indicator is extremely important because it helps in the implementation of measures to rationalize costs and as an indicator for comparisons with other companies operating in the same industry (Ristić, 2016, Trnavac, 2008). The analyzed indicator of trade profitability by individual sectors is as follows: in the wholesale trade of the European Union it is 5.4% and in the Republic of Serbia 4.1%; in the retail trade of the European Union it is 7.4% and in the Republic of Serbia -1.9% and in the trade of vehicles in the European Union it is 5.8%, and in the Republic of Serbia 1.5%. As a result of the presented indicators, the net profit from the total investments in the trade of the Republic of Serbia is very low. This in itself shows that the trade of the Republic of Serbia is unprofitable - very low earning capacity, especially compared to the trade of developed market economies. This conclusion is also indicated by the low share of net profit in revenues from the sale of goods (in total trade 3.0%, wholesale 4.1%, retail -1.9% and car sales 1.5%). The rate of return on equity as a true measure of profitability in the trade of the Republic of Serbia is 7.66%, in wholesale 9.65%, in vehicle trade 6.53% and in retail trade -5.31%. These rates are significantly lower in the trade of the Republic of Serbia compared to the trade of the European Union, where on average they range between 15% and 20%. This especially refers to retail trade in the Republic of Serbia, which even achieves negative profitability rates, which is not the case in any country of the European Union. It is certain, therefore, that in terms of profitability, retail trade is in the most difficult position.

The ratio of operating expenses to operating income in 2006 was 0.97 for total trade, 0.96 for wholesale trade, 0.99 for retail trade and 0.99 for car sales. A ratio greater than 1 indicates an operating loss and less than 1 an operating profit. Accordingly, the trade productivity of the Republic of Serbia is very low. It is particularly negative in retail and vehicle trade. The ratios of inventory turnover and turnover of total assets are relatively satisfactory. It should be noted that the stocks in the trade of the Republic of Serbia are "underestimated", which also applies to the total fixed assets of trade. For many years, insufficient investment has been made in the trade of the Republic of Serbia, so that there is a high degree of write-off of fixed assets. Hence, the turnover of inventories and total assets are presented as "unjustifiably accelerated" (Ristić, 2018).

Indicators	2018	2019
1. RoE		
Retail trade, excl. vehicles	-7.80%	-0.20%
Wholesale trade	9.10%	3.70%
2. Productivity		
Retail trade, excl. vehicles	1	1
Wholesale trade	1	1
3. Total assets turnover ratio		
Retail trade, excl. vehicles	1.2	1.3
Wholesale trade	1.4	1.1
4. Trade receivables turnover ratio		
Retail trade, excl. vehicles	9.5	10.2
Wholesale trade	4.9	4.2
5. Days sales outstanding		
Retail trade, excl. vehicles	38.4	35.8
Wholesale trade	74.5	86.9
6. Payables turnover ratio		
Retail trade, excl. vehicles	3.4	3.3
Wholesale trade	3.1	2.7
7. Days payables outstanding		
Retail trade, excl. vehicles	107.4	110.6
Wholesale trade	117.7	135.2
8. Inventories turnover ratio		
Retail trade, excl. vehicles	6.2	6.5
Wholesale trade	6.1	5.5
9. Current assets turnover ratio		
Retail trade, excl. vehicles	2.6	2.8
Wholesale trade	2.1	1.8

Table 2: Profitability, productivity and activity ratios  
(Source: <https://www.informacionisistemtrgovine.gov.rs>)

The limiting factor of large investments in the trade of the Republic of Serbia in the past period is the pronounced lack of own funds and very expensive external sources. This is evidenced by the fact that in the structure of sources of financing investments in fixed assets in trade of the Republic of Serbia in 2005, financial loans participated in: total trade with only 3.63%, wholesale with 2.36% and retail with 20.44%.

As already pointed out, the trade of the Republic of Serbia is in a very unfavorable position in relation to the trade of countries with developed market economies in terms of the possibility of using favorable loans for financing fixed assets and working capital. For the stated reasons, the material and technical equipment of operating in the trade of the Republic of Serbia is very low. (Trnavac, 2009)

### 3. CONCLUSION

The global conclusion is that the business performance of the trade industry in the Republic of Serbia is unsatisfactory. Therefore, it is necessary to significantly improve the overall trade performance of the Republic of Serbia in the future through more efficient management of revenues, costs, profits, as well as deployed capital. It is certain that the trade services of the Republic of Serbia are at a significantly lower level compared to developed market economies. Hence, in relative terms, they are "more expensive" than significantly better trade services of other countries, primarily due to lower labor productivity, inadequate ("chain") structure of marketing channels (sales) and low level of competition in the market.

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# ARTIFICIAL INTELLIGENCE IN TOURISM AND HOSPITALITY – THE PARADIGM SHIFT

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## **ABSTRACT**

*The purpose of this paper is to highlight the role and impact of artificial intelligence in tourism and hospitality. For this purpose, a systematic search of the available relevant literature in Google Scholar database was conducted. The research has shown that the influence of artificial intelligence is undeniable and that it has led to a paradigm shift in tourism and hospitality, from "business-centric" to "consumer-centric" and from "standards-driven" to "data-driven". The contribution of this study is that it discusses the application and role of artificial intelligence through practical examples and theoretical considerations. In this way, the main advantages of the application have been highlighted, but also some questions have been raised, as a starting point for future research.*

**Keywords:** *artificial intelligence, chatbots, machine learning, robots, tourism and hospitality industry*

## **1. INTRODUCTION**

When John McCarthy decided in 1955 to organize a workshop to identify and define ideas about thinking machines, and chose the name "Artificial Intelligence" for it, he probably had no idea that he was laying the foundation for something that would play an important role in all areas of social life in the next century. After a not very successful meeting, artificial intelligence was occasionally more or less in the centre of interest until it came to the fore at the beginning of the 21st century (COE, 2021). The importance of applying of artificial intelligence in business is also shown by IDC's projections (IDC, 2021) according to which by 2026, enterprises that successfully create digital innovation will generate over 25% of revenue from digital products, services, and/or experiences. With the advancement and development of information technology, such as cloud computing, mobile devices, big data mining and social media, artificial intelligence has become more efficient and its application is finding more and more space in various industries, including tourism and hospitality. Given the global importance of tourism and the omnipresence of artificial intelligence in everyday life, the research question arises as to how far the limits of the use of artificial intelligence in tourism and hospitality industry extend and whether they exist at all. The answer to this question is found in a comprehensive study of the recent literature on the use and impact of artificial intelligence in the tourism and hospitality industry. The research sheds light on the various possibilities of using artificial intelligence as well as the possible effects of its use.

## **2. RESEARCH METHODOLOGY**

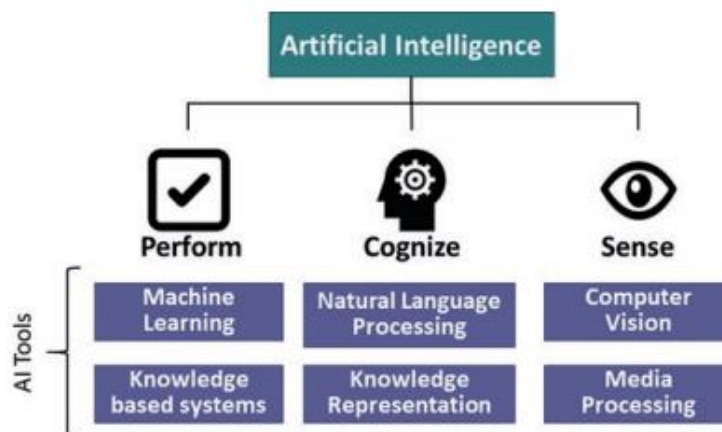
To find the most relevant literature for the purposes of this study, the Google Scholar database was searched. The search was conducted using the following query: "Artificial Intelligence" AND "Impact" AND "Tourism and Hospitality". Papers in which the terms "Artificial Intelligence", "Impact" and "Tourism and Hospitality" appeared somewhere in the title, abstract or keywords, and were published in peer-reviewed journals between 2015 and 2020 were selected. A total of 190 papers were selected. After closer examination, papers that did not meet the search criteria based on the analysis of the abstract were excluded (e.g. papers focusing on the technical description of the implementation of the artificial intelligence approach to

analysis, papers focusing mainly on the development of artificial intelligence, papers focusing on other irrelevant topics, such as the use of artificial intelligence for educational purposes). After this screening, the 45 papers were analysed in detail. From the analysis, the main discussion points related to the research question of this article emerged:

- The main application areas of artificial intelligence in tourism were discussed and the main benefits as well as some doubts were identified. The results are presented in the following sections.

### 3. ARTIFICIAL INTELLIGENCE - WHAT IS IT?

In order to even consider the opportunities that arise from the use of artificial intelligence, it is certainly necessary to define the concept of artificial intelligence itself. According to Kreutzer & Sirrenberg (2020) artificial intelligence is the ability of a machine to perform cognitive tasks that we associate with the human mind. This includes possibilities for perception as well as the ability to argue, to learn independently and thus to find solutions to problems independently.“ So the term itself refers to all those tools and techniques that can be combined and used in different ways to sense, recognise and perform. The main aim of this approach is to learn from past experience and adapt over time. In the context of defining AI, Russel et. al. (2010) pointed out four main categories of definitions; those definitions concerned with the tough process and reasoning, those which addresses behaviour, those which measure success in terms of fidelity to human performance, and those which measure against an ideal performance measure. Historically, all four approaches have found their place in theory and practice. As mentioned earlier, the concept of artificial intelligence is not yesterday's news, from the beginning until today, the development of new technologies has been accompanied by the development of the application of artificial intelligence. Below is a brief description of what artificial intelligence, as we know and research it, means today (Figure 1.).



*Figure 1. Artificial Intelligence – what it is?  
(Source: Akerar (2019))*

When it comes to artificial intelligence, many equate it with knowledge-based systems (KBS); computer programmes that understand and use previously collected information to solve complex problems. As such, they are applicable to all areas of social activity. Natural language processing (NLP) includes a combination of linguistics, ICT technology and artificial intelligence that aims to the interact of computer and human language or computer programming to process and analyse large amounts of data. More specifically, NLP enables the content analysis of the web pages, data mining, generation of specific information from documents, the classification and collection of information of interest.

In the context of this application area of AI, language processing (LP) can also be highlighted. There are applications and tools that convert spoken text into machine-processable text, e.g. a Word file. The advantage of this tool is that it makes it easier for those who cannot type well, and also makes it easier for people with disabilities to use their gadgets. The use of artificial intelligence in robotics dates back to the term "artificial intelligence". In 1948, William Grey created Elmer and Elsie; two robots who were the first to work autonomously - independent of a human (Fong, Nourbakhsh, & Dautenhahn, 2003). Machine learning (ML) is a branch of artificial intelligence based on the assumption that systems can learn from data, recognise patterns and make optimal decisions with minimal human intervention. In general, machine learning consists of learning algorithms that recognise behavioural patterns in large datasets, rank them according to certain criteria and divide them into smaller clusters, regardless of whether it is supervised or unsupervised machine learning (Mariani, Baggio, Fuchs, & Höepken, 2018). Considering the previously described characteristics of AI, which lead to the conclusion that it is applicable in different areas of societal growth and development, it can certainly be concluded that AI is leading to a significant change in existing business models in tourism and hospitality, but also to the creation of some new models.

#### 4. THE RANGE OF THE ARTIFICIAL INTELLIGENCE IN TOURISM

The previously described areas where the application of artificial intelligence is visible suggest that artificial intelligence is widely applicable in the tourism and hospitality industry. The potential application arises from the shift of the paradigm through which tourism was experienced to the paradigm through which it is observed today, which is illustrated in the Fig.2.



Figure 2: Paradigm shift – tourism and hospitality then and now  
(Source: Authors adoption according to (Leung, 2020))

Figure 2 shows the paradigm shift triggered by the emergence of artificial intelligence. Society is already facing a shift from “business-centric” to “consumer-centric” and from “standard-driven” to “data-driven”. This results in several possible application areas for artificial intelligence in tourism and hospitality, some of which are described below.

##### 4.1. Chatbots

An example of the use of natural language and in tourism and hospitality are chatbots; machine conversation systems that interact with human users via natural conversational language (Leung & Wen, 2020). Depending on the type; they work in different ways. For example, some use a predefined list of automated responses to customer queries and direct users to the website and information they need. A slightly more complex type are chatbots that enable two-way communication (e.g. Facebook Messenger integrated chatbots or Expedia chatbots). The most complex type is the one that, in addition to two-way communication, also enables the provision of recommendations related to what the customer is looking for. Such chatbots require simple information, such as the destination and duration of the trip, and help the customer organise their trip based on this information. Such chatbots are widely used and integrated into a variety of applications that are used on a daily basis (e.g. Uber and Google Maps).

#### **4.2. Robots**

Service robots are “technology that can perform physical tasks, operate autonomously without needing instructions, and are directed by computers without help from people (Huang & Rust, 2018). In tourism, they are technology-driven assistants that can perform from simpler tasks, such as turning on lights, turning off appliances, to more complex tasks, such as automation of fast food chains jobs. In addition, humanoid robots are now replacing human labour.

#### **4.3. Facial recognition technologies**

Facial recognition technologies are generally used to identify people. AI can help, a human serving guests to better personalize their service by being prompted about the guest’s history of preferences and by identifying guests by name through facial recognition technology (Cain, Thomas, & Alonso, 2019). It can also be used in certain areas to recognise emotions (e.g. to recognise feelings of happiness in people leaving a gala dinner).

#### **4.4. Virtual reality**

According to Jung et.al. (2016) virtual reality offers users a new world in which they are immersed allowing them, for example, to fly over a city without taking their feet off the ground. Virtual reality allows tourists to replace real tourist activities with virtual ones. This opens up new opportunities for tourism development and challenges science and practise to recognise and exploit the possibilities of applying new technologies. Considering that anyone with a 360-degree camera can create their own virtual reality experience, even without additional knowledge in complex programming, it is undeniable that such content will increasingly find its place in creating a memorable tourist experience. Adapting technology will thus lead to changes in destination management, marketing strategies and other aspects of tourism, combining aspects of virtual community, entertainment and interaction with new content.

#### **4.5. Machine learning**

Machine learning can be understood as a subset of artificial intelligence where the machine learning algorithm acts or performs the task without being explicitly programmed. The machine has the ability to learn automatically from the past raw data and to build predictive models based on algorithms which are predesigned (Aamer, Yani, & Priyatna, 2021). Sterne (2017) explains that machine learning classifies personal profiles into market segmentation categories that can be predefined or automatically generated.

#### **4.6. AI for the purpose of forecasting**

The growing importance of tourism and the hospitality industry is challenging researchers to develop innovative methods for tourism forecasting. Artificial intelligence algorithms are suitable in this regard, especially when dealing with large amounts of data (Claveria, Monte, & Torra, 2015). Considering a combination of artificial intelligence and forecasting, the benefits are: understanding tourism demand (Buhalis & Leung, 2018), developing marketing strategies, managing finances (Claveria et al., 2015) and much more.

### **5. AI IMPLICATIONS IN TOURISM AND HOSPITALITY INDUSTRY**

Artificial intelligence is not yet strongly represented in the tourism and hotel industry, despite its wide range of applications. From all mentioned above, it can be concluded that the impact of applying of artificial intelligence tools in tourism and hospitality industry is diverse and largely positive. Some researchers have identified the benefits; dividing them in two main categories; financial and otherwise (S. H. Ivanov, Webster, & Berezina, 2017).

The main positive impacts of the use of artificial intelligence can be summarised as follows:

- Enables personalisation of services
- Enables virtual assistants - chatbots
- Enables back-office automation
- Enables revenue accounting automation
- Helps with operations management.

Personalising services improves the guest experience and creates customer delight. Machine learning can be used to identify guests' preferences, buying habits and satisfaction levels. The biggest challenge in this context is to collect relevant data and create meaningful information from it. In this context, it is important to highlight the role of natural language processing, which helps companies analyse the emotional behaviour of tourists. In addition, hotels and other tourism stakeholders can create targeted promotional activities (e.g. videos) and offer new tourism content for different tourism niches. Machine learning capabilities could be used in the development of virtual assistants (e.g. in luggage tracking to avoid mishandling of luggage and to detect breakages). With the advantages of virtual reality technologies, tourists can get first-hand information about the offers that interest them. In this way, they experience tourist content and have access to natural resources, general and tourist infrastructure facilities, which has an impact on their purchasing decisions. From the point of view of service providers in tourism and hospitality, the benefits of using artificial intelligence are immeasurable and are most evident in the savings of resources used in the business. Virtual assistants and chatbots that communicate with guests can reduce the workload of call centres with a large number of employees. The chatbot can access guest data without registering in individual systems. Robotic process automation is a tool for front and back office automation and can take over most tasks that would otherwise be done by a human (e.g. automating invoice delivery or automating financial reconciliation). After a trip, tourists often post their impressions on social media. In this area, tourism and hospitality stakeholders can take full advantage of the use and analysis of content and direct their promotional activities in this direction and even develop loyalty programmes.

## **6. AI-RELATED CHALLENGES IN TOURISM AND HOSPITALITY**

Are humans (un)replaceable? According to (Bowen & Morosan, 2018) about 25 % of the hospitality industry workforce in actual decade could be replaced by robots, and some traditional jobs may even disappear. This is the main cause of concern for all those working in tourism and hospitality; job losses due to replacement by artificial intelligence solutions. Sigala (2018) notes that artificial intelligence is suited to complex thinking (requiring precision), while tasks requiring generalisation, perception, creativity and interaction with the real world (i.e. low-level sensory-motor skills) are relatively simple and computationally intensive for humans. In this sense, any task that can be characterised by an algorithm or is repetitive is likely to be outsourced to technology, while skills such as pattern recognition, recombinant innovation, multi-sensory communication and developing creative solutions to previously unimagined problems are the skills for which human labour will be in demand. It is to be expected that routine works will be replaced by artificial intelligence in the future. More researchers and practitioners agree that there is no need to fear for the human workforce in the tourism and hospitality industry of the future. Ivanov and Webster (2017) thus conclude that artificial intelligence could be a qualitative complement to human workforce, freeing employees from routine tasks and leaving them more time to provide better services. Indeed, there is no question that humans will continue to have two key functions in tourism; they will perform smaller tasks that are difficult to automate – despite the superpowers of robots.

It is clear that the physically present humanoid workforce will make a difference and will be factor of diversification on the supply side. From an industry perspective, artificial intelligence benefits companies by improving business processes, optimising productivity and, most importantly, providing a better user experience (Tussyadiah & Miller, 2019). The issue of humans replaceability is not the only problem related to the emergence of artificial intelligence in tourism; physical changes may also need to be made to the property to accommodate the new technology that will be part of the new workforce.

## 7. CONCLUSIONS

The impact of artificial intelligence on the tourism and hospitality industry is huge. Society as a whole, including today's businesses, is moving away from the usual way of doing business and increasingly using solutions such as Chatbots, maps, translators... The aim of this research was to summarise the impact of the use of artificial intelligence, so the main conclusions are listed below. Artificial intelligence solutions enable tourism and hospitality industry to personalise services, analyse user reviews gathered on the social media, offer virtual assistance, business automation, loyalty analysis, management automation. The advantage of artificial intelligence over human intelligence can be highlighted, its ability to constantly improve and thus reducing the possibility of human error. (Akerar, 2019). Ultimately, some researchers agree that AI certainly improves and speeds up the delivery of tourism services, but it cannot replace human contact, which is an essential factor for memorable experiences. In this context, the impact of can be summarised as a shift from "business-centric" to "consumer-centric" and from "standards-driven" to "data-driven". The main limitation of this research is that the papers included in the study only cover the Google Scholar literature; future research on this topic should also include papers cited in other relevant databases. There is no question that the use and impact of artificial intelligence in tourism will increasingly be the topic of scientific consideration in the future. Therefore, this study can be considered a good basis for future research on the same or a similar research problem.

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# THE CHANGE IN TOURISM OF CENTRAL DALMATIA UNDER THE INFLUENCE OF COVID-19 CRISIS

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## **ABSTRACT**

*After two seasons under the Covid-19 restrictions, this paper analyzes the tourist arrivals and overnights in one of the most popular tourist regions in the Republic of Croatia – Central Dalmatia. After the record year 2019, in the following two years the number of tourists in Croatia declined. However, 2021 was much better than 2020. Additionally, compared to other Mediterranean countries, Croatia has had excellent season in both crisis years. The analysis in this paper includes descriptive statistical methods. The idea is to show how the top destinations have changed in 2020 and 2021 compared to 2019. Over the period from 2010 to 2020, the number of tourists from the most important markets (countries) was growing each year. A graphical analysis compares this trends regarding the number of tourist arrivals and overnights.*

**Keywords:** *Central Dalmatia, Covid-19, tourism*

## **1. INTRODUCTION**

Central Dalmatia is one of the most popular tourist areas in Croatia. Known primarily by the summer tourism, Central Dalmatia is the host to numerous tourists from all over the world during summer months. Especially crowded are July and August, when often all tourist beds are occupied, when restaurants do not accept reservations as they are full, when the normal waiting time for paying in the supermarket is over 15 minutes. Boat, catamaran and ferry lines are usually sold out from early morning, busses are overcrowded. Such situation is very well known to anyone who has visited Central Dalmatia in the last 10 years, but not in 2020. Covid-19 caused the global crisis which influenced all areas of life and business. Tourism was especially influenced, as traveling was not easy, even completely blocked in some periods. This paper analyses 2019 as the record year of Croatia tourism, and compares the results from 2019 to results in 2020 and 2021. As at the time of writing this paper the last available data were for first ten months of 2021, these data are also used for 2019 and 2020. Anyway, about 98% of tourist arrivals and overnights in Central Dalmatia occur in the period from January to October. The aim of this paper is to show how the most popular destinations have changed during the crisis, in the terms of tourist arrivals and overnights. Additionally, the analysis consists of the countries which have given the most tourists to Central Dalmatia, especially in terms of the change in the period from 2010 to 2020.

## **2. LITERATURE OVERVIEW, DATA AND METHODOLOGY**

Scientific papers and analyses of Covid-19 and its influence in different areas have appeared just recently. Due to this fact, the whole literature available at the moment of writing this paper is from 2020 and 2021. Here are some of the most interesting researches connected to Covid-19 and tourism. The tourism industry is an environmentally sensitive one. The recent outbreak of the Covid-19 severely hit the global tourism industry. Nonetheless, future tourism development directions affected by the recent Covid-19 and feasible solutions for the recovery of the tourism industry in the existing literature were limited.



Hence, this Zhong et al.<sup>1</sup> predicts a future tourism development with detailed directions affected by the Covid-19 outbreak using China as an example to address the aforementioned gaps. In total, 91 in-depth interviews were conducted among hospitality and tourism practitioners and experts. Overall, hospitality and tourism practitioners and experts hold a positive attitude toward the recovery of the tourism industry, whereas tourism practitioners perceive the long-term impacts of Covid-19 pandemic on the tourism industry. The findings contribute to the detailed predictions of the future tourism development for the hotel industry, travel agency, and tourist attractions. Beh and Lin<sup>2</sup> aim to examine the extent of the Covid-19 on the tourism industry in ASEAN countries. They have utilized a Panel Vector Autoregression approach to examine the possible bidirectional causality that exists between Covid-19 and tourist arrivals. Data from seven ASEAN nations were used wherein accumulated numbers of cases are hypothesized due to variations in the levels of inbound tourism and other socio-economic differences. The findings indicated two-way causality between Covid-19 and tourist arrivals at the 95% significance level. The results revealed that international tourism can seriously be affected by the Covid-19 outbreak. The impact caused in the tourism sector by the public health crisis linked to coronavirus Covid-19 and the need to protect the population from subsequent infection marks a necessary change in the model of tourism in coastal areas in Spain where mass tourism was the norm. According to Lario<sup>3</sup>, relevant reforms must be made to soften the economic effects of the drop in foreign tourism. In the case of cultural tourism in urban areas and inland, there is an excellent opportunity to make structural changes in management that pre-Covid was already experiencing serious problems. Kumar and Patel<sup>4</sup> study the economic impact of Covid-19 in Fiji, Tonga, and Vanuatu. The UNWTO's International Tourism 2020 Scenarios and the World Bank's projected decline in remittance flows are treated as negative Covid-19 led shocks in the nonlinear autoregressive distributed lag (NARDL) model. Negative tourism shocks are significant for all three countries, whereas negative remittance shocks are significant for Tonga only. Thus, the economic effects of Covid-19 are propagated by tourism for all three countries, whilst remittance is a Covid-19 transmission channel for Tonga only. Simulations with the projected declines in tourism and remittances suggest that Vanuatu would experience the greatest decline in growth and highest uncertainty, whilst Tonga would face the lowest decline and uncertainty. The profound impact of the Covid-19 pandemic on global tourism activity has rendered forecasts of tourism demand obsolete. Accordingly, scholars have begun to seek the best methods to predict the recovery of tourism from the devastating effects of Covid-19. Zhang et al.<sup>5</sup> have combined econometric and judgmental methods to forecast the possible paths to tourism recovery in Hong Kong. The autoregressive distributed lag-error correction model was used to generate baseline forecasts, and Delphi adjustments based on different recovery scenarios were performed to reflect different levels of severity in terms of the pandemic's influence. These forecasts were also used to evaluate the economic effects of the Covid-19 pandemic on the tourism industry in Hong Kong. For many years, tourism scholars have been investigating tourism development issues and disseminating their research results through papers published in academic journals. Although there is evidence that their viewpoints are in discrepancy with the viewpoints of tourism practitioners, these inconsistencies were rarely investigated and juxtaposed. As the global health pandemic caused by Covid-19 stopped travel and tourism all over the world, it created time for both groups of

<sup>1</sup> Zhong, L.N.; Sun, S.; Law, R.; Li, X.N. (2021) Tourism crisis management: evidence from COVID-19, *Current Issues in Tourism*, Volume 24, Issue 19, pages 2671-2682

<sup>2</sup> Beh, L.S.; Lin, W.L. (2020) Impact of COVID-19 on ASEAN tourism industry, *Journal of Asian Public Policy*, OCT 2020

<sup>3</sup> Lario, P.A. (2021) Notes for tourism management in Spain after the COVID-19 public health crisis, *Pasos-Revista de Turismo y Patrimonio Cultural*, Volume 19, Issue 1, pages 189-194

<sup>4</sup> Kumar, N.N.; Patel, A. (2021) Modelling the impact of COVID-19 in small pacific island countries, *Current Issues in Tourism*, Early Access AUG 2021

<sup>5</sup> Zhang, H.Y.; Song, H.Y.; Wen, L.; Liu, C. (2021) Forecasting tourism recovery amid COVID-19, *Annals of Tourism Research*, Volume 87

tourism experts to reflect on the various opportunities and challenges that the tourism sector will face in the future. Using the qualitative research design, Corak, Zivoder and Marusic<sup>6</sup> had the chance to collect, analyse and discuss the views of tourism experts on the recovery phase and possible changes to tourism in Croatia. Data was obtained through semi structured interviews of tourism practitioners from public and private sectors, and through literary review of published opinion papers by international scholars. The aim of the research was focused on the comparison of their views on the short-term recovery of tourism, as well as the long-term possibilities to transform the sector towards a more sustainable and more inclusive sector that is able to utilize the regional competitive advantages in the best possible way. The research results revealed more similarities regarding the attitudes on the recovery during short-term period, as opposed to more dissimilarity on the long-term future of tourism in Croatia. According to the research results, the future of tourism would benefit from the experience and knowledge of both groups combined - practitioners and scholars. Payne, Gil-Alana and Mervar<sup>7</sup> examined the change in the degree of persistence in the Croatian tourism indicators, foreign arrivals, and overnight stays, due to the Covid-19 pandemic using recursive estimation of a fractional integration model. The results indicate that the shock from the Covid-19 pandemic can be viewed as permanent in nature. The policy response to restore tourism to its original trend should consider whether such policies proceed as in the past with the promotion of the traditional tourism growth model or support the transformation toward a more sustainable tourism model. Golja<sup>8</sup> examined the behaviour and the response of regional destination management organizations (DMOs) to the current Covid-19 crises. This enables provide suggestions for improvement of stakeholder management practices and strategic planning in the times of crises and extreme uncertainty. Main activities and differences between regional DMOs' behaviour in the mitigation and restart phase of tourist destination and DMOs were explored using a mixture of qualitative and quantitative methods. The regional DMOs' websites, social media channels, newsletters and different media publications related to regional DMOs were observed and reviewed in the period from mid-March to mid-June 2020 to better understand their response to Covid-19. Findings illustrate that regional DMOs in Croatia have not managed to advance the relationship with their main stakeholders nor have they implemented integrated management practices during the crises. The pandemic of Covid-19 is one of the largest shocks in the economy on the worldwide level. All economies have experienced the falls in GDP and rise of unemployment from the beginning of 2020. Croatia is one of such countries, where the influence on economy is very large. As Croatian economy is very much based in tourism, and tourism is suffering extremely during the pandemic period, the expectations about the fall of GDP are about 10% in 2020. Galetić<sup>9</sup> analyse the influence of Covid-19 pandemic on Croatian tourism, after 2019 which was the year of records with almost 20 million tourist arrival. The analysis will be done on the example of the island of Hvar, one of the most visited tourism destinations in Croatia. The island of Hvar is divided into 5 tourist places: Hvar (town), Stari Grad, Jelsa, Vrboska and Sućuraj. Each of these five places will be analysed and compared. The analysis will show how the number and the structure of tourists have changed due to the Covid-19.

<sup>6</sup> Corak, S.; Zivoder, S.B.; Marusic, Z. (2020) Opportunities for tourism recovery and development during and after COVID-19: Views of tourism scholars versus tourism practitioners, *Tourism*, Volume 68, Issue 4, pages 434-449

<sup>7</sup> Payne, J.E.; Gil-Alana, L.A.; Mervar, A. (2021) Persistence in Croatian tourism: The impact of COVID-19, *Tourism Economics*, Early Access MAR 2021

<sup>8</sup> Golja, T. (2021) The Behavior and Response of Regional Destination Management Organizations in the two Recovery Phases of Tourism Destination Amid Covid-19 Pandemic: the Case of Croatia, *Turismo-Estudos e Praticas*, Volume 10, Issue 1

<sup>9</sup> Galetić, F. (2020) The Influence of Covid-19 on Tourism – The Case of the Island of Hvar, *Proceedings of the 58th International Scientific Conference on Economic and Social Development*, pages 60-68

The data used in this paper are data about tourist arrivals and overnights taken from the Tourist board of Split-Dalmatia County (Turistička zajednica Splitsko-dalmatinske županije) and from eVisitor, the Croatian information system for check-in and check-out of tourists. Using these data, descriptive statistics is applied: base indices, chain indices, percentage changes, shares.

### 3. TOURISM IN CENTRAL DALMATIA

The Republic of Croatia is very popular tourist destination, famous primarily by its summer tourism on the coast of the Adriatic sea. Croatia is divided into counties. The County of Split-Dalmatia (in tourism also called Central Dalmatia) is located in the central part of the Dalmatian region. The total territorial area is 14,045 km<sup>2</sup>, of which the land surface is 4,572 km<sup>2</sup>. It has 16 towns and 39 municipalities, and its capital Split is the second largest city in Croatia with 175 thousand inhabitants. The strongest economic branch in Dalmatia is certainly tourism. The Dalmatian area is a pearl of Croatian tourism, offering visitors a multitude of facilities, from sightseeing of numerous natural and cultural sights to enjoying top dishes and gastronomic specialties. The Croatian Adriatic Sea is one of the warmest seas in the world, and many beaches of coastal towns and places are treated as beaches with the clearest sea.



Figure 1: Position of Central Dalmatia  
(Source: The Heart of Adriatic, Split-Dalmatia County Tourist Board)

In this analysis are shown the data about the tourist arrivals and overnights for the period of first 10 months (January - October) for 2019, 2020 and 2021. In these 10 months Central Dalmatia hosts about 98% of all tourists. The high season is from June to September, adding April, May and October, we get almost the whole season.

JAN-OCT	2019	2020	2021
arrivals	3.595.239	1.222.138	2.283.248
overnights	17.937.467	7.991.169	13.461.290

Table 1: Tourist arrivals and overnights JAN-OCT 2019-2021  
(Source: Split-Dalmatia County Tourist Board)

Table 1 shows the number of tourist arrivals and overnights for first ten months in 2019, 2020 and 2021. The year 2019 is the record year of Croatian tourism, so represents the maximum so far. In both 2020 and 2021 there were less tourists who have generated less overnights compared to the record year 2019. The following two tables analyse this trend more in detail, using base indices and chain indices.

JAN-OCT	2019	2020	2021
arrivals	100	33,99	63,51
overnights	100	44,55	75,05

*Table 2: Base indices for tourist arrivals and overnights JAN-OCT 2019-2021 (2019=100)*  
(Source: Author's calculation)

Table 2 shows the values of base indices. The base year is 2019 and the base indices show the comparison to 2019. In 2020 the number of tourist arrivals decreased by 66% and in 2021 it decreased by 36,5% compared to 2019. The number of overnights decreased by 55,5% in 2020 and by 25% in 2021, compared to 2019.

JAN-OCT	2019	2020	2021
arrivals	-	33,99	186,82
overnights	-	44,55	168,45

*Table 3: Chain indices for tourist arrivals and overnights JAN-OCT 2019-2021*  
(Source: Author's calculation)

Table 3 shows the chain indices for tourist arrivals and overnights. The number of tourist arrivals decreased by 64% in 2020 and increased by 87% in 2021. The number of overnights decreased by 55,5% in 2020 and increased by 68,5% in 2021.

#### 4. MOST POPULAR DESTINATIONS

Central Dalmatia, or Split Dalmatia County is the second most visited county in Croatia, according to the number of overnights, just after Istra.<sup>10</sup> Statistically, Central Dalmatia consists of 42 local tourist boards (towns, municipalities, villages) for which tourist data are monitored. It is interesting to compare the most popular destinations in 2019, 2020 and 2021. All data shown in the following tables are for the first ten months of each year.

	Arrivals	Share
Split	908056	25,26%
Makarska	269824	7,51%
Hvar	207915	5,78%
Baška Voda	163028	4,53%
Seget	157928	4,39%

*Table 4: Top 5 destinations by arrivals in I-X 2019 by arrival*  
(Source: Author's calculation according to TZSDŽ)

*Table following on the next page*

<sup>10</sup> TZSDŽ (2021) Statistička analiza turističkog prometa 2020.

	Arrivals	Share
Split	194479	15,91%
Makarska	101946	8,34%
Omiš	80154	6,56%
Baška Voda	74489	6,09%
Tučepi	50985	4,17%

*Table 5: Top 5 destinations by arrivals in I-X 2020  
(Source: Author's calculation according to TZSDŽ)*

	Arrivals	Share
Split	456074	19,97%
Makarska	192768	8,44%
Omiš	125162	5,48%
Baška Voda	119911	5,25%
Hvar	115075	5,04%

*Table 6: Top 5 destinations by arrivals in I-X 2021  
(Source: Author's calculation according to TZSDŽ)*

Tables 4-6 show the most popular destinations in 2019, 2020 and 2021, as well as their share in the total arrivals to Central Dalmatia. In 2019, every 4<sup>th</sup> tourist visited Split. All other destinations had the share under 8%. Comparing these data with 2020, it is obvious that the share of the top destination (Split) has fallen, and all other share have grown. In 2021, Split is again gaining the share, while the shares of other destinations is diminishing. Regarding the destinations, before and during Covid-19 crisis, Split and Makarska remained on the top, while other positions have changed. Hvar (the only destination on the island in the top 5) has fallen out in 2020, and Omiš and Tučepi entered top 5. In 2021 Hvar is again in top 5, but this time on the 5<sup>th</sup> position, while Omiš remained on the 3<sup>rd</sup> position. This analysis was done using the data about arrivals. Now let's switch to the number of tourist overnights.

	Overnights	Share
Split	2677185	14,93%
Makarska	1551524	8,65%
Baška Voda	1059176	5,90%
Omiš	967810	5,40%
Seget	829871	4,63%

*Table 7: Top 5 destinations by overnights in I-X 2019 by arrival  
(Source: Author's calculation according to TZSDŽ)*

	Overnights	Share
Split	785772	9,83%
Makarska	640865	8,02%
Omiš	588873	7,37%
Baška Voda	516441	6,46%
Okrug	358702	4,49%

*Table 8: Top 5 destinations by overnights in I-X 2020  
(Source: Author's calculation according to TZSDŽ)*

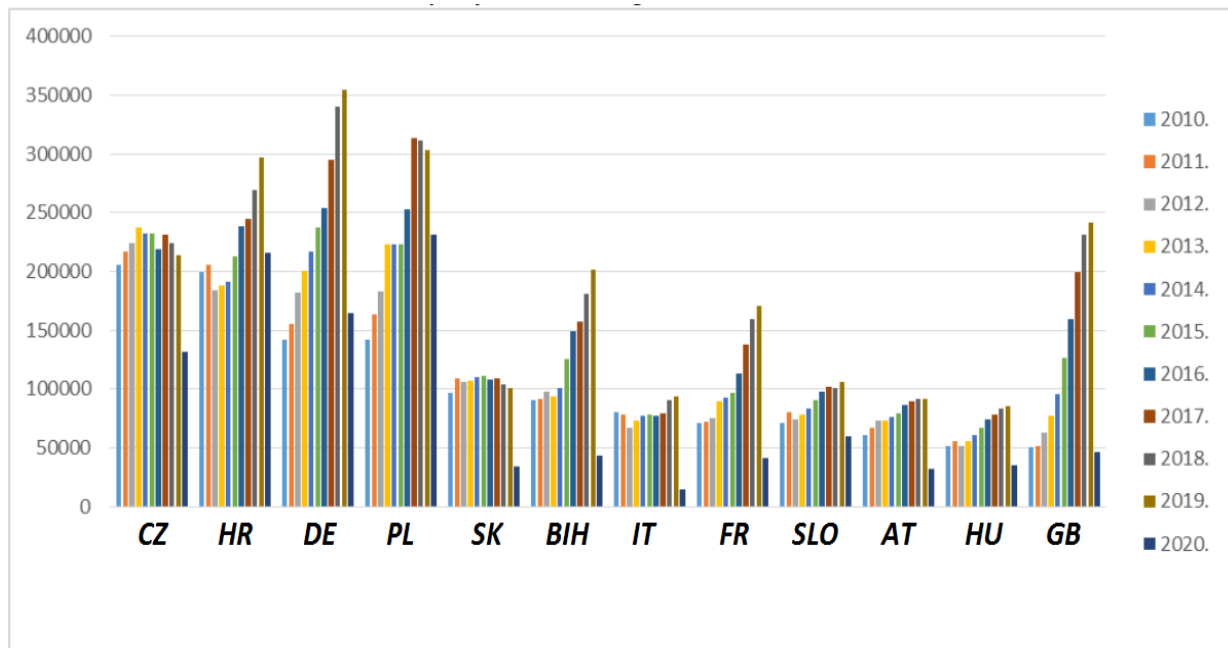
	Overnights	Share
Split	1654397	12,29%
Makarska	1148448	8,53%
Omiš	841186	6,25%
Baška Voda	819159	6,09%
Tučepi	644926	4,79%

Table 9: Top 5 destinations by overnights in I-X 2021  
(Source: Author's calculation according to TZSDŽ)

In 2019 the top destination measured by the number of overnights was Split. It generated 15% of all overnights in Central Dalmatia. Its share dropped to under 10% in 2020 and then back to 12% in 2021. Other destinations, opposite of Split, have experienced the growth in the share of tourist overnights in the Covid-19 crisis. Comparing the data about tourist arrivals and overnights in the top 5 destinations, one can observe that all destinations in top 5 overnights are on the mainland. As Hvar was the destination within top 5 arrivals, the conclusion is that tourists have been staying there relatively short compared to other destinations.

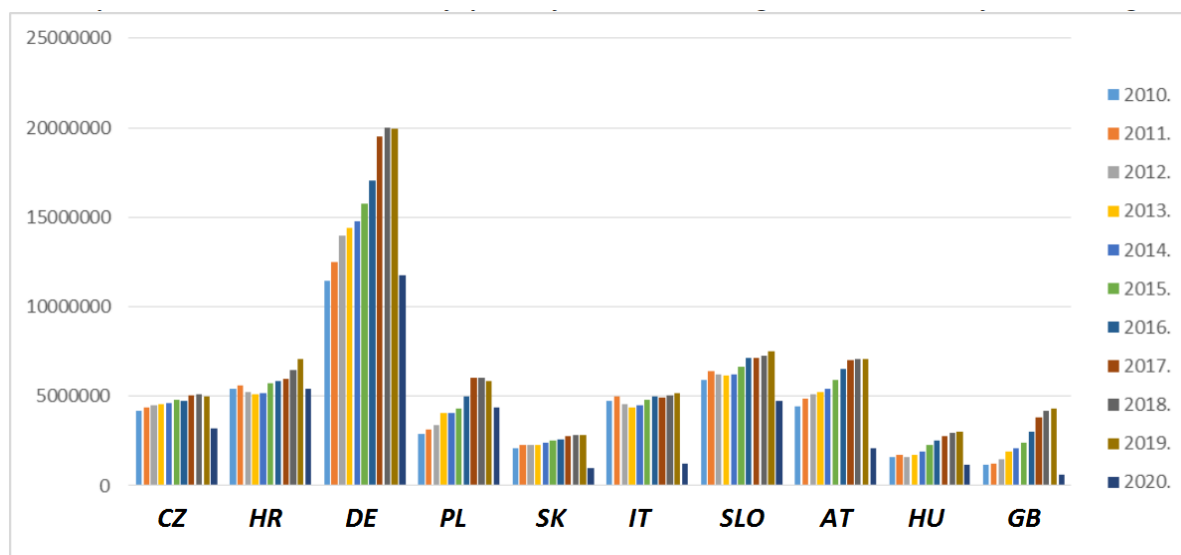
## 5. STRUCTURE OF TOURISTS

Tourists from all over the world visit Central Dalmatia. However, the majority of tourists are from Europe. Next two graphs show the number of tourist arrivals and the number of tourist overnights in Central Dalmatia for the period 2010-2020.



Graph 1: Tourist arrivals to Central Dalmatia by the country of origin (2010-2020)  
(Source: eVisitor)

The majority of tourists arrive from Germany, Poland, Croatia and Czech Republic. For some countries there is the high growth after 2010, as for example Germany, France and Great Britain. Other countries are stable over years, as Slovakia or Italy. The lowest fall in the number of tourists in 2020 was registered by tourists from Poland and Slovenia, as well as by domestic tourists. However this graph shows just the number of tourist arrivals. More interesting is to analyze the number of tourist overnights generated by these tourists.



Graph 2: Tourist overnights to Central Dalmatia by the country of origin (2010-2020)  
(Source: eVisitor)

From this graph it is obvious that the leading tourists in terms of overnights are from Germany. They generate more than double overnights compared to Slovenia, which is on the second place. During the whole period from 2010 to the Covid-19 crisis, there is an obvious growing trend in all analyzed countries. The largest fall in 2020 occurred by the tourists from Great Britain and Italy, and the lowest fall was in the case of the tourists from Poland and domestic tourists.

## 6. CONCLUSION

This paper gave the overview of tourist seasons 2020 and 2021 compared to 2019 as the record one in Central Dalmatia as one of the most popular tourist regions in Croatia. The analysis showed the data about tourist arrivals and overnights in Central Dalmatia, as well as their changes in the analyzed period. Additionally, the analysis includes the top 5 destinations in Central Dalmatia in 2019, 2020 and 2021, as well as the change in the leading destination ranking. The last part of the analysis shows the changes in the number of tourists and the number of overnights for the most popular countries from which Central Dalmatia receives tourists for the period from 2010 to 2020. For further research, this analysis could be extended to other Croatian tourist regions, which would enable the comparison. Additionally, after several more years, the influence on tourism could be better analyzed. This could show if the Covid-19 was just the temporarily crisis or it has completely changed the way of traveling and tourism.

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## THE FUTURE IS NOW BUT WHERE THE CEO'S ARE?

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### ABSTRACT

*Global warming, pollution, overpopulation, pandemics, inequality, wars, oppression, media, energy crisis, inadequate consumption of mineral and water resources over the last 100 years are taking a toll and asking whether we have an answer to what the Earth will look like in the coming years, decades or next century. The world is at a crossroads, what we are contemporaries is that we are in the middle of the global pandemic COVID 19, global warming and energy crisis. Solutions are being sought and offered that would help overcome the current situation, heal current chalangesd and find opportunities that would push the world forward. The environment, the way of working, the demands of the market, the division of work, the approach to work are changing, it is expected that today's behavior will define a more certain future. Companies are expected to prepare, survive, change, respond to increasingly demanding markets, recognize the future, flirt with today and prepare for tomorrow. Companies are run by directors, owners, stakeholders, CEOs, and the question of their necessity, knowledge, expertise, skills required in response to given challenges is rightly raised. This paper aims to provide some of the answers to the questions asked.*

**Keywords:** CEO, COVID 19, energy crisis, global warming

### 1. INTRODUCTION - MAIN FACTOR OF CRISIS TODAY

"Code red" for humanity. How further? How much more time do we have to ignore the signals sent to us by the planet, endlessly wasting resources without renewal, with our heads in the sand expecting that challenges that are no longer at the door but very deeply and complexly affect our lives and create our present and uncertain future. The combination of global warming, the energy crisis and the COVID-19 pandemic is creating widespread concern and uncertainty for consumers, organizations and countries around the world. This challenging environment has a strong impact on the processes in the company. In addition to these challenges, which are very obvious, the question arises whether there is no possibility that through existing organizations, states, corporations, companies,... there are Leaders who can respond to the challenges ahead. Are they able, through the company's Value Chaine, to meet the demands placed before them, such as the purposefulness of existence, skills, knowledge necessary today to survive in positions such as CEO, Directors, CEOs or similar?

#### 1.1. Global Warming

World surface temperature has been measured since 1880 on earth and in the ocean. We have reached the fifth annual heat record in the last ten years. In 2016, the temperature of the planet Earth averaged 1.26 degrees Celsius (2.3 degrees Fahrenheit) above pre-industrial averages, which is dangerously close to the limit of 1.5 degrees Celsius set by World Political agreement. Higher latitudes have warmed more than equatorial regions. "Global warming cannot be stopped," said Gavin A. Schmidt, a scientist who deals with climate change as the director of NASA's Goddard Institute of Space Studies.

"Everything that has happened so far is already in calculation." "I think the 1.5° C [2.7° F] target is inaccessible as a long-term goal," Schmidt said. He estimated that we will reach that around 2030. [1] Some of the global warming scenarios are melting ice, which could increase sea levels from 60 to 90 cm (2 to 3 feet) by 2100. This could relocate up to 4 million people. The oceans absorb about one-third of the total carbon dioxide in the atmosphere, causing them to heat up and become more acidic. Rising temperatures will therefore cause the oceans to become more acidic around the world. Recycling as one of the responses to pollution, helps to keep garbage in the final amount as well as reduces mining, which pollutes and destroys the environment unstopable and at the same time encourages the creation of new jobs. For example, according to Popular Mechanics, each ton of recycled aluminum cans (about 64,000 of them) actually keeps 10 tons of CO<sub>2</sub> out of the atmosphere. Whether this is a cure, the current picture does not show so [2].

## **1.2. Energy crisis**

Newspapers headlines:

- U.S. energy prices will rise as a answer of upcoming winter heating
- The Indian government is increasing coal reserves
- China is expanding coal production to reduce coal prices
- The energy crisis is causing disagreement in Europe over nuclear energy
- Tensions within government are growing over aid to energy companies in the UK

The message that is evident, world is facing an energy crisis. The chain of events begins with the pandemic and the fall of energy prices, followed. When pandemic of Covid-19 start, gas and electricity usege fell sharply in all countries, and when overproduction by oil and gas companies start, prices fell. Crude oil rose from \$ 38.85 to \$ 80.9 per barrel this year. Gasoline is more expensive than ever since 2014, with stocks at their lowest level in five years. Meanwhile, natural gas, which provides more than 30% of total electricity since the beginning of the year, has risen in price almost 100% in the United States since the beginning of the year [3]. Even the price of coal is exploding, and China and India are digging as fast as possible. The price of American coal has risen by 250 percent this year [3]. In Europe, energy prices have jumped several times, electricity prices have quadrupled, and natural gas prices have risen several times. All this creates an inflationary cycle, raising the prices of energy-intensive metals such as nickel, steel, silicon. Fertilizer, which is mainly produced from natural gas, has increased prices to record levels. China has announced that it will stop the export of fertilizers. Copper, perhaps the most important raw material in the construction of the wind farm and solar industry, has jumped by almost 40% since the beginning of the year [3]. The combination of variables affects this mess. Central banks that keep artificially low interest rates, cheap money despite spending records. China has increased its exports by 30%, political instability in Europe brings less gas from Europe. Have we gotten here to fast? Nuclear power plants closed in Germany, slowed down exploration and drilling of natural gas in the North Sea for the past 10 years. The demonization of fossil fuels and nuclear energy and their exclusion from the portfolios of many companies has made investors no longer interested in these projects for the common good. Renewable energy, on the other hand, has not been shown to be strong enough to meet the energy hunger that has suddenly pop up and has shown that renewables are not yet able to fully replace fossil fuels. In July, according to the US Energy Information Administration, renewable energy sources (excluding hydropower) accounted for just under 10% of total electricity production (gas was 42%).

### **1.3. Covid 19**

The Covid 19 pandemic infected more than 255 million people, recovered more than 230 million people and killed more than 5 million people worldwide [4], and the end is not seen yet. Pharmaceutical companies have developed vaccines that reduce the symptoms of the disease and are very effective, but in addition to the health system that is affected, our daily lives are most affected due to unpreparedness for pandemic conditions. The economy, on the other hand, has its own balance sheet, so that a quarter of companies experienced a 50% sales drop, on average a 27% drop in sales. About 65% of businesses have adjusted their salaries to less hours, vacations and absences. Because of this adjustment, only 11% of companies laid off people. Internet use of social media and digital platforms increased by 34% and 17% of companies invested in new software and digital solutions. One in 10 companies in countries with low GDP received assistance from the state. Also in these countries, more than 70% of companies emphasise lack of trust a major challenge in gaining support. At the same time, 1/5 of the companies that did not have any business challenges received assistance from the state, which shows that fiscal resources could be used much more optimally [5]).

## **2. IMPACT ON COMPANY VALUE CHAIN**

Typical emergency plans or crisis management has aim to ensure operational efficiency and empower companies for various crisis scenarios. They did not cover the pandemic scenarios of Lock Down, the closure of schools, travel restrictions, social distance ... In order to understand the possibility of defense and ways to improve, it is valuable to recognize the processes that are directly affected in the Value Chain of an organization. The problems in the processes that your industry may face of are as follows.

### **2.1. Impact on Strategy**

Today, leaders are swimming in unknown waters as a result of the energy crisis, pandemic, and global pollution. Accelerating the digital transformation and dealing with the inventive crisis as well as the cost structure creates a rather slippery slope for companies. Each of the challenges that culminates today is a path to uncertainty, and develop new algorithms for progress is difficult. Defining the company's course over and over again due to new circumstances becomes one of the priorities. The daily task of companies is to constantly make new assessments, create new scenarios and strengthen their ability to feel better and react faster on the same market. Remote working, online education and social distancing are becoming everyday life and creating demand for products and services provided by the technology industry. The uncertainty caused by the current crises in the world is a major obstacles in defining algorithms for new strategies that would strengthen the organization and contribute to its resilience and flexibility in the market.

### **2.2. Impact on Customer**

The current crisis is forcing companies to question their approach to customers, whether they can respond to relevant customer requirements to its perception, and how to use digital channels as a continuous way of doing business in the future. The way of changing life habits has changed what and how customers buy, it has created major structural changes in the consumer goods industry. Experiences after the pandemic will forever change the approach to the market and the customer, and the acceleration that happened in this segment will force organizations to digitalize and look for new opportunities, "contactless sales". Some companies in the technology sector are relying on overseas customer, which has slowed since of the pandemic, which shows that some industries are slowing down due to delayed purchases. On the other hand, the IT sector has a problem to fulfill needs and develop new applications.

### **2.3. Impact on Work Force**

The first wave of Covid 19 brought that in the U.S., 41.3% of businesses reported being temporarily closed. A far smaller number - 1.8% - reported being permanently closed due to a pandemic. ... The number of part-time employees was reduced by 34% [6]. Probably the biggest transformation will be experienced by the organizations themselves in response to the current market situation. This change brings the greatest challenges to the workforce, and future strategies will certainly have short-term and long-term goals that aim to make everyone function, work and struggle with everyday life. Establishing business continuity will require major changes in the workforce in organizations, and in the future there will certainly be a strong movement of labor in the market, and insecurity in the number of employees and ways of working. It will be necessary to develop agile strategies as a way of maintaining the global economy and a social effect that will aim to help employees and their families. This approach has as its ultimate goal the empowerment of a workforce that can meet all challenges. Concerns about working hours are increasing for full-time employees. As companies look for business solutions to address remoteworking, social distancing, and the need for sales alternatives, the demand for talent for developers and engineers will grow. Risks to cybersecurity will grow in response to the growing number of people working out of offices. Preserving talents and their further development will be essential. Employment will slow down as a result of the crisis, which may imply changes in the qualification structure of workers.

### **2.4. Impact on Operations**

The production of goods slows down as a result of a difficult or interrupted supply chain. Now, more than ever, the supply chain is the most critical link in the sales chain. The impact of changing customer behavior requires restructuring, new ways of supplying the market and paths to the market to which companies do not currently have an adequate response. Switching to different ways of making decisions, empowering management teams with purpose, data, technologies and speed of market entry. Old structures will despire, more flexible organizations capable of meeting market demands have a better chance of surviving. Organizations capable to response on current disruptions and reshape supply chains for the future have more chance to succeeded and increase the resilience of their own organization. Lifestyle change, expects the IT industry to have a boom in further development. Cash flow challenges will test undercapitalized companies and may require an alternative source. Many industries rely on one or two major suppliers which can result in interruptions in production and supply and bottlenecks.

### **2.5. Impact on Finance**

Risk and liquidity rebalancing are factors that need to be strengthened in companies. The manager's task is to address short-term liquidity challenges or address profitability and generate funds to invest in new business opportunities, including M&A. Falling sales and increased costs, interventions in investments in key technology processes and people. Liquidity becomes a matter of organization survival. New ways of working create new tax implications that are unclear or inapplicable to new cases. Tax liabilities could be delayed and new ways of communicating tax rules need to be developed. In addition to tax liabilities, due to a different way of working, financial reporting will change. The crisis emphasizes the need for flexible, resilient business models, increased focus on Cash Flow forecasting, companies may become more attractive for acquisition if they are rich in cash.

### **2.6. Impact on Technology**

The change in the way of doing business before the pandemic due to digitalization was only accelerated now. New ways of doing business in the IT world are pushing companies to test

and implement new applications even faster. Organizations face a number of new priorities and risks in doing business making a company that responds quickly to challenges is the foundation for the future. The safe transition to new IT technologies creates the need for even better protection, even faster development of the Cyber security system.

### **2.7. Impact on Industry**

The global crisis has affected all industries only with different degrees of severity. Organizations that are more resilient are easier to deal with the current state of the market, but a return to normal before the pandemic is no longer possible. Market patterns are changing, supply chains are disrupted, and different governments are reacting differently to the new crisis. Business continuity planning does not take into account the uncertainty due to the crisis. Cancellation of industrial events represents a less opportunity for the future of the business.

### **3. AMERICA HAS TOO MANY MANAGERS**

In a 2016 Harvard Business Review, two writers calculated the annual cost of excess corporate bureaucracy at about \$ 3 trillion, with an average of one manager for every 4.7 workers. Their story mentions several case studies - a successful GE factory with 300 technicians and one supervisor, a Swedish bank with 12,000 workers and three levels of hierarchy - which showed that reducing the number of managers usually leads to higher productivity and profits. Yet at the time of this story, 17.6 percent of the U.S. workforce (and 30 percent of compensation) was made up of managers - an alarming statistic that shows how large American managerial layer have become [7]. There is an avant-garde in the same market that shows possibility to do complex jobs with less managerial staff. These companies include Nucor (the most profitable steel producer in America), Morning Star (the largest tomato processor in the world), V.L. Gore (a \$ 3 billion high-tech company known for its Gore-Tek fabrics), Svenska Handelsbanken (a Stockholm-based bank with more than 800 branches across Northern Europe and the UK), Sun Hydraulics (the leading manufacturer of hydraulic components in its class), Valve (a pioneering online game developer) and the General Electric electric jet factory in Durham, North Carolina. Practice shows that it is possible to double the ratio of employees to managers and administrators, from 4.7: 1 to 10: 1. That would free up 12.5 million individuals for another job that is more creative and productive. The largest world economies in Europe and the USA are facing a prolonged decline in productivity. This has the implication of protectionism and creates market splits. While some hope that robots, genomics and the Internet of Things will one day bring a bonanza of productivity, we believe that a joint effort to reverse the growing tide of bureaucracy offers a more direct and less speculative way to improve economic performance. Current organizations are run by of three main types of managers: general managers, functional managers, and front-line managers. General managers are responsible for the overall performance of the organization. Functional managers lead a particular organization within a function. They usually cover areas such as accounting, marketing, sales, research and development, manufacturing, information technology or logistics. Frontline managers manage employees who are not managers themselves and represent the lowest level in the hierarchy. Modern American capitalism has equated "getting the maximum of someone" with "getting the most working hour out of him," instead of getting the best value of them. "Success" is separate from real success in business.

### **4. MANAGERS IN FUTURE**

The assumptions are that due to the large number of managers, as much as 50% of all internal compliance tasks are of suspicious value or unnecessary. If 111 million American non-managerial workers spend approximately 16% of their time on internal compliance (estimated by the Deloitte Economics study) [11] and that half of that is wasted, which means an annual

loss of about 8.9 million years of work. So there are 21.4 million employees in the U.S. workforce - 12.5 million managers and the equivalent of 8.9 million individual associates, who, through no fault of their own, create little or no economic value. This means that the United States could achieve current levels of economic production with 15% less people in the workforce. That would, in fact, increase GDP per worker from \$ 120,000 to \$ 141,000 [7]. It is not an idea to leave 21.4 million people without a job, but to engage in activities that create new value. Such a change would create more than \$ 3 trillion a year more GDP than before. In various industries, a huge part of the management staff is more focused on taking credits and shifting the blame, and not on the actual management of people, with terrible consequences. The challenges by the Covid 19 pandemic are also remote management, which in the long run leads to a shift towards partial or permanent remote work, which will lead to a re-examination of corporate structures. Parts of production will give up their bureaucracy for the reason that they are slowing down progress. This leads to a new way of evaluating managers who have a role in remote work, from the role of forcing jobs to be done, their role becomes more serviceable by having to provide tools to employs to do their jobs from a completely new environment and succeed in their work. In the 21st century, many do not need a manager to perform their activities, and it will be difficult to prove that managers are really doing something. The strongest modern companies will not win the war of talents by simply good employment policy from abroad, but by encouraging and empowering employees who create and produce for the company in the long run must. A 214 firm improvement study conducted by the National Bureau of Economic Research [8] recognize that potentially inject bad management into companies by prioritizing the decision and prioritizes the current performance of the job over whether the person can actually do the job for which is considered. The future will test need for a bureaucracy in which the "manager" is the only way for companies to grow. In the case of working from remote locations, the manager will become a tool for organizing the organization's resources and their proper use. Such a manager will get the best out of everyone for the company. Such processes seem painful because the reconstruction of the way of working is a natural process. Through the advancement of technologies, especially in transport and IT, the world is becoming an "electronic global village" as described by Canadian Professor Marshall McLuhan [9] and made it a smaller place has become quite challenging for the current organization that does not justify the position of manager by keeping people on task mentoring and training young people and gets the best out of them. Management needs to move from a position as a means of control to a culture that values a manager who estimate and develops greatness in others. COVID-19 has made remote working more the norm than the exception, and now many companies are struggling to provide a hybrid plan that managers and employees can accept in the long run. With a return-to-work policy, managers are trying to go back to the old familiar method of office life, but it is a mistake to impose a pre-pandemic mentality into a pandemic reality. "We are at a time in the history of work where the nature of the work we knew is disrupted, whether we accept it or not," says Neeley, author of Remote Work Revolution: Succeeding from Anywhere [10]. It is comfortable to think of our remote work environment as temporary; it is much harder to think about what it should look like in the long run and how to do it properly. One thing is for sure: many employees are looking for a permanent change in their schedule and companies are adapting. A recent McKinsey survey found that 90 percent of companies are ready to meet their plans for hybrid jobs [12]. Working from home gives the employee an unprecedented freedom of feeling agility and autonomy by making schedules that differ from typical working hours from nine to five. The flexibility given to them in the surveys shows that it encouraged increased productivity during the pandemic. This means that managers in this process did not have an impact on increased productivity.

## 5. CONCLUSION

The old task of managers is to count employees and the number of hours at work is past. They need to find a new role on the recommendation of J. Richard Hackman, an expert in organizational psychology from Harvard, proposing that managers switch to three key performance measures: results, group cohesion, and employee learning and satisfaction. Focusing on these measures ensures that managers track what is actually being achieved, rather than micro-managing what appears to be a productive work day. At the same time, employees must be trained to report their progress on a regular basis to keep managers informed. While people may have been reluctant to talk about their responsibilities at home before the pandemic, reason is might look like that they are not fully committed to their work, at this point they should feel free to continue to share any challenges they may face. And managers need to listen so that they can better adapt to people's individual circumstances when possible. The manager of the future should develop soft skills that include clear communication, active listening, empathy, and the ability to persuade others to work toward a common goal. This approach does not mean that workers should have complete control over their schedule. In times when colleagues have to work on specific tasks - for innovation, specific collaboration needs or team building - a face-to-face meeting may be more desirable. But instead of dictating an approach that suits everyone, business leaders should allow individuals and managers to understand the schedules that best suit their teams. On the other hand, full trust is needed, but it is necessary for the manager and employees to be side by side in order to cooperate. Research has shown that encouraging these measured disclosures and respecting employee boundaries can help build trust among associates, as well as evoke a sense of commitment among workers who feel valued for their well-being. Despite the pile of articles written about remote work in recent months, we know very little about the impact of remote work on performance. Maybe it's too early. While we cannot assess long-term performance in home office and remote management, we cannot be sure of the impact. What the future represents is a totally new approach, different from the approach in which management pressures oversight roles, the direction is that more and more organizations are opening a different path for people who are very good at their specific job, where these people get paid for that they are great at what they do and mentoring others. It is challenging how to reward someone who is good at their job without it being "now you manage some people". Focusing on talent is a task that needs to be solved by paying more money to people to be better at their job. Talent development is also a more sustainable form of business where you care talent so that it does not go elsewhere and does not cost you the time and money to have to recruit it. Philosophically speaking, it changes the organization from a defensive position - recruiting to offensive (building an organization from within), and also greatly expands the organization's ability to be successful in the market. This attitude should be a direction of the future and organizations that are stronger and spend less money. At the same time, the process is positive for young people because at the beginning of career, working in corporations is quite painful.

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## LOCAL SELF-GOVERNMENT UNITS IN SERBIA: FUNCTIONING DURING THE STATE OF EMERGENCY CAUSED BY COVID-19 VIRUS

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### ABSTRACT

*On March 15, 2020, after the first cases of COVID-19 virus were detected in Serbia, the President of the Republic, the President of the National Assembly, and the Prime Minister of the Republic of Serbia made a joint decision to introduce a state of emergency in the Republic of Serbia. During the state of emergency, a significant number of decrees, decisions and conclusions regulating the work of state institutions and companies in Serbia was adopted. The local self-government units were at the frontline and had an essential role in COVID-19 response. The paper discusses how and to what extent did cities and municipalities in Serbia established institutional mechanisms and strategic planning documents and procedures to be functional in the pandemic control.*

**Keywords:** *Local self-government units, state of emergency, COVID-19 virus, legal acts relevant during the state of emergency*

### 1. INTRODUCTION

To prevent the spread of the COVID-19 virus pandemic, the President of the Republic, the President of the National Assembly, and the Prime Minister of the Republic of Serbia made a joint decision introducing a state of emergency in the Republic of Serbia on March 15, 2020. During the state of emergency, a significant number of decrees, decisions and conclusions regulating the work of state institutions and companies in Serbia was adopted. The state of emergency was terminated on May 6, 2020, by the decision of the National Assembly of the Republic of Serbia. Local self-government units (LSGUs) are the level of government which is closest to the citizens. Thus, local regulations considerably contribute to a safe environment and affect the quality of life. The role of the governments on the local level is important not only in everyday circumstances, but also in emergencies such as natural disasters and pandemics. This raises the question of how cities and municipalities in Serbia reacted to the suppression of the pandemic caused by COVID-19 virus during the state of emergency. Another question is related to the relevant legal framework in Serbia and if it was adequate to the successful operation of LSGUs. The paper discusses how and to what extent did cities and municipalities in Serbia established institutional mechanisms and strategic planning documents and procedures to be functional in the pandemic control. Another important issue is the achieved level of communication and coordination of relevant (and competent) actors on the central, provincial, and local level. In that regard, the paper discusses the interaction between services and institutions at the local level, cooperation with the Government of Serbia and

relevant ministries and institutions on the central level, as well as cooperation with neighboring LSGUs, humanitarian organizations and non-governmental organizations (NGOs).

## **2. LEGAL FRAMEWORK**

The Constitution of the Republic of Serbia regulates the issue of the state of emergency in detail. Article 200 of the Constitution provides that when "the survival of the state or its citizens is threatened by a public danger" the National Assembly proclaims the state of emergency for a period of 90 days maximum, extendable for another 90 days by the majority votes of the total number of deputies". According to the Article 200 of the Constitution, on March 15, 2020, the President of the Republic, the President of the National Assembly, and the Prime Minister jointly adopted the Decision on declaring a state of emergency in Serbia. A state of emergency has been declared due to the danger of spreading infection caused by the COVID-19 virus. After the state of emergency was introduced, the Government of the Republic of Serbia adopted a large number of decrees, decisions and conclusions which additionally regulated the work of public institutions, companies and entrepreneurs. Furthermore, the Government prescribed measures which restricted personal freedoms during the state of emergency. On April 29, 2020, the National Assembly adopted a law which confirmed the validity of these decrees of the Government of Serbia. The Law on Disaster Risk Reduction and Emergency Management is the key act which regulates the organization and functioning of the disaster risk reduction system and emergency management, as well as the competencies of relevant institutions at the central, provincial, and local level. The Law states that "An emergency situation is declared when the risks and threats or consequences of a catastrophe on the population, material and cultural goods or the environment are of such scope and intensity that their occurrence or consequences cannot be prevented or eliminated by regular action of competent bodies and services. which, for their mitigation and elimination, it is necessary to use special measures, additional forces and means with an intensified regime of work". (Article 38). The act also states that LSGUs have a primary role in disaster risk management and that role should be supported by all relevant institutions from central and provincial level (Article 5). In that sense, based on the law, the local self-governments carry out the following activities:

- 1) Adopt regulations on the organization and functioning of civil protection on the territory of the LSGUs, at the proposal of the competent staff and ensure its implementation;
- 2) Develop and adopt risk assessment, local disaster risk reduction plan, protection and rescue plan and external plan for protection against major accidents for Seveso complexes of higher order in their territory;
- 3) Establish emergency headquarters;
- 4) Entitle entities of special importance for the protection and rescue of LSGUs at the proposal of the competent staff;
- 5) Plan and provide budget funds intended for disaster risk reduction and emergency management;
- 6) Educate civil protection units;
- 7) Establish a situation center in accordance with the act on the organization and functioning of civil protection, and depending on the technical and material possibilities;
- 8) Prepare a study of the coverage of the public alarm system for its territory (acoustic study) and take care of the maintenance, procurement and installation of acoustic sources (sirens) and other equipment within the unique public alarm system in the Republic of Serbia;
- 9) Cooperate with neighboring LSGUs in the implementation of measures and activities important for disaster risk reduction and emergency management;
- 10) Take urgent and preventive measures in order to reduce the risk of disasters;
- 11) Adopt the annual work plan and the annual report on the work of the emergency staff;
- 12) Perform other tasks determined by law.

The Law defines the basic strategic document which determines the policy and directs the activities of state bodies and other entities in disaster risk management, i.e., the Strategy for Disaster Risk Reduction and Emergency Management, as well as the accompanying Action Plan (Article 12). Also, the Law stipulates that the authorities from central and provincial level have the obligation to provide professional and other assistance and support to LSGUs in performing abovementioned tasks, in accordance with their competencies. The same act stipulates forming of emergency headquarters, which will monitor activities on disaster risk reduction, coordination, and management in emergency situations. These bodies are operational institutions formed at different levels of government:

- 1) For the territory of the Republic of Serbia - the Republic Headquarters for Emergency Situations formed by the Government;
- 2) For the territory of the autonomous province - the provincial headquarters for emergency situations which forms the executive body of the autonomous province;
- 3) For the territory of the administrative district - the district headquarters for emergency situations which is formed by the Republic headquarters for emergency situations;
- 4) For the territory of the city - the city headquarters for emergency situations formed by the competent body of the city;
- 5) For the territory of the municipality - the municipal headquarters for emergency situations, which is formed by the competent body of the municipality.

Additionally, the Law prescribes that emergency headquarters may form an expert-operational team, consisted of bodies with proven expertise in the field of emergency management and related areas, such as: relevant state administration bodies, provincial and LSGUs, scientific institutions, private companies, and other legal entities.

### **3. FUNCTIONING OF LOCAL SELF-GOVERNMENT UNITS DURING THE STATE OF EMERGENCY**

The research with the representatives of LSGUs was conducted in May 2020. The research was performed in the scope of a larger initiative, and it was prepared by the Institute for Territorial Economic Development (InTER) in cooperation with the National Convention on the European Union (NCEU), with the support of a project funded by the Open Society Foundation, Serbia. This paper used the data received from the LSGUs through the questionnaire which was distributed to the local governments in Serbia (LSGUs from Kosovo and Metohija did not participate in the research). The questionnaire consisted of 22 semi-structured questions in which respondents were able to enter their comments. In total, 99 questionnaires were fully completed, and these data were used in the analysis. Questionnaires were obtained from 16 cities (out of a total of 27 cities in Serbia without Kosovo and Metohija, i.e. 59.3%) and from 80 municipalities (out of a total of 118 municipalities in Serbia without Kosovo and Metohija, i.e. 67.8%). The questionnaire was also filled out by three city municipalities, two from Belgrade (Grocka and Zvezdara) and one from Nis (Panteleji). Although city municipalities do not belong to the local self-government, their answers were used in further analysis. The geographical distribution of the received responses by regions shows that 69.2% of LSGUs from Western Serbia and Sumadija completed the questionnaire, 63.5% LSGUs from Eastern and Southern Serbia and 62.2% LSGUs from Vojvodina. After the state of emergency was introduced, and after the new Law on Disaster Risk Reduction and Emergency Management passed, the Government of the Republic of Serbia adopted the Decree on the composition, manner, and organization of emergency headquarters at all levels of government. The Decree enabled local self-governments to regulate more closely the work of their emergency headquarters, which were put into function to suppress the COVID-19 pandemic. The results from the questionnaire showed that LSGUs in Serbia immediately activated emergency

headquarters to coordinate relevant institutions and organizations in preventing the spread of the pandemic on their territory. Most respondents did not change the composition of the emergency headquarters after the introduction of the state of emergency. However, about 18.7% of LSGUs decided to supplement the existing or to hire new emergency staff. Crisis headquarters was formed in several cities and municipalities (Bac, Cacak, Kragujevac, Plandiste, Prokuplje, Vranje, Vrnjacka Banja). Decisions on the formation of the crisis headquarters were usually made by the emergency headquarters, although there are cases where such a decision was made by the mayor (Prokuplje and Vrnjacka Banja), the City Council (Kragujevac, Vranje), or the Municipal Assembly (Plandiste). The research showed that expert-operational teams have been formed in many cities and municipalities. In most cases, they were considered of a lower number of individuals that were already a part of emergency headquarters. For example, in Arilje and Bac, the decision was made to reduce the existing emergency headquarters, to comply with the recommendations of the Government of Serbia on the reduced number of people indoors. In Loznica, all members of the staff for emergency situations over the age of 65 were replaced. Regarding the composition of the emergency headquarters, they usually consisted of representatives of local self-government bodies, the police and health institutions, public companies founded by LSGUs, Serbian Red Cross and Center for Social Work, and the Sector for Emergency Situations. Additionally, representatives of media, army, educational institutions, private companies, and citizens' associations participated in the work of emergency headquarters in a slightly smaller number of cases. The work of emergency headquarters and expert-operational teams is regulated by different legal acts (regulations and procedures), which are often defined by the decision on the establishment of these bodies, in accordance with relevant legislation, statutes of LSGUs and other acts. The cities and municipalities in Serbia were facing many challenges in preventing the spread of the pandemic caused by COVID-19 among the local population. As the key ones, the respondents highlighted the following: preventing the spread of the pandemic in hospitals, health centers, homes for the elderly; ensuring a continuous supply of food and medicines; organizing the continuous help for people over the age of 65 and categories of the population identified as at-risk groups. Other identified challenges were related to the procurement of sanitary and protective equipment and means for disinfection of public areas. LSGUs in rural areas also faced with problems regarding the restrictions in the movement of farmers and beekeepers. In many LSGUs, there was a problem with the influx of returnees from abroad and the implementation of quarantine measures for them. The LSGUs also had to ensure the implementation of the measures on the local level, which were prescribed by the crisis staff of the Government of the Republic of Serbia. These measures were mainly related to the abolishing of public transport and organization of work of the LSGUs, other public institutions, and private business. In the operational terms, the biggest challenge emergency headquarters faced was implementation of regulations, decisions and recommendations of state bodies and their adaptation to be applicable on the local level. Decisions had to be made and implemented quickly, which was not always possible. As a result, LSGUs had a frequent communication with the institutions from central level to obtain clarifications in the implementation of directives, recommendations and decisions which were made by the Government of Serbia and other institutions from the central level. Most respondents stated that they were not satisfied with the quality of communication and cooperation. On the other hand, good cooperation and communication between emergency headquarters and expert-operational teams (together with the volunteers) on the local level, significantly contributed to efficient solving of many obstacles previously identified. Respondents highly rated the work of their emergency headquarters and expert-operational teams, with a cumulative score of 4.7 out of a maximum of 5. The high score is explained by the operational capabilities of LSGUs to implement many decisions prescribed by the Government of the Republic of Serbia, in a short time and in

complex circumstances. Operational capability of emergency staffs had been significantly improved through flood prevention and response activities that had affected many LSGUs in the past. The knowledge and experience gained in these situations was applied during the state of emergency. Regarding the communication with the authorities from the central level, during the state of emergency, LSGUs mostly cooperated with the Ministry of Interior. This cooperation can be explained by the well-established institutional links between the emergency headquarters and this ministry, which was further improved during the state of emergency. Among the respondents, 75.8% of them confirmed that they had frequent communication with the Ministry of Interior, and 92.9% of them said that the cooperation was good. Majority of LSGUs also communicated with the Ministry of Health, and 82.3% were satisfied with it. The communication and cooperation with other institutions was rated slightly lower: Ministry of Labor, Employment, Veterans and Social Affairs (80.8%), Ministry of Defense (78.8%), Ministry of Economy (69.7%) and the Crisis Staff of the Government of Serbia (69.7%). On the other hand, LSGUs were the least satisfied with the cooperation with the Ministry of Trade, Tourism and Telecommunications (55.6%), and with the Institute of Public Health of Serbia “Dr. Milan Jovanovic Batut” (54.6%). Regarding the cooperation with other institutions and organizations, the most positive rating was given for the cooperation with the media (94.8%), followed by the cooperation with the Serbian Red Cross (91.8%), the neighboring LSGUs and their headquarters (87.5%) and the district headquarters for emergency situations (86.6%). Cooperation with the Standing Conference of Towns and Municipalities (82.3%) and with citizens' associations (82.3%) were also highly rated. The research showed that the LSGUs had the least communication with regional development agencies (49.5%), the Chamber of Commerce (64.6%), donors and international organizations (74%), and with humanitarian organizations (76.8%). On the provincial level, in total, 28 local self-governments from the Autonomous Province of Vojvodina responded to the questionnaire. The data showed that their communication with the Government of Vojvodina (82.1%) was significantly more intensive than it was with the Government of Serbia (60.7%). Communication with the provincial headquarters for emergency situations (82.1%) was even more significant in relation to the contact with the Crisis Staff of the Government of Serbia (57.1%). However, as in other parts of Serbia, LSGUs from Vojvodina most often communicated with representatives of the Ministry of Interior (92.9%), the Ministry of Labor, Employment, Veterans and Social Affairs (89.3%) and the Ministry of Defense (82.1%). Regarding the cooperation with provincial institutions, most of the respondents pointed out good cooperation with the Government of Vojvodina, the Provincial Secretariat for Health and the Provincial Secretariat for Regional Development, Interregional Cooperation and Local Self-Government.

#### 4. CONCLUSION

Shortly after the first cases of COVID-19 virus were detected in Serbia, the state bodies introduced a state of emergency and prescribed measures and regulations to suppress the spread of the pandemic. With the introduction of the state of emergency, cities and municipalities in Serbia have faced the challenge of organizing their institutions and bodies to effectively implement regulations and measures prescribed by the Government of the Republic of Serbia and other institutions on the central level. LSGUs were especially challenged to put the prescribed measures in a local context and make them applicable in both, urban and rural areas. In order to implement prescribed measures, the LSGUs activated the emergency headquarters on the local level. Some of the LSGUs have formed crisis headquarters as new bodies, and some of them expert-operational teams, both were organized to prevent the spread of COVID-19, and to reduce the negative effects of the pandemic. The LSGUs managed to activate a significant number of volunteers, which positively contributed to the efficiency of the emergency headquarters to perform different activities (preventing the spread of the pandemic in hospitals,

health centers, homes for the elderly; ensuring a continuous supply of food and medicines; organizing the help for people at-risk groups, organizing the work of the institution on the local level, private business and farmers, etc.). However, the most challenging was to adopt and implement a significant number of regulations derived from the central level of government, as well as to adjust them to be applicable on the local level. For that purpose, the communication and cooperation with different institutions from the central level was inevitable. The best institutional cooperation was achieved with the representatives of the Ministry of the Interior, Ministry of Health, and the Ministry of Defense. LSGUs also had a good cooperation with the Ministry of Labor, Employment, Veterans and Social Affairs, the Ministry of State Administration and Local Self-Government, the Red Cross and the Standing Conference of Towns and Municipalities. Good cooperation with the media was also emphasized during the research. Despite the recently amended legislation in the field of emergency management, the research showed that there is a still need to develop clear procedures for the actions of LSGUs in emergency situations (such as a pandemic). The pandemic is recognized in the law and strategic-planning documents as a security threat, but the procedure in case of this danger has not been elaborated in more detail.

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## CONTRACTING PARTIES TO THE SPONSORSHIP AGREEMENT, WITH SPECIAL REFERENCE TO THE PRINCIPLE OF THE BEST INTERESTS OF THE CHILD

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### ABSTRACT

*The subject of the author's attention in this paper is the question of who the contracting parties to the sponsorship agreement are. This includes determining who in practice concludes a sponsorship agreement as a sponsor, and who as a sponsee, who has the economic interest in concluding a sponsorship agreement at all, as well as whether there are legal restrictions in that regard. Special attention will be dedicated to the question of whether the conclusion of a sponsorship agreement is in the best interests of the child, if the sponsee is a minor natural person.*

**Keywords:** *sponsorship agreement, sponsor, sponsee, economic interest, principle of best interests of the child*

### 1. INTRODUCTION

The sponsorship agreement obliges one contracting party, the sponsor, to the other party, sponsee, to, in order to support his activities, pay him a certain amount of money, hand over certain things for ownership, or use, provide certain services (the sponsor may owe a combination of these obligations), and the sponsee in return gives permission to the sponsor to use his image for promotional purposes, and undertakes to promote the sponsor, his products, or services in an agreed manner. Therefore, the contracting parties to the sponsorship agreement are the sponsor and the sponsee. The subject of the author's attention in this paper is precisely defining the roles of the sponsor and the sponsee. To answer this question, we must first analyze who appears in the practice of concluding a sponsorship agreement as a sponsor, and who appears as a sponsee. In this respect, the economic logic of sponsorship is relevant. Therefore, we must ask a question, who has an economic interest in concluding a sponsorship agreement, either as a sponsor or as a sponsee. The fact is that based on the concluded sponsorship agreement, the sponsor takes over the contractual obligation of support, because he supports the activities of the sponsee, and the sponsee takes over the communicative (promotional) contractual obligation, because he communicates with the public for the sponsor and thus promotes the sponsor, his products or services. The goal that the sponsor strives for is "image transfer". In fact, the sponsor wants to create a connection between him and the sponsee in the eyes of the public, so that the part of the positive image of the sponsee is transferred to him, his products, or services. On the other hand, the sponsee wants money, things, or services to support his activities. It is within these limits that the economic interest in concluding the sponsorship agreement lies. The answer to the question, who is a sponsor and who is a sponsee, necessarily implies the analysis of the law, that is, it should be established whether there are laws that regulate who cannot be a sponsor, or a sponsee.

As sponsee very often is, in the practice of concluding a sponsorship agreement, a minor natural person, special attention in this paper will be dedicated to the provisions of the Family Law which are important for concluding a sponsorship agreement with a minor natural person, as well as to the question of whether concluding a sponsorship agreement in the best interests of the child.

## 2. ECONOMIC INTERESTS IN CONCLUDING A SPONSORSHIP AGREEMENT

In practice, the sponsorship agreement is concluded by natural persons and legal entities, both as a sponsor and as a sponsee. If we consider natural persons as sponsors, the economic logic of sponsorship suggests that only entrepreneurs could have an economic interest in their promoting, i.e. the promoting of their business name, their products, or services. This clearly follows from the legal definition of the term entrepreneur. According to the Company Law (hereinafter referred to as ZPD), the entrepreneur is a legally capable natural person who performs activities for the purpose of generating income and who is registered as such in accordance with the Registration Law.<sup>1</sup> Other natural persons, as individuals, have no economic interest in concluding a sponsorship agreement to promote their personal name.<sup>2</sup> If we consider natural persons as sponsees, in the practice of concluding the sponsorship agreement, they are athletes, coaches, artists, scientists, researchers, students, etc; as well as any other natural person who needs support to perform his activities and for whom, of course, potential sponsors find interest in sponsoring. However, it is necessary to point out that in practice, the conclusion of the sponsorship agreement with natural persons is most often in sports. So, most often it will be an athlete, or a coach.<sup>3</sup> The following is a consideration of which of the different categories of legal entities has an economic interest in concluding a sponsorship agreement. Legal entities are not a unique category. Thus, there are legal entities of public and private law. Legal entities of public law are the country, autonomous province, municipality, city, institutions and public companies. Legal entities of private law are companies, associations, institutions, endowments and foundations.<sup>4</sup> It seems obvious to us that the country, the autonomous province, the municipality and the city have no economic interest in concluding sponsorship agreements, either as sponsors or as sponsees.<sup>5</sup> The main goal of performing the activities of institutions is to ensure the exercise of rights established by law and the exercise of other statutory interests of citizens and organizations in certain areas.<sup>6</sup> Institutions may have an economic interest in concluding sponsorship agreements both as sponsors and as sponsees. For example, the theater concludes a sponsorship agreement as a sponsor, with a well-known actor in order to improve the image and thus increase the number of visitors. However, such a thing requires a longer period of promotional activity, which requires greater financial resources. A practical problem that arises in practice is the lack of financial resources. For example, in 2010, the Belgrade Philharmonic Orchestra had about RSD 357,000 at its disposal for promotion.<sup>7</sup> Consequently,

<sup>1</sup> Zakon o privrednim društvima (hereinafter ZPD), Službeni glasnik Republike Srbije, 36/2011, 99/2011, 83/2014, 5/2015 čl. 83.

<sup>2</sup> Therefore, they are most often patrons. So benefactors who help science, art, sports, etc, whereas the difference between a patron and a sponsor is that a patron, unlike a sponsor, does not demand a counter-service for his support. The patron is guided by altruistic and idealistic motives.

<sup>3</sup> The one who gives support to an artist, scientist, student, or researcher is usually a patron.

<sup>4</sup> For more information on the types of legal entities, please refer to: Stojanović, D. (1990). Uvod u građansko pravo. Beograd. 134-137.

<sup>5</sup> In principle, one could imagine a situation in which countries that have a bad image in the world, such as Serbia, try to improve their image in the world by sponsoring certain events, or their sports teams, and through their victories. However, we believe that sponsorship is not an adequate way to improve the image of a country in the world. National activities would be more adequately organized, for example in the form of campaigns, which would aim to improve the image of the country, which in Serbia should have been dealt with by the Council for the Promotion of Serbia or a lobbying mechanism, through the engagement of world-renowned lobbying agencies.

<sup>6</sup> Zakon o javnim službama, Službeni glasnik Republike Srbije, 42/91, 71/94, 79/2005, 81/2005, 83/2005, 83/2014 čl. 1.

<sup>7</sup> Please refer to: Starčević, M. (2014). Strateško planiranje marketinga u ustanovama kulture, Doktorska disertacija, Fakultet organizacionih nauka, Univerzitet u Beogradu. Beograd. 113.



institutions in practice conclude sponsorship agreements mainly as sponsees, because they need support to perform their activities. For example, national theaters, Belgrade Philharmonic Orchestra, etc. are sponsored in this way. An association is a voluntary and non-governmental non-profit organization based on the freedom of association of several natural persons or legal entities established for the purpose of achieving and promoting a certain common or general goal and interest.<sup>8</sup> According to the Law on Associations, an association may directly perform economic or other profit-making activities.<sup>9</sup> However, the profits made in this way can be used by the association only to achieve the goals for which it was founded. In that respect, an interest could be recognized for the associations, not an economic interest, but certainly an interest to sponsor, for example, events that are in line with their goals. For example, this is how Automobile and Motorcycle Association of Serbia sponsored the Belgrade marathon.<sup>10</sup> However, such situations are rare. The economic interest of associations to conclude sponsorship agreements as sponsees is more obvious, in order to obtain support for achieving their goals, so in the practice of concluding sponsorship agreements, associations are almost always the sponsee. Thus, organizations in the field of sports are sponsored, such as sports organizations (according to the Sports Law (hereinafter ZS), for the purpose of performing sports activities, a sports organization may be established as an association (sports association)),<sup>11</sup> sports societies, sports federations, Olympic and Paralympic Committee, cultural and artistic societies, etc. Endowments and foundations are established to achieve common good goals.<sup>12</sup> As well as endowments and foundations, sponsors can support the achievement of common good goals. However, unlike sponsors, endowments and foundations are not interested in achieving communicative goals, but in achieving the goals for which they were founded, so it can be said that they are focused on patronage and donations, and not on sponsorship. Likewise, endowments and foundations in practice receive donations rather than conclude sponsorship agreements as the sponsee. A public company is a company that performs activities of general interest, and which is established by the Republic of Serbia, an autonomous province, or a unit of local self-government.<sup>13</sup> It is obvious that public companies lack any economic interest in concluding sponsorship agreements as sponsees, while the issue of the economic interest of public companies to conclude sponsorship agreements as sponsors is debatable. However, the interesting fact is that public companies are the greatest sponsors in Serbia. So, public companies in Serbia, many of which have been operating at a loss for many years, spent 1.3 billion dinars on sponsorships and donations in the period from 2011 to 2014. The largest amounts of money for sponsorships and donations were given by Elektroprivreda Srbije, JP Pošta Srbije, Srpska banka, Airport "Nikola Tesla" and Elektromreže Srbije.<sup>14</sup> As for public companies as sponsors, the question of rationality and social justification arises for public companies, many of which are market monopolists in their fields, to conclude sponsorship agreements for the purpose of additional self-promotion. The only logical explanation is actually in the influence of politics. Accordingly, sponsorship agreements concluded by public companies as sponsors cannot be considered sponsorship agreements in the true sense of the word, because, at least at first glance, they lack economic interest in achieving communicative goals. However, as a public company is established and operates, among other things, for the purpose of making a profit,<sup>15</sup> and as it is obliged to pay a part of the

<sup>8</sup> Zakon o udruženjima (hereinafter Zakon o udruženjima), Službeni glasnik Republike Srbije, 51/2009, 9/2011 čl. 2.

<sup>9</sup> Zakon o udruženjima, čl. 37/2.

<sup>10</sup> Available at: <https://www.amss.org.rs/aktuelnosti/amss-sponzor-jubilarnog-25-beogradskog-maratona>.

<sup>11</sup> Zakon o sportu (hereinafter ZS), Službeni glasnik Republike Srbije, 10/2016 čl. 33/1.

<sup>12</sup> Zakon o zadužbinama i fondacijama, Službeni glasnik Republike Srbije, 88/2010, 99/2011 čl. 2.

<sup>13</sup> Zakon o javnim preduzećima (hereinafter Zakon o javnim preduzećima), Službeni glasnik Republike Srbije, 119/2012, 116/2013, 44/2014 čl. 1.

<sup>14</sup> "Javna preduzeća i finansiranje sporta/Gubitaška sponzorstva na račun svih nas", available at: <http://www.energyobserver.com/vesti.php?lang=1&ID=44053>.

<sup>15</sup> Zakon o javnim preduzećima, čl. 4/4.

realized profit to the budget of the Republic of Serbia, autonomous province, or local self-government unit,<sup>16</sup> the economic interest to improve their image and increase their income by concluding the sponsorship agreement could be recognized in this. We believe, however, that there are fewer benefits that the country can have from concluding sponsorship agreements by public companies as sponsors than the possibilities for corruption. Public companies are controlled by political parties, and political parties also control the boards of directors of sports associations, and this opens up a great possibility of corruption. In accordance with this, the Government of the Republic of Serbia, thorough the Regulation on determining the elements of the annual business program for 2020, i.e. the three-year business program for the period 2020-2022 of public companies and other forms of organization that perform activities of general interest, prohibited public companies that operate at a loss, as well as those who use funds from the budget to finance current business operations, salaries and material costs, from spending money on sponsorships.<sup>17</sup> Still, we are not sure that is enough. Consequently, not only do we believe that sponsorship agreements concluded by public companies as sponsors cannot not be treated as sponsorship agreements in the true sense of the word, but we advocate that, following the example of the Law on Sponsorship of the Republic of Romania (hereinafter RZS) public companies should be prohibited from concluding sponsorship agreements as sponsors. RZS stipulates that government authorities and institutions, as well as companies with majority of country ownership, may not perform sponsorship activities.<sup>18</sup> A company is a legal entity that performs activities for the purpose of gaining profit.<sup>19</sup> Companies are the category of legal entities that have the most obvious economic interest in concluding sponsorship agreements as sponsors, as they may benefit from the promotion of their business name, products, or services. Therefore, in the practice of concluding sponsorship agreements, companies are the most important category of sponsors. However, according to ZS, for the purpose of performing sports activities and sports work, a sports organization can also be established as a company (sports company),<sup>20</sup> therefore, in the practice of concluding sponsorship agreements, companies are sponsees.

### 3. LEGAL RESTRICTIONS

Certain restrictions regarding who can be a sponsor arise from the Law on Advertising of the Republic of Serbia and the Law on Ratification of the European Convention on Transfrontier Television. Restrictions arising from the Law on Advertising of the Republic of Serbia apply to producers of alcoholic beverages, organizers of games of chance, producers of tobacco products, government authorities and organizations and political organizations, and they refer to sponsorship of minors, athletes, sports clubs, sports competitions and media. The restrictions arising from the Law on Ratification of the European Convention on Transfrontier Television apply to producers and sellers of tobacco products and to the advertising of medicines and medical treatments, and refer to the sponsorship of television programs. The Law on Advertising of the Republic of Serbia stipulates that advertisers of alcoholic beverages and tobacco products may not sponsor media, athletes, sports clubs, sports competitions, including the sponsorship of individuals, i.e. participants in these events, minors, their activities, as well as persons or activities whose audience is predominantly consisted of minors.

<sup>16</sup> Zakon o javnim preduzećima, čl. 58.

<sup>17</sup> Available at: [paragraflex.rs](http://paragraflex.rs).

<sup>18</sup> Legea nr. 32/1994, lege privind sponsorizarea, modificata si completata prin: Ordonanta Guvernului nr. 36/1998, Legea nr. 204/2001 si Legea nr. 394/2006., čl. 4., available at: <http://codfiscal.net/40542/legea-321994-privind-sponsorizarea-actualizata>.

<sup>19</sup> ZPD, čl. 2.

<sup>20</sup> ZS, čl. 33/1. In practice, most sports organizations are still organized as associations of citizens while only a small number of them are organized as companies (most often limited liability companies and joint stock companies), please refer to: Đurđević, N., Mićović M., Vuković, Z. (2014). Ugovori u sportu. Kragujevac. 49.

The exception is that the ban does not apply to advertisers of alcoholic beverages with an alcohol content of less than 20%, as well as to the sponsorship of print media and events whose organizers are the print media, unless they are targeted or thematically intended for minors.<sup>21</sup> For tobacco producers, in cases of sponsorship not prohibited by this, the use of the business name and trademark of the tobacco products manufacturer is allowed in the premises intended for participants of sponsored gatherings and the audience of sponsored events, but the use of the business name and trademark of tobacco products manufacturers is not allowed on stage and in scenography of a cultural event, i.e. in another noticeable way that would ensure their visibility during a possible television broadcast or recording of the event. Also, the use of the business name and trademark of a tobacco products manufacturer is not allowed in advertisements which advertise a sponsored event. The same goes for sponsorship by electronic cigarettes manufacturers.<sup>22</sup> In addition, the organizer of typical and special games of chance may not sponsor minors and their activities, as well as persons, or activities whose audience is predominantly consisted of minors,<sup>23</sup> while media services or program contents may not be sponsored by government authorities and organizations and political organizations.<sup>24</sup> The Law on Ratification of the European Convention on Transfrontier Television stipulates that programs cannot be sponsored by natural persons or legal entities whose main activity is the production, or sale of products, or the provision of services whose advertising and tele-shopping are prohibited. It is further stated that advertising and tele-shopping of tobacco products are not allowed, as well as advertising of medicines or medical treatments that can be obtained in the Contracting Country from whose territory the program is broadcast only with a doctor's prescription and that tele-shopping for medicines and medical treatments will not be allowed.<sup>25</sup> It also stipulated that companies whose activities include, inter alia, the manufacture or sale of medicines and medical treatments may sponsor programs by promoting the name, trademark, image, or activities of the company, with the exception of any messages regarding medicines, or specific medical treatments that are available only with a doctor's prescription in the broadcasting Contracting Country, and that the sponsorship of news and current affairs programs will not be permitted.<sup>26</sup> Prohibitions and restrictions on sponsorship by manufacturers and sellers of tobacco products, alcoholic beverages and medicines are not specific to domestic legislation. The comparative analysis of foreign legislations indicates that this is a general trend. Thus, the Law on Public and Private Radio and Television System of the Republic of Italy, better known as Mammi Law, according to its proposer Oscar Mammi, who was the Minister of Post and Telecommunications of the Government of the Republic of Italy at that time, stipulates that programs cannot be sponsored by natural persons or legal entities whose main activity is the production or sale of cigarettes, or other products of the tobacco industry, production or sale of alcoholic beverages, production or sale of medicines, or the provision of medical services available only with a doctor's prescription.<sup>27</sup> The National Broadcasting Agreement of the Federal Republic of Germany (Rundfunkstaatsvertrag) stipulates that shows may not be sponsored by companies whose main activity is the production or sale of cigarettes and other tobacco products, and in cases of sponsoring shows by companies whose activities include the production and sale of medicines and medical treatments, only the name or image of the company can be promoted, but not for certain prescription medicines and medical

<sup>21</sup> Zakon o oglašavanju (hereinafter Zakon o oglašavanju), Službeni glasnik Republike Srbije, 6/2016 čl. 67.

<sup>22</sup> Zakon o oglašavanju, čl. 69.

<sup>23</sup> Zakon o oglašavanju, čl. 68.

<sup>24</sup> Zakon o oglašavanju, čl. 65/6.

<sup>25</sup> Zakon o potvrđivanju evropske konvencije o prekograničnoj televiziji (hereinafter Zakon o potvrđivanju evropske konvencije o prekograničnoj televiziji), Službeni glasnik Republike Srbije – Međunarodni ugovori, 42/2009 čl. 15.

<sup>26</sup> Zakon o potvrđivanju evropske konvencije o prekograničnoj televiziji, čl. 18.

<sup>27</sup> Disciplina del sistema radiotelevisivo pubblico e privato, Legge 6 agosto 1990., n. 223., čl. 8/14., available at: [http://www.camera.it/\\_bicamerali/rai/norme/I223-90.htm](http://www.camera.it/_bicamerali/rai/norme/I223-90.htm).

treatments.<sup>28</sup> The Electronic Media Law of the Republic of Croatia states that audiovisual media services or programs may not be sponsored by companies whose main activity is production or sale of cigarettes and other tobacco products, and if the audiovisual media services or programs are sponsored by a company whose activities include the production or sale of medicines and treatments, the name or reputation of that company may be promoted, but certain medicines or treatments which are available only with the doctor's prescription may not be promoted.<sup>29</sup> Directive 2003/33/EC on the unification of the laws, regulations and administrative measures of the member countries with regard to the advertising and sponsorship of tobacco products prohibits the sponsorship of a radio program by companies whose main activity is the production or sale of tobacco products, and sponsorship of events or activities that involve, or take place in several member countries of the European Union, or have certain border effects, which also applies to the free distribution of tobacco products, which aims to directly or indirectly promote these products.<sup>30</sup>

#### **4. PROVISIONS OF THE FAMILY LAW WHICH ARE IMPORTANT FOR CONCLUDING A SPONSORSHIP AGREEMENT WITH A MINOR NATURAL PERSON**

In the practice of concluding a sponsorship agreement, a minor natural person is often a sponsee, especially in the field of sports sponsorship. Regarding the conclusion of the sponsorship agreement with a minor natural person, the provisions of the Family Law (hereinafter referred to as the PZ) must be taken into account. Minors may, with the permission of the court, acquire full legal capacity before coming of age, in case of marriage, or if they become parents, and have reached 16 years of age and have reached the physical and mental maturity necessary for independent care of their own personality, rights and interests,<sup>31</sup> and in that case they can validly conclude a sponsorship agreement. Minors up to the age of 14 do not have legal capacity and their parents or guardians undertake legal affairs for them as legal representatives. However, these persons may validly undertake legal affairs of minor importance, legal affairs by which only rights are acquired, as well as legal affairs by which neither rights nor obligations are acquired.<sup>32</sup> Minors from 14 to 18 years of age have partial business ability. These persons may validly undertake legal affairs of minor importance, legal affairs by which only rights are acquired, as well as legal affairs by which neither rights nor obligations are acquired, and from the age of 15 legal affairs which give access to earnings or property acquired by their own work, and all other legal affairs can be validly undertaken only with the consent of the parents or guardians as their legal representatives.<sup>33</sup> It seems to us that the conclusion of a sponsorship agreement does not belong to legal affairs of minor importance, or to legal affairs by which only rights are acquired, or to legal affairs by which neither rights nor obligations are acquired. PZ stipulates that parents exercise parental rights jointly and amicably when they live in cohabitation, as well as when they do not live in cohabitation if they conclude an agreement on joint exercise of parental rights and if the court finds that the agreement is in the best interests of the child.<sup>34</sup>

<sup>28</sup> Staatsvertrag für Rundfunk und Telemedien (Rundfunkstaatsvertrag) vom 31. August 1991 (GVBl S. 636) in der Fassung des Achtzehnten Staatsvertrages zur Änderung rundfunkrechtlicher Staatsverträge vom 9., 10., 18., 28. September 2015. (GVBl. 9/2015, S. 150), in Kraft getreten am 01. Januar 2016., čl. 8/4, čl. 8/5, available at: [http://www.tlm.de/tlm/die\\_tlm/rechtsgrundlagen/gesetze/rundfunkstaatsvertrag/](http://www.tlm.de/tlm/die_tlm/rechtsgrundlagen/gesetze/rundfunkstaatsvertrag/).

<sup>29</sup> Zakon o elektroničkim medijima Republike Hrvatske, 153/09, 84/11, 94/13, 136/13, čl. 17/2, čl. 17/3, available at: <http://www.zakon.hr/z/196/Zakon-o-elektronicnim-medijima>.

<sup>30</sup> Directive 2003/33EC of the European Parliament and of the Council of 26 May 2003 on the approximation of the laws, regulations and administrative provisions of the Member States relating to the advertising and sponsorship of tobacco products, čl. 4, čl. 5, available at: [eur-lex.europa.eu/legal-content](http://eur-lex.europa.eu/legal-content).

<sup>31</sup> Porodični zakon (hereinafter PZ), Službeni glasnik Republike Srbije, 18/2005, 72/2011- 6/2015 čl. 11., čl. 23.

<sup>32</sup> PZ, čl. 64/1.

<sup>33</sup> PZ, čl. 64/2, čl. 64/3.

<sup>34</sup> PZ, čl. 75.

In the case of independent exercise of parental rights, the other parent who does not exercise parental rights has the right to decide on issues that significantly affect the child's life together with and in agreement with the parent who exercises parental rights, and issues that significantly affect the child's life are considered to be, in particular, the child's education, undertaking major medical procedures on the child, changing the child's residence and management of the child's property of great value.<sup>35</sup> Is the conclusion of a sponsorship agreement an issue that significantly affects the child's life? To answer this question, we believe that the criteria for deciding whether the conclusion of a sponsorship agreement is important for the child's life should be the length of the agreement, the value of the agreement, as well as the obligations the child assumes by the agreement. For example, if a sponsorship agreement concluded with a minor athlete would imply that the sponsor provides sports equipment, or financially assists the athlete for one sports tournament, we do not see how this would significantly affect the child's life. On the other hand, if the sponsorship agreement should be concluded for a longer period of time and oblige the sponsor to high financial or material benefits, i.e. an agreement by which a minor athlete can acquire not only large financial resources, but also extremely valuable material things, we believe that such an agreement would certainly significantly affect the child's life, and also taking into account the obligations that a minor athlete should have under a sponsorship agreement. If the parents cannot reach an agreement on concluding a sponsorship agreement, the disagreement of one of the parents represents an absolute veto on undertaking the mentioned legal affair.<sup>36</sup> If the parents cannot agree on this, it practically means that the sponsorship agreement could not be concluded. With regard to resolving this issue, our case law has taken the position that the court is not authorized to make decisions that replace joint decisions of parents on issues that significantly affect the child's life, but can partially deprive a parent who does not exercise parental rights to decide on issues that significantly affect the child's life if he or she negligently exercises the rights and duties of parental rights.<sup>37</sup> However, in the domestic legal literature, there is an opinion that if the parents cannot reach an agreement on the decision, then instead of the parents, the decision should be made by the court, in accordance with the principle of the best interests of the child.<sup>38</sup> If we accept the view that if the parents cannot agree on the decision, then instead of the parents the decision should be made by the court, in accordance with the principle of the best interests of the child, and regarding the conclusion of the sponsorship agreement, the question arises whether the conclusion of the sponsorship agreement is in the best interests of the child. The content of the principle of the best interests of the child is shaped by both external and internal factors. As far as external factors are concerned, these are cultural, religious and moral values that prevail in a certain society. As far as internal factors are concerned, "the individualistic character of the best interests of the child imposes the need to adapt the mentioned principle to each specific case, i.e. to an individual child".<sup>39</sup> In our legal system, case law has identified internal factors that need to be taken into account when deciding in the best interests of the child. These elements are the age and gender of the child, the wishes and feelings of the child with regard to age and maturity, the needs of the child and the ability of the parents to satisfy the identified needs of the child.<sup>40</sup> In order to determine whether the conclusion of a sponsorship agreement is in the best interests of the child, external and internal factors that shape the content of the stated principle should

<sup>35</sup> PZ, čl 78.

<sup>36</sup> Vlašković, V. (2014). Načelo najboljeg interesa deteta u porodičnom pravu, Doktorska disertacija, Pravni fakultet u Kragujevcu. Kragujevac. 310.

<sup>37</sup> Rešenje Vrhovnog suda Srbije, Reb. 2557/06, od 1.03.2007., Bilten sudske prakse Vrhovnog suda Srbije, br. 2/2007.

<sup>38</sup> Vlašković, V. (2014). Načelo najboljeg interesa deteta u porodičnom pravu, Doktorska disertacija, Pravni fakultet u Kragujevcu. Kragujevac. 305-312.

<sup>39</sup> Vlašković, V. (2014). Načelo najboljeg interesa deteta u porodičnom pravu, Doktorska disertacija, Pravni fakultet u Kragujevcu. Kragujevac. 94.

<sup>40</sup> Presuda Drugog opštinskog suda u Beogradu, P. br. 5569/05 od 13.6.2006., i presuda Okružnog suda u Beogradu, Gž. br. 13945/06 od 31.10.2006., Bilten Okružnog suda u Beogradu, br. 74/2006.

be applied to the specific case. For example, we will consider concluding the sponsorship agreement with a minor athlete. Playing sports is certainly in line with the cultural, religious and moral values that prevail in our society. As for internal factors, playing sports is extremely important for both physical and mental development of the child, it is in line with the needs of the child, and each child would express their wishes and feelings, but we will assume that the child has a desire to play sports. If parents are not financially able to meet the child's need for sports, especially nowadays, when it can be very expensive and demanding because it sometimes requires individual training and coaches, for example for tennis, traveling to tournaments, sports equipment, accommodation during the tournament, etc., and the sponsorship agreement would enable the child to do so, it could be said at first glance that the conclusion of the sponsorship agreement is in the best interests of the child. However, when deciding, the court would also have to take into account what obligations the minor athlete undertakes in the sponsorship agreement and how this could affect, for example, his/her schooling. Thus, the essential conclusion is that it should be decided depending on a specific case whether the conclusion of a sponsorship agreement is in the best interests of the child, so a general judgment about that cannot be given, because the individualistic character of the best interests of the child imposes the need to adapt the mentioned principle to each specific case, i.e. to an individual child.

## 5. CONCLUSION

In practice, the sponsorship agreement is concluded by entrepreneurs and companies as sponsors. Their economic interest is obvious and clear. Sporadically, sponsorship agreements are concluded by both institutions and associations as sponsors. However, by far the largest sponsors in Serbia are public companies. Their economic interest in that regard is extremely debatable, and the possibilities for corruption are immeasurable. The Government of the Republic of Serbia has somewhat limited public companies in sponsorship activities. However, we think that this is not enough and that public companies should be completely banned from concluding sponsorship agreements. As sponsees, sponsorship agreements are in practice concluded by natural persons, associations, institutions, as well as companies to the extent that sports organizations are established as companies. Therefore, both natural persons and legal entities who need support in performing their activities come into consideration. In the field of sponsorship in sports, a minor natural person is very often a sponsee, so the question can be asked whether the conclusion of a sponsorship agreement is in the best interests of the child. In our opinion, there is no single answer, but the decision must be made depending on a specific case. Certain restrictions regarding who can be a sponsor arise from the Law on Advertising of the Republic of Serbia and the Law on Ratification of the European Convention on Transfrontier Television. These restrictions apply to producers of alcoholic beverages, organizers of games of chance, producers and sellers of tobacco products, government authorities and organizations and political organizations, as well as to producers and sellers of medicines and medical treatments, and apply to sponsorship of minors, athletes, sports clubs, sports competitions, media and television programs.

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## DEVELOPMENT OF CONSTITUTIONALITY IN THE USA FROM GAINING INDEPENDENCE UNTIL TODAY

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### ABSTRACT

*The Constitution of the United States of America is the fundamental law of the federal system of government in the United States and an important document of the Western world. It is the oldest written national constitution in use, which defines the main authorities and their competencies and the basic rights of citizens. The United States Constitution has served as the supreme law of the United States since its entry into force in 1789. The document was written at the Philadelphia Convention of 1787 and ratified by a series of state conventions held in 1787 and 1788. Since 1789, the Constitution has been amended twenty-seven times, particularly important amendments include ten amendments to the United States Rights Act and three amendments to reconstruction. The United States consists of fifty states, one federal district, and several territories. Forty-eight neighboring states are located between Mexico in the south and Canada in the north. Alaska, the forty-ninth state, is located west of Canada, and the fiftieth Hawaii is an island located in the Pacific Ocean. Initially, the state consisted of a loose group of British colonies that developed along the east coast of today's United States. The original thirteen colonies were Hampshire, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania, Delaware, Maryland, Virginia, North Carolina, South Carolina, and Georgia. British rule within the colonies increased after the end of the Six-Year War between Britain and the French in the northern territories. Relations between the colonies and Britain soon deteriorated due to a lack of representation in the British Parliament and increased taxation to pay for the war. The American War of Independence began in 1775. On July 4, 1776, the colonists adopted the Declaration of Independence from Britain. The short document had many novelties, such as the statement that all people are created equal and that the people have the right to elect a government.*

**Keywords:** *Constitutionality, Development, Independence, USA*

### 1. REVOLUTION AND EARLY GOVERNANCE

#### 1.1. The Declaration of Independence

At the Second Continental Congress, on June 4, 1776, a resolution was introduced declaring the union with Great Britain dissolved, proposing the formation of foreign alliances and proposing the drafting of a confederation plan to be submitted to the respective states. Independence was declared on July 4, 1776, and the preparation of the confederation plan was postponed. Although the Declaration was a statement of principle, it did not create a government or even a policy framework. The members of the Confederacy provided the necessary structure to the new nation during and after the American Revolution. The declaration, however, set out ideas on natural rights and a social contract that would help form

the foundations of constitutional authority. The period of the Declaration of Independence is sometimes called the period of the "continental congress". John Adams famously estimated that as many as one third of those who lived in the first thirteen colonies were patriots. Scholars like Gordon Wood describe how Americans were caught up in the revolutionary fervor and excitement of creating a government, a new nation on the face of the earth by rational choice (Wood, Gordon, S., 1972). The republican government and the personal freedom of the "people" were supposed to expand the continents of the New World and last forever, as a gift to their descendants. These goals were influenced by the Enlightenment philosophy. Proponents of this goal grabbed the political philosophy of the English Whigs, as described by historian Forest McDonald, as a justification for most of their changes that were given to colonial charters and traditions. This was rooted in opposition to the monarchy, which they considered corrupt and corrupt according to the "permanent interests of the people" (Jensen, Merrill, 1950). For these partisans, voting was the only permanent defense of the people. Elected terms for the legislature have been shortened to one year, for the governor of Virginia one year without re-election. Property requirements for the right to vote for men have been reduced to taxes on their tools in some states. Free blacks in New York could vote if they had enough property. New Hampshire considered abolishing all voting conditions for men except residence and religion. New Jersey allowed women to vote. In some states, senators were now elected by the same voters as the larger electorate in the House, and even judges were elected for one-year terms. These "radical Whigs" called the people "out of the house." They trusted not only the royal authority, but also any small, secret group that was not public. Crowds of men and women gathered on the steps of village court buildings during market militia days. The Shays Rebellion (Shays' Rebellion 1786-87) is a well-known example. Urban riots began with open-air rallies, on the steps of an oppressive government official, with speakers holding "people's" committees until a decision was made, including hanging or looting and burning the house of an insulting tyrant (Shays' Rebellion, 2021).

## 1.2. First and Second Continental Congress

The First Continental Congress met from September 5 to October 26, 1774. It agreed that states should impose an economic boycott on British trade, and drafted a petition to King George III, praying for their complaints to be rectified and the Intolerable Acts repealed. She did not propose independence or a special government for the states. The Second Continental Congress was convened on May 10, 1775, and functioned as a de facto national government at the beginning of the War of Independence. Beginning in 1777, the significant powers assumed by Congress "made the alliance of states as cohesive and strong as any similar republican confederation in history" (Wood, Gordon, S., 1972). The process created the United States "from people in the community, not from individual states," because only four states had constitutions at the time of the Declaration of Independence in 1776, and three of them were temporary. The Supreme Court in the `` *Penhallow v. Doane's Administrators* (1795), and again in *Ware v. Hylton* (1795) and (1796) ``, made a decision on the powers of the federal government before the adoption of the US Constitution in 1788 (Justia US Supreme Court, 2021). It said that Congress exercised powers derived from people, explicitly granted through state conventions or legislative bodies, and once exercised, these powers are "implicitly confirmed by the consent and obedience of the people" (Jensen, Merrill, 1950).

## 2. CONFEDERATION PERIOD

The members of the Confederation were approved by the Second Continental Congress on November 15, 1777, and sent to the states for ratification. It entered into force on March 1, 1781, after being ratified by all 13 states. For the past four years, Congress has used it as a "working document" to govern the early United States government and win the War of



Independence. Lasting successes for members of the Confederacy included the Treaty of Paris with Britain and the Land Act of 1785, by which Congress promised settlers west of the Appalachian Mountains full citizenship and final statehood (Morris, Richard, B., 1987). Some historians characterize this period from 1781 to 1789 as weakness, discord and turmoil. Other scientists believe the evidence reflects fundamental stability and prosperity (Jensen, Merrill, 1950). But the return of prosperity in some areas has not slowed the growth of domestic and foreign problems. The nationalists felt that the central government of the confederation was not strong enough to establish a sound financial system, regulate trade, execute contracts or go to war when necessary. The Congress of the Confederation, as defined in the members of the Confederation, was the only body of the national government; there was no national court to interpret the laws or an executive to enforce them. Government functions, including declarations of war and conscription, have been voluntarily supported by each state, in full, in part or not at all. The newly independent states, separated from Britain, no longer received preferential treatment in British ports. The British refused to negotiate a commercial agreement in 1785 because certain American states would not be bound by it. Congress could not act directly on states or individuals. It did not have the authority to regulate foreign or interstate trade. Every act of government is left to individual states. Each state collected taxes and tariffs at the will of other states, which called for retaliation. Congress could vote for a mediator and a judge in state disputes, but states did not have to accept his decisions. The weak central government could not support its policy with military force, which embarrassed it in foreign affairs. The British refused to withdraw their troops from fortifications and trading posts in the northwestern territory of the new country, as they had agreed to do in accordance with the Treaty of Paris of 1783. British officers on the northern borders and Spanish officers in the south supplied weapons to Native American tribes. allowing them to attack American immigrants. The Spaniards refused to allow Western American farmers to use their port of New Orleans to deliver products (Morris, Richard, B., 1987). Revenues were requisitioned by a petition from Congress to each state. No one paid what they were asked to do, sometimes some did not pay anything. Congress appealed to thirteen states to change members in order to tax sufficient amounts to pay the public debt because the principal was due. Twelve states agreed, Rhode Island did not, so it failed. The members of the Constitution demanded a super majority. The proposed amendments to the states required ratification by all thirteen states, all important laws required 70% approval, at least nine states. One or two states have consistently rejected legislative proposals of great importance. Without taxes, the government would not be able to repay the debt. Seven of the thirteen states printed large quantities of their own paper money, backed by gold, earth, or nothing, so there was no fair exchange rate between them. State courts have required state creditors to accept payments at face value with a fraction of actual purchasing power. The same law that these countries used to erase the revolutionary debt to the patriots was used to pay the promised veterans' pensions. The measures were popular because they helped both small farmers and plantation owners to pay off their debts (E. James, Ferguson, 1961). The Massachusetts legislature was one of five against paper money. He introduced strictly limited currency and high taxes. Without paper money, veterans without cash lost the farm due to arrears of taxes. This triggered Shais 'revolt to stop tax collectors and close courts. Troops quickly quelled the uprising, but nationalists like George Washington warned, "There are flammable substances in every state that could be ignited by a spark" (Flexner, James, Thomas, 1970).

### **3. CONSTITUTIONAL CONVENTION**

The constitution was written in the summer of 1787 in Philadelphia, Pennsylvania, by 55 delegates to the Constitutional Convention, which was allegedly called upon to amend the members of the Confederacy (1781-89), the first written constitution in the country.

The constitution was the product of a political compromise after long and often heated debates on issues such as state rights, representation, and slavery. Delegates from small and large states disagreed on whether the number of representatives in the new federal legislature should be the same for each state - as was the case with members of the Confederacy - or different depending on the population of the state. In addition, some delegates from the northern states sought to abolish slavery or, failing that, to make representation dependent on the size of the free population of one state (National Archives Article on the Constitutional Convention, 2021). At the same time, some southern delegates threatened to abandon the convention if their demands that slavery and the slave trade remain legal and that slaves be counted for representation were not met. In the end, the creators resolved their disputes by adopting a proposal put forward by the Connecticut delegation. The great compromise, as it became known, created a bicameral legislature with the Senate, in which all states would be equally represented, and the House of Representatives, in which representation would be divided on the basis of the free population of the state plus three-fifths of its enslaved population. (The inclusion of the enslaved population was especially known as the three-fifths compromise.) A further compromise on slavery forbade Congress to ban the importation of slaves until 1808 (Article I, Section 9) (National Archives and Records Administration. National Archives Article on the Constitution, 2021). After all disagreements were bridged, the new Constitution was signed by 39 delegates on September 17, 1787, and it was submitted for ratification in 13 countries on September 28.

### **3.1. Debate on slavery**

The contentious issue of slavery was too controversial to be resolved during the Convention. But it was at the center of the Convention three times: on June 7 in terms of who would vote for Congress, on June 11 in the debate on how to balance relative seats in the "house" and on August 22 in terms of trade and future wealth of the nation. After the Convention considered how to balance the representation of the House of Representatives, the temperament among several delegates exploded due to slavery. As the Convention progressed beyond personal attacks, it adopted the existing "federal relationship" to tax states for the three-fifths of the slaves it holds (Bowen, Catherine, 2010). The Details Committee reported on August 6 on its proposed revisions to Randolph's plan. The question of slavery reappeared and again that question met with outbursts of rage. Over the next two weeks, delegates weaved a network of mutual compromises relating to trade and commerce, east and west, the keeping of slaves and free. The transfer of authority to regulate the slave trade from the states to the central government could happen in 20 years, but only then. Later generations were able to try out their own answers. Delegates were trying to form a government that could last that long. The migration of free or "imported" pledges and slaves could be continued by the state, defining slaves as persons and not as property. Long-term power would change according to the number of inhabitants, counting every ten years. The distribution in the House would not be by wealth, but by people, free citizens and three-fifths of the number of other persons, meaning propertyless slaves and tax-paying Indian agricultural families. In 1806, President Thomas Jefferson sent a message to the 9th Congress about their constitutional ability to remove American citizens from the transatlantic slave trade "in violation of human rights" (Annals of Congress, 2011). The "Act of Prohibition of the Importation of Slaves" from 1807 entered into force on the first moment that the Constitution allowed, on January 1, 1808. The United States joined the British that year in the first "international humanitarian campaign" (Brown University Steering Committee on Slavery and Justice, 2011). Between 1840 and 1860, abolitionists condemned the runaway slave clause and other slavery protections. William Lloyd Garrison famously proclaimed the Constitution "an alliance with death and an agreement with hell." In ratification conventions, anti-slavery delegates sometimes began as voices against ratification. However, the Constitution "as it was written" was a progress in relation to the

members from the abolitionist point of view. The constitution provided for the abolition of the slave trade, but the members did not. The outcome could be gradually determined over time. Sometimes contradictions among opponents were used in attempts to win over abolitionist converts. The objections to the Constitution were inconsistent, "At the same time it opposes the promotion and destruction of slavery!" But the contradiction was never resolved peacefully, and the failure to do so contributed to the civil war.

### **3.2. Great compromise**

Roger Sherman, something like a political mediator in Connecticut, was an incredible leader in the August Society of the Convention. But on June 11, he proposed the first version of the "Great Compromise" of the Convention. It was like a proposal he made at the Continental Congress in 1776. Both states and the population should have representation in Congress. There, small states voted for all equal states, only one vote (Bowen, Catherine, 2010). Now, in the 1787 Convention, he wanted to balance all the great victories of the great powers in the distribution of the population. He proposed that in the second "Senate" branch of legislation, each state should be equal, one vote and no more. The proposal for equal representation of the state in the "Senate" failed: 6 against, 5 for Sherman's proposal came again for the third time from Oliver Ellsworth (Farrand, Max, 1937). In the "senate", states should have equal representation. Deputies said it could not be agreed, the union would somehow fall apart. Big states would not be trusted, small states could unite with a foreign power by showing "more faith". If the delegates could not unite behind this, one day the states could be united by "some foreign sword." On the issue of equal representation of the state, the Convention was again postponed in the same way, "before a decision was taken in the House." On July 2, the convention considered the "senate" with equal state votes for the fourth time. This time it was voted, but it stopped again, equalized to 5 yes, 5 no, 1 divided. The Convention elected one delegate from each State delegation to the Committee to submit a proposal; she reported on July 5 - nothing has changed in five days. On July 10, Lansing and Ites left the Convention to protest the vast majority of large states that had repeatedly overrun small state delegations voting for the vote. For another week, there was no direct vote on the floor based on the presentation of the 'senate'. But the leaders of the conference went forward where they could. First, a new arrangement of home seats was agreed, balancing big and small, north and south. Large states have been given a decade-long census for the distribution of "houses" that reflects their future growth. The northerners insisted that only free citizens count for the "house"; the southern delegations wanted to add property. Benjamin Franklin's compromise was that there would be no "property" provision for adding representatives, but states with large populations of slaves would receive a bonus added to their free persons, counting three-fifths of other persons. On July 16, Sherman's "Great Compromise" prevailed in his fifth attempt. Each state was to have an equal number in the United States Senate. Washington decided to vote 5 for, 4 against, 1 divided. It was not that five was a majority of twelve, but to continue doing business, he used the precedent set earlier in the Convention. Now some of the delegates of the great state were talking about leaving, but no one was. The debate over the next ten days developed the agreed general framework of the Constitution. Small states have readily relented on many issues. Most of the remaining delegates, large and small, now felt safe enough to take advantage of the new plan.

## **4. TWO NEW BRANCHES OF GOVERNMENT**

### **4.1. The executive branch of the US federal government and the judicial branch of the US federal government**

The Constitution innovated two branches of government that were not part of the U.S. government during the members of the Confederacy. Earlier, a board of thirteen members was

left in Philadelphia when the Congress stopped performing "executive" functions. The lawsuits between the states were sent to the Congress of the Confederation and were treated as a private law that will be determined by a majority vote of the members who attended that day. On June 7, the "national executive" was taken over by the Convention. The "chief judge" or "presidency" was a serious concern for the former colonial people, who feared concentrated power in one person. But to secure "strong executive power," nationalist delegates such as James Wilson, Charles Pinken and John Dickenson favored one officer. They had in mind someone whom everyone could trust to start a new system, George Washington. After the item was put up for discussion, an extended silence ensued. Benjamin Franklin and John Rutled called on everyone to express their opinions freely. When discussing the problem with George Washington in the room, delegates were wary of expressing their objections to potential violations by officers who will be elected "president" in the future "after the launch." Many objected, preferring two or three people in the executive branch, as the Ancient Roman Republic did when appointing consuls. Voting for the presidency was negative for 7, for, 3 against, New York, Delaware and Maryland. Virginia, along with George Washington, voted in favor. From that vote for a single "presidency", George Mason seriously said that from that moment on, the federal government of the Confederacy was "to some extent dissolved by the meeting of this convention". The convention followed Randall's agenda plan, taking every decision in turn to move the proceedings forward. They returned to the items when the coalitions demanded an adjustment to the previous votes overnight in order to secure a majority in the next point of the deal. June 19, and the next was the Ninth Resolution, on the national judicial system. On the table was a nationalist proposal for inferior (lower) courts in the national judiciary. Pure republicanism from 1776 did not give much recognition to the judges, who stood out from, and sometimes contradicted the state legislation, the voice of the sovereign people. According to the precedent of English customary law, the legislator, according to the correct procedure, was a "people" for all constitutional purposes.

## **5. FINAL DOCUMENT**

After almost four months of debate, on September 8, 1787, the final text of the Constitution was drafted and revised. Then an official copy of the document was entered by Jacob Shallus. The effort consisted of copying the text (introduction, articles and recommendations) on four sheets of parchment, made of processed animal skin and measuring approximately 28 inches (71 cm) by 23 inches (58 cm), written probably with a goose feather. Shalus entered the entire document except for the list of states at the end of the document, which were entered in manuscript by Alexander Hamilton (John, R. Vile, 2005). On September 17, 1787, after a speech by Benjamin Franklin, 39 delegates supported and submitted the Constitution to the Confederate Congress (Maier, Pauline, 2010).

## **6. CRITICISM OF THE CONSTITUTION AND DEALING WITH CONTEMPORARY EVENTS**

In the early twentieth century, the Supreme Court ruled on various unconstitutional state laws restricting employment contracts. The constitution has been criticized for putting the government at the head and calling big business (Michael, J. Phillips, 2001). Recent criticism has often been academic and limited to certain characteristics. University of Texas law professor Sanford Levinson wonders if it makes sense to have a Connecticut compromise that gives Wyoming the same number of votes as California, which has about seventy times the population (Robert, Justin, Lipkin, 2007). Levinson believes that this imbalance causes "a constant redistribution of resources from large states to small states." Levinson is critical of the Electoral College because it allows for the possibility of electing a president who does not win a majority or even a plurality of votes.

Five times in American history, presidents have been elected despite failing to win a multitude of votes: 1824 John Quincy Adams, 1876 Rutherford B. Hayes, 1888 Benjamin Harrison, 2000 George W. Bush and 2020 Joseph Robinette Biden. In his view, current powers for recalls do not give people a quick way to remove incompetent or sick presidents (USA Today, 2008). Yale professor Robert A. Dahl saw a problem with the American tendency to worship the Constitution itself. He sees aspects of American governance that are "unusual and potentially undemocratic: the federal system, the bicameral legislature, the judiciary, the presidency, and the electoral college system." hopes this will ever happen. French journalist Jean-Philippe Immarigeon wrote in Harper's that "a constitution of almost 230 years has stretched beyond its usefulness," and suggested that the key problems were the inability to call elections when the government stalled, several months between presidential elections and when he or she takes office, and the inability of the lower house of Congress to influence serious foreign policy decisions, such as ending a war when confronted with a veto. University of Virginia professor Larry Sabato is in favor of an amendment on the organization of presidential elections. Sabato makes several remarks in his book *A More Perfect Constitution*. He opposes life imprisonment for judges of the Federal Court, including judges of the Supreme Court. He also writes that "If the 26 least populated states had voted as a bloc, they would have controlled the US Senate with a total of just under 17% of the country's population." and resolve many issues that have arisen in the last two centuries.

## 7. CONCLUSION

Throughout its history, the influence of American constitutionalism has waned and waned. Democratizing countries often opted for more centralized, consolidated British or French models. Many countries that were once part of the British Empire favored the British Westminster parliamentary system. At the international level, it seems that those from Confucian and Islamic culture do not readily accept some of his premises. Yet, "the influence of American constitutionalism abroad has been deep in the past and remains a remarkable contribution to humanity's quest for freedom within the legal system." According to a study by David Love from the University of Washington in 2012, the influence of the American Constitution may be declining. The study examined more than 700 federal constitutions from nearly 200 countries. "Instead of leading the way to global constitutionalism, the U.S. Constitution seems to be losing its appeal as a model for those who have written constitutions elsewhere," the researchers write. "The idea of adopting a constitution may still be inspired in the United States, but the way constitutions are written is no longer the case." half (26 of 60) of the provisions listed in the average charter of rights. It is also one of the few in the world today that still has the right to hold and carry weapons, the only others being the constitutions of Guatemala and Mexico. Overall, research suggests that the Constitution of Canada, revised in 1982, is now the leading international model, not the Constitution of the United States. From the point of view we have in the 21st century, as well as many legal experts, the US Constitution is more a relic of the 18th century, and not a model for the new constitutions of the Modern Age.

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## **APPROACHES TO THE APPLICATION OF THE CONCEPTS OF COOPERATIVE INTEGRATION BETWEEN ORGANIZATIONS**

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### **ABSTRACT**

*Some basic economic theories, such as the cluster theory, network theory and integration theory describe the process of increasing the efficiency of an enterprise through collaborative partnership by combining functional advantages of each partner. These theories focus on achieving synergy in the form of developed and put into practice innovative product due to shared use of resource potential of the members of such associations.*

**Keywords:** *Cluster, Resource, Organizations, Concepts*

### **1. INTRODUCTION**

The term “cluster” was formulated and put forward in the 1990’s by an American economist M. Porter. The author interpreted cluster as “geographically proximate group of interconnected companies” (Porter, 1998). The main criterion is the geographical proximity of partner organizations. Contemporary national science literature also contains other definitions of business cluster. For instance, a cluster is understood as “a network of complementary, territorially interconnected enterprises and organizations (incl. specialized suppliers of goods and services, as well as manufacturers and buyers) collaborating with each other, united around a research and education centre, and which is cooperating with local institutions and governing authorities with the aim of increasing the competitiveness of enterprises, regions and the national economy” (Yasheva, 2008). The aim of the cluster is to ensure effective regional development related to the growth of competitiveness, encouraging innovation in the region, eliminating of regional imbalances in the process of redistribution and reorientation of mobile capital from areas of accelerated development (cluster core) to less developed territories (Matveeva, Aguzarov, 2013; Anisova 2014; Afonichkin 2011; Gakashev, 2013a; Koblova, 2013b; Lavrikova, 2008a; Mingaleva, 2011a; Sergeev, 2008b; Tomashevskaya, Korchagina, 2010).

### **2. APPROACHES TO THE APPLICATION OF THE CONCEPTS OF COOPERATIVE INTEGRATION BETWEEN ORGANIZATIONS**

In general, the desire to shift the emphasis towards the territorial localization of enterprises, part of the cluster, is prevailing. These enterprises form production chains that create the final product and are concentrated around a large organization (core). This indicates the inclusion of small and medium-sized enterprises in the cluster through competitive selection (based on the selection of the most favourable, profitable conditions, quality goods and services). The main distinctive features of clusters include: concentration of production, cooperation, internal competition, and competitiveness of a cluster. The product of the cluster activity should be competitive outside the territory of the cluster itself. Its products should have a competitive advantage in the foreign market.

The existence of a coordinating organization (cluster core) (Economics, 2007; Zapariy, 2017, Prangishvili, 2000) is therefore necessary. The performance of these enterprises is determined by the appropriateness of collaboration based on the theory of integration. Participants of such business associations strive to gain benefit due to shared resources, in other words, to obtain resources at a lower cost than in the market. This is the essence of integration. Such forms of cooperative integration between organizations are gradually shifting the target towards the development of innovative potential, increase of the capitalization of the modernization potential of the integration structure (Chernova, 2009; Chernova, Ivanov, 2015). It is also possible to consider the integration of enterprises as "a project, a complex of organizationally and economically separate activities", which necessitates an assessment of the effectiveness of this project both at the stage of making a decision on its implementation and at the stage of assessing the intermediate and final results obtained (Simonova, 2012). Analysing the existing types of networks of industrial enterprises (types of network structures according to R. Miles, Ch. Snow; network models according to R. Paturel; ways of network development according to A.L. Rvachev, E.P. Berezhkova; models of network organization of business processes according to E.P. Karlina; models of organizational networks according to A. Lamanov; models of network organizations according to O.Yu. Michurina; models of functioning of networks according to A.N. Asaul, E.G. Skumatov, G.E. Lokteva) (Mahmudova, 2010a), it should be noted that they lack the concept of innovation, which is fundamental in the modern model of society development. Taking into account this fact, we believe it would be wise to analyse the presented classifications of network organization models with the help of such features as "process" and "resource" when creating an innovative product (manifested vertically or horizontally). The "process" feature of the creation of a network of enterprises is based on the unification of enterprises engaged in innovation, in the process of sequentially performing each stage in the creation of innovative products: analytical stage (studying the market conditions by product groups, monitoring the dynamics of supply and demand for certain types of goods, conducting surveys, etc.), generation stage (justification of the relevance, importance of new ideas, design of innovative solutions, development of new types of products, technologies, organization of training and competitive events, etc.), production stage (design, creation of prototypes of innovative products, release of finished products, etc.), testing stage (launching a trial batch of innovative products on the market, assessing and analysing demand, attitudes of buyers to products, making the necessary adjustments, etc.), implementation stage (development of a marketing programme for bringing new products to the market, market diversification policy, release of innovative products according to the production capacities of enterprises, updating the technical and technological base, improving the resource potential of enterprises, etc.). The "resource" feature of network organization is the pooling of resources (usually unique or scarce) from enterprises. This includes shared use of intellectual potential, unique raw materials, unique equipment, unique management technologies and other resources in order to create extraordinary, original and, consequently, competitive products that would bring economic (and social) benefit and increase competitive advantages of each member-organization.

Taking into account "process" and "resource" features when forming a network organization of production by industrial enterprises, it is possible to use one of 5 alternative models:

- Process linear (the initiative of the association comes from the stage of assessing and analysing the state of the industrial goods market);
- Process reverse (the initiative of the association is generated by enterprises that implement the last stage of the process of creating innovative products - the introduction of innovative developments in the practical areas of industry);



- Resource multi-level (unique resources of enterprises of several sectors are combined to create industrial innovation);
- Resource single-level (unique resources of enterprises of the same industry are combined);
- Combined (industrial enterprises are united on the basis of a combination of two or more possible models for the creation of innovative industrial products) (Figure. 1).

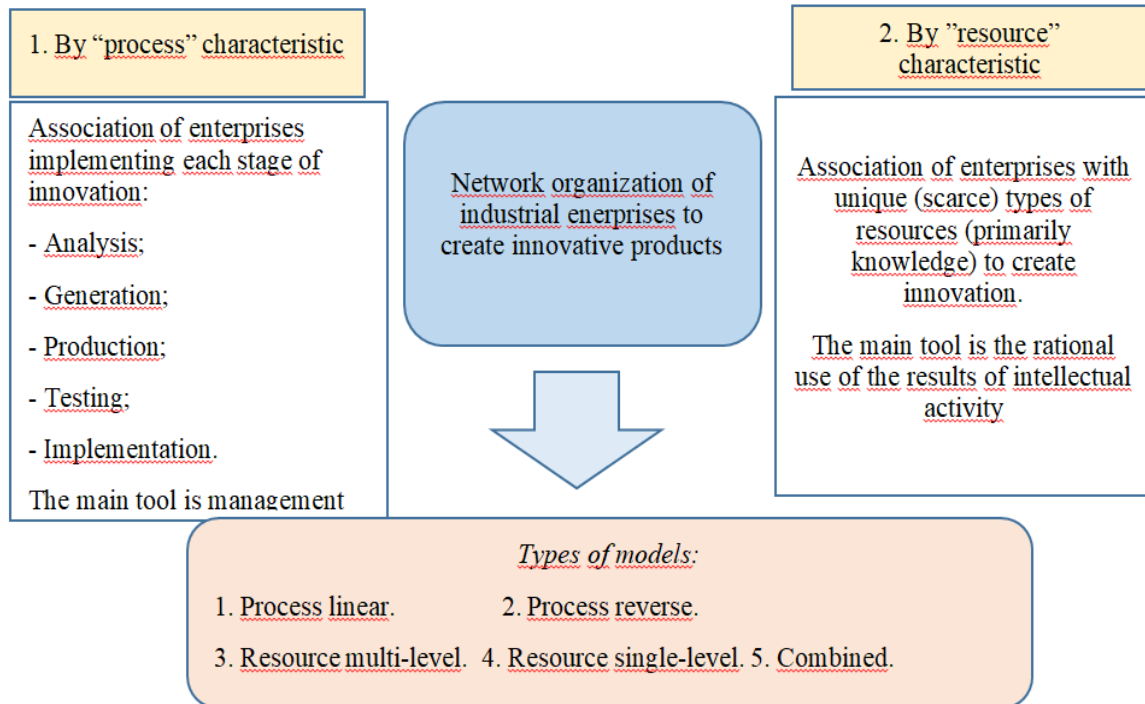


Figure 1: Types of models of network organization of industrial enterprises by "process" and "resource" features (V.V. Klimuk)

The study of the main ideas of theories that determine the importance of interaction between enterprises in order to increase economic benefits, the implementation of strategic objectives, allows us to systematize these theories in relation to the main tools of influence and goals (Table 1).

Table following on the next page

<i>Name of the theory</i>	<i>Description and goal</i>	<i>Distinctive features</i>
Cluster theory	Association of enterprises (suppliers, manufacturers, buyers) of one sector, primarily based on the principle of territorial localization. The main goal is to increase competitiveness of enterprises, regions and national economy.	The core of the association is a large industrial enterprise.
Integration theory	Based on theories of transaction costs, strategic advantages and industry life cycles. The goal is to optimize costs (primarily indirect) as a result of optimizing individual control functions.	Shared use of factors of production within the association on favourable terms. Monitoring the capacity of the industrial goods market.
Network theory	Association of enterprises according to sectoral, territorial, functional and other characteristics. The goal is to create competitive products based on the development of intellectual potential, information and communication technologies.	Association of enterprises with unique (scarce) resources to enhance innovation potential. Formation of a product and resource environment for attracting investments.
Such interaction would result in an increase in the competitiveness of enterprises due to: - access to unique (scarce) resources; - cost optimization; - development of scientific and innovative activity.		

*Table 1: Comparative analysis of theories of interaction between partners in the sector of industrial business*

### 3. CONCLUSION

Thus, the development of integration between organizations allows achieving synergy by optimally distributing functions between the participants of an ecosystem based on the principles of partnership, absolute advantages, flexibility of the strategy being implemented.

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