Burilovic, Luka (Ed.); Rados, Tomislav (Ed.); Recker, Nicholas (Ed.)

**Conference Paper**

# Economic and social development : 63rd International Scientific Conference on Economic and Social Development - "Building Resilient Society" : book of proceedings : Zagreb, 11-12 December 2020

**Provided in Cooperation with:**
Varazdin Development and Entrepreneurship Agency

**Varazdin Development and Entrepreneurship Agency** and **University North**
in cooperation with
**Croatian Chamber of Economy**
**Faculty of Management University of Warsaw**
**Faculty of Law, Economics and Social Sciences Sale - Mohammed V University in Rabat**
**Polytechnic of Medimurje in Cakovec**

# Economic and Social Development

63rd International Scientific Conference on Economic and Social Development Development – "Building Resilient Society"

## Book of Proceedings

Editors:
**Luka Burilovic, Tomislav Rados, Nicholas Recker**

ISSN 1849-7535

Zagreb, 11-12 December 2020

**Varazdin Development and Entrepreneurship Agency** and **University North**
in cooperation with
**Croatian Chamber of Economy**
**Faculty of Management University of Warsaw**
**Faculty of Law, Economics and Social Sciences Sale - Mohammed V University in Rabat**
**Polytechnic of Medimurje in Cakovec**

Editors:
**Luka Burilovic, Croatian Chamber of Economy, Croatia**
**Tomislav Rados, Croatian Chamber of Economy, Croatia**
**Nicholas Recker, Metropolitan State University of Denver, United States**

# Economic and Social Development

63rd International Scientific Conference on Economic and Social Development Development – "Building Resilient Society"

## Book of Proceedings

*This esd Conference is part of the project "Centar održivog razvoja"/"Center of sustainable development", co-financed by the European Union from the European regional development fund and implemented within Operational Programme Competitiveness and Cohesion 2014 – 2020 of the Republic of Croatia, based on the call "Investing in Organizational Reform and Infrastructure in the Research, Development and Innovation Sector".*

Due to the Covid-19 restrictions and epidemiological measures, the Program of the Conference has been scheduled online. All Sessions and Presentations have been presented via Discord platform.

Zagreb, 11-12 December 2020

**Title** ■ Economic and Social Development (Book of Proceedings), 63rd International Scientific Conference on Economic and Social Development Development - "Building Resilient Society"

**Editors** ■ Luka Burilovic, Tomislav Rados, Nicholas Recker



**Publishing Editor** ■ Spomenko Kesina, Mario Vrazic, Domagoj Cingula

**Publisher** ■ **Design** ■ **Print** ■ Varazdin Development and Entrepreneurship Agency, Varazdin, Croatia / University North, Koprivnica, Croatia / Croatian Chamber of Economy, Zagreb, Croatia / Faculty of Management University of Warsaw, Warsaw, Poland / Faculty of Law, Economics and Social Sciences Sale - Mohammed V University in Rabat, Morocco / Polytechnic of Medimurje in Cakovec, Cakovec, Croatia

**Printing** ■ Online Edition

**ISSN 1849-7535**
The Book is open access and double-blind peer reviewed.
Our past Books are indexed and abstracted by ProQuest, EconBIZ, CPCI (Web of Science) and EconLit databases and available for download in a PDF format from the Economic and Social Development Conference website: http://www.esd-conference.com

# CONTENTS

# ECONOMIC POTENTIAL AS A MEASURE OF STRENGTH OF TERRITORIAL UNITS - QUANTITATIVE ANALYSIS BASED ON EU MEMBER STATES IN 2018

**Adrianna Mastalerz-Kodzis**
*University of Economics in Katowice,*
*Department of Statistics, Econometrics and Mathematics,*
*1-Maja 50 Street, 40-287 Katowice, Poland*
*adrianna.mastalerz-kodzis@ue.katowice.pl*

***ABSTRACT***

*The concept of potential comes from sciences, particularly physics, but can be applied to economics and finance, management sciences, and spatial econometrics. In spatial econometrics, potential is defined as the pool of strength, skills and performance that can be assigned to a given territorial unit. The potential of a region or area is a multi-dimensional concept because it depends on many different, often interdependent factors. Potential determines the strength of an individual based on skills, competencies and efficiency. Then the size of the potential depends on the distance of individual territorial units, e.g. geographic coordinates are taken into account in the research. The result of the analysis depends on the adopted measure. The potential models analyse the impact of all territorial units (facilities) on a given unit. The potential can then be interpreted as the strength, intensity of the impact of all regions of the system, territorial division into a selected region. Each region is perceived in relation to the rest of the system units and to itself. For example, a given region may have a low own potential, but it may be in a favourable territorial position, close to strong regions, so its potential (total and surrounding) is increased. The aim of the work is to show the properties of the constructed modified measure of the potential of a territorial unit, as well as to compare its value with the HDI social and economic development measures and with the Gini coefficient. The article consists of two parts. The first one presents the method of measuring the potential of territorial units and includes references to the method of calculating HDI and the Gini coefficient. The second part is empirical and contains the results of comparing the values of the discussed measures for the European Union countries.*

***Keywords:*** *Economic potential, Gini coefficient, HDI, international comparisons*

## 1. INTRODUCTION

International analyses play an important role in assessing the strength and ability to function in international markets. Many methods can be used during quantitative analysis. The article uses three selected measures: economic potential, HDI measure of socio-economic development and Gini coefficient. After a short methodological description, a multidimensional comparative analysis for European Union countries was carried out and conclusions were written.

## 2. RESEARCH METHODOLOGY

The article uses three measures: economic potential, HDI measure of socio-economic development and Gini coefficient. A brief methodological description of the measures is presented below [Anselin L., Florax R., Rey S. (2004); Getis A., Mur J., Zoller H. (2004); Giri C.N. (2004); Matyas L., Sevestre P. (ed.) (2006); Paelinck J.H.P. Klaassen L.H. (1983); Rencher, A. C., Christensen W.F. (2012); Suchecka J. (2014); Suchecki B. (2010); Woolridge G (2002)].

## 2.1. Economic potential

G. Dutton in 1970 introduced the concept of the quotient of income potentials and population. The quotient of income potential and population is the equivalent of income per capita, however, in the analyses it takes into account the interregional relations shaping these potentials. The following formulas were constructed based on the literature, however, the formulas were slightly modified, without doubling the potentials of own income and population, and introducing a time variable. This made it possible to clearly record the total potential of a given territorial unit as the sum of: own potential and the potential of the environment. This division enables precise spatial interpretation of the obtained quantities. Moreover, a time variable was introduced into the models, thus enabling not only a static but also a dynamic interpretation of the calculated measures [Brakman S., Garretsen H., van Marrewijk Ch. (2001); Combes P-P, Mayer T., Thisse J-F., (2006); Rich D.C., (1980)]. Potential models are, inter alia, used for analysis of the level of socio-economic development. The value of the spatial potential is then interpreted as a measure of the region's spatial accessibility for residents of other regions. The following spatial potential models can be distinguished:

- Models of income potential (shaping the spatial variability of income) - a measure of the ability to meet the demand. The income potential in i - this region is a function of the income generated in that region and income in other regions and the distance between regions.
- Models of population potential. The models inform about the potential of the population of a given region compared to other regions.
- Location potential models. The model informs about the availability of a given region for the inhabitants of other regions.

In empirical research, attention is drawn to the existence of a significant spatial correlation between the variability of the population potential and the variability of many indicators reflecting the level of socio-economic development of regions. The population's potential is then treated as a substitute for socio-economic phenomena. On the other hand, the regional income potential is treated as a measure of the availability of economic activity. The following designations are adopted:

$t$ - time parameter (e.g. period: year, quarter, month or moment).
$L_i(t)$ - total potential of the population in the *i-th* region at time *t*,
$Z_i(t)$ - total income potential in *i-th* region at time *t*,
$P_i(t)$ - quotient of the potentials in the *i-th* region at time *t*,
$z_i(t)$ - GDP in *i-th* region at time *t*,
$l_i(t)$ - population in *i-th* region at time *t*,
$d_{ij}$ - distance from the region *i* and from the region *j* ( it is assumed that $d_{ii}=1$).

The total potential of the population and the total income potential are defined as the sum of own and environment potentials (foreign potentials):

$$L_i(t)=\frac{l_i(t)}{d_{ii}}+\sum_{\substack{j=1\\ j\neq i}}^{n}\frac{l_j(t)}{d_{ij}} \tag{1}$$

$$Z_i(t)=\frac{z_i(t)}{d_{ii}}+\sum_{\substack{j=1\\ j\neq i}}^{n}\frac{z_j(t)}{d_{ij}} \tag{2}$$

and the quotient of the potential for the region and:

$$P_i(t) = \frac{Z_i(t)}{L_i(t)} \tag{3}$$

In Suchecki (2010) in the second component of formulas (1) and (2), he does not add a subscript below the sum. This doubles the value for individual units in the calculation of the potential, thus lowering the impact of the environment on a given unit. In formulas (1) and (2), the potential of a given unit is not counted twice, thus allowing for a precise interpretation of the impact of the environment on a given territorial unit. Potential is a measure of spatial accessibility of a given territorial unit. The potential is also often interpreted as a measure of the influence of regions included in a given system of regions on a given region. It determines the intensity of the impact between the regions, taking into account the given economic values and the distance between the regions according to the established metric. A region may have a small own potential, but it may have a good location in the system of impacts, and thus its surrounding potential (and total potential) is increased. Total income potential in a given region is a function of the income generated in that region and in all other regions of a given system of territorial division, and the distance between regions. It takes into account the impact of interregional income dependencies on the level of spatial variability of income. Total population potential means accessibility of a given region to people from other regions. In order to distinguish strong and weak territorial units, the quotient $P_i(t)/g_i(t)$ is determined, where $g_i(t)$ is the ratio of income per capita in the territorial unit and at the time moment (period) t:

$$\frac{P_i(t)}{g_i(t)} = \frac{1 + \frac{\left(\sum_{\substack{j=1 \\ j \neq i}}^{n} z_j(t)/d_{ij}\right)}{z_i(t)}}{1 + \frac{\left(\sum_{\substack{j=1 \\ j \neq i}}^{n} l_j(t)/d_{ij}\right)}{l_i(t)}} \tag{4}$$

In further analysis, the obtained values are compared, namely:

- The value of the quotient $P_i(t)/g_i(t)$ depends on the proportion between the surrounding potential of the *i-th* region and the region's own potential in terms of income and the number of inhabitants; the quotient takes values close to 1.
- In a situation where the quotient $P_i(t)/g_i(t)$ is greater than one, it means that the region's potential is greater than its per capita income, which means that the environment clearly plays a role in shaping the level of economic growth development. Very often in such a situation there are regions with a low own potential, with a significant share of agricultural land, but located in a favourable location, near large urban agglomerations and regions with high self-potential.
- When the quotient $P_i(t)/g_i(t)$ is lower than one, the per capita income exceeds the region's potential. Most often, such a situation occurs for regions with a predominance of urban areas, for large urban agglomerations with very well developed economic development.

The economic development of countries or agglomerations largely depends on their geographical location. There is a significant influence of the environment on the level of economic growth of a given territorial unit, as well as on the development of the labor market of this unit. It can be shown that the potential quotient is a useful decision support tool and shaping strategies in making economic decisions. The potential method is used in empirical analyses for various issues, including economic ones. The application of this method in the study of economic potential for European Union countries and the study of the dependence of the potential on socio-economic development and the indicator of social inequality will be proposed below.

### 2.2. The Human Development Index

The Human Development Index (HDI) was developed by Amarty Sen and Mahbub ul Haq in the 1990s. [Duncan C.J., Scott S. (1998); Santon E.A. (2007); Waller L.A., Gotway C.A.(2004)]. It is used to describe socio-economic changes in countries around the world. The HDI measures three criteria: long and healthy life, knowledge and standard of living. The United Nations Development Program recommends that the synthetic HDI be calculated using basic characteristics, which are:

- Health Index (Heath Index) $H.Ind_i = \dfrac{LE_i - 25}{65}$, where $LE_i$ is the average life expectancy in the *i-th* country.
- Education Index $E.Ind_i = \frac{2}{3}\left(LIT.Ind_i\right) + \frac{1}{3}\left(ENR.Ind_i\right)$ for $LIT.Ind_i$ - the illiteracy rate, $ENR.Ind_i$ - the enrollment rate.
- Welfare Index: $\left(Y.Ind_i\right) = \dfrac{\log\left(y_i\right) - \log\left(100\$\right)}{\log\left(40000\$\right) - \log\left(100\$\right)}$ where $y_i$ is the income per capita in a given country.

The per capita social development index for a given country is as follows:

$$HDI_i = \frac{H.Ind_i + E.Ind_i + Y.Ind_i}{3} \tag{5}$$

The size of HDI at a given level means a developed country: poorly (0-0.5), medium (0.501-0.8), high (0.801-0.9), very high (0.901-1).

### 2.3. Gini coefficient

In economics, the Gini coefficient is used primarily to measure the uneven distribution of goods, in particular the uneven distribution of income, for example in households. The value of the coefficient is contained in the interval (0, 1). When the value is 0, it means that all people get the same income. When the value of the coefficient reaches the level of 1, it means that one household concentrates all income in a given country. The value of the ratio should be interpreted as follows: the higher the value, the greater the income inequality in a given country [Fingleton B (2003); Suchecki B. (2010)]. The measure of income inequality is the Gini coefficient, which in econometrics is called the social inequality index. When the observations are ordered in ascending order, it is calculated using the formula:

$$G = \left(\sum_{i=1}^{n}\left(2i - n - 1\right)y_i\right) \Big/ n^2\bar{y} \tag{6}$$

where n is the number of sample elements, then $y_i$ the income of the i-th unit is the average income $\bar{y}$ in the sample. You can also use the alternative formula of the form: $G = \frac{E|X-Y|}{2\mu}$, for $E|X-Y|$ - the mean absolute difference between the two incomes, $\mu$ is the average value of the incomes. When the G coefficient is doubled, information is obtained as to what part of the average $\mu$ is the average absolute difference between a random pair of incomes (e.g. for G = 0.3 the average difference between incomes is 60% of the average income).

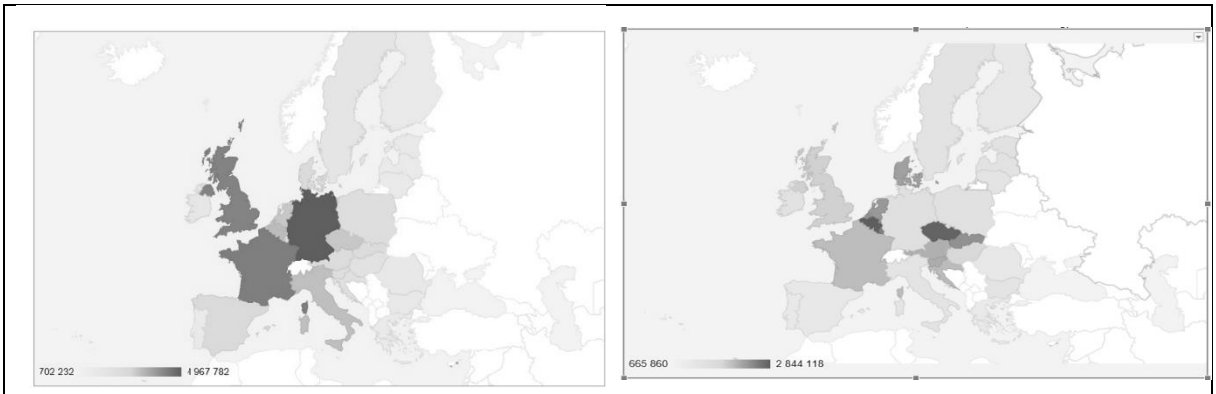
## 3. COMPARATIVE ANALYSIS OF SOCIO-ECONOMIC DEVELOPMENT, SOCIAL INEQUALITY INDEX AND THE POTENTIAL OF THE EUROPEAN UNION - EMPIRICAL RESEARCH

The purpose of the analysis carried out in this chapter is to examine the dynamics of changes in the socio-economic sphere of Poland against the background of the European Union Member States using the potential quotient method, and to compare the obtained values with the values of the measure of the level of socio-economic development and the measure of income differentiation. The law in force in the European Union has a significant impact on the socio-economic development of the Member States. The unrestricted movement of people and the freedom to take up employment has a positive effect on most economic indicators, favours the development of trade, opens borders for population migration and allows free shaping of economic activity. The data analysis concerns selected economic characteristics of the EU countries. Calculated: distance matrix between countries, HDI index, Gini coefficient. Data analysis covers the following variables: $z_i$ - GDP, $g_i$ - GDP per capita, $d_{ij}$ - distance between territorial units *i* and *j*; we accept, than $d_{ii} = 1$ (Euclidean distance between the capitals of EU countries, geographic coordinates were used). The empirical analysis was conducted on the basis of selected socio-economic characteristics for the EU countries in 2018.

*Table following on the next page*

| **EU Country** | $Z_i$ | $\sum_{\substack{j=1 \\ j\neq i}}^{n} \frac{z_j}{d_{ij}}$ | $L_i$ | $\sum_{\substack{j=1 \\ j\neq i}}^{n} \frac{l_j}{d_{ij}}$ | $P_i$ |
|---|---|---|---|---|---|
| The Netherlands | 3103840 | 2320119 | 78,73 | 61,80 | 39441 |
| Germany | 4967782 | 1412704 | 122,32 | 41,63 | 40612 |
| Denmark | 2495896 | 2248431 | 64,25 | 58,55 | 38846 |
| Ireland | 1559866 | 1315939 | 40,45 | 35,70 | 38614 |
| Sweden | 1741383 | 1297480 | 46,19 | 36,39 | 37702 |
| United Kingdom | 4319345 | 1818170 | 113,38 | 48,69 | 38095 |
| France | 4404040 | 2001473 | 117,37 | 52,95 | 37529 |
| Austria | 2475210 | 2110897 | 69,34 | 61,04 | 35695 |
| Belgium | 3308980 | 2844118 | 85,48 | 74,18 | 38711 |
| Luxemburg | 2583763 | 2527625 | 67,53 | 66,93 | 38262 |
| Finland | 1265628 | 1053092 | 36,14 | 30,64 | 35022 |
| Slovenia | 2193209 | 2132430 | 62,82 | 60,71 | 34925 |
| Italy | 3253394 | 1244891 | 94,78 | 34,95 | 34335 |
| Spain | 2592347 | 1079620 | 75,75 | 29,65 | 34222 |
| Czech Republic | 3112788 | 2799836 | 83,44 | 72,94 | 37306 |
| Greece | 1247327 | 976540 | 40,28 | 29,28 | 30965 |
| Cyprus | 702232 | 665860 | 21,09 | 19,89 | 33298 |
| Estonia | 1352713 | 1317705 | 38,59 | 37,29 | 35055 |
| Lithuania | 1322630 | 1246081 | 40,28 | 37,38 | 32838 |
| Poland | 2338097 | 1379423 | 76,52 | 37,92 | 30556 |
| Slovakia | 2442957 | 2385427 | 68,86 | 66,77 | 35479 |
| Malta | 1222950 | 1211422 | 35,48 | 35,08 | 34464 |
| Portugal | 1291799 | 1016892 | 38,71 | 28,41 | 33368 |
| Hungary | 1963051 | 1720758 | 59,77 | 49,87 | 32843 |
| Croatia | 2089913 | 2004107 | 61,09 | 56,90 | 34208 |
| Latvia | 1317182 | 1271926 | 39,25 | 37,25 | 33561 |
| Romania | 1437581 | 1049026 | 50,69 | 31,19 | 28361 |
| Bulgaria | 1373132 | 1252733 | 45,59 | 38,49 | 30123 |

*Table 1: The income and population potential (own and the environment) as well as the quotient of potentials for EU countries in 2018.*
*(Source: own study)*




*a) Own income potential* *b) Income potential of the environment*

*Figure 1: Value map of selected measures for EU countries*
*(Source: own study)*

Then the HDI index and the Gini coefficient were determined for the EU countries and their values were compared with the $P_i / g_i$ quotient. The table below shows the results.

| **EU Country** | ***GINI*** | ***HDI*** | ***Pi/gi*** |
|---|---|---|---|
| The Netherlands | 0,274 | 0,934 | 0,851 |
| Germany | 0,311 | 0,939 | 0,922 |
| Denmark | 0,278 | 0,930 | 0,895 |
| Ireland | 0,289 | 0,942 | 0,748 |
| Sweden | 0,271 | 0,937 | 0,832 |
| United Kingdom | 0,335 | 0,920 | 0,985 |
| France | 0,285 | 0,891 | 1,006 |
| Austria | 0,268 | 0,914 | 0,814 |
| Belgium | 0,257 | 0,919 | 0,941 |
| Luxemburg | 0,313 | 0,909 | 0,411 |
| Finland | 0,259 | 0,925 | 0,906 |
| Slovenia | 0,234 | 0,902 | 1,207 |
| Italy | 0,334 | 0,883 | 1,022 |
| Spain | 0,332 | 0,893 | 1,043 |
| Czech Republic | 0,240 | 0,891 | 1,252 |
| Greece | 0,323 | 0,872 | 1,258 |
| Cyprus | 0,291 | 0,873 | 1,099 |
| Estonia | 0,306 | 0,882 | 1,302 |
| Lithuania | 0,369 | 0,869 | 1,244 |
| Poland | 0,278 | 0,872 | 1,230 |
| Slovakia | 0,209 | 0,857 | 1,295 |
| Malta | 0,287 | 0,885 | 1,196 |
| Portugal | 0,321 | 0,850 | 1,250 |
| Hungary | 0,287 | 0,845 | 1,342 |
| Croatia | 0,297 | 0,837 | 1,674 |
| Latvia | 0,356 | 0,854 | 1,483 |
| Romania | 0,351 | 0,816 | 1,423 |
| Bulgaria | 0,396 | 0,816 | 1,774 |

*Table 2: Values of HDI and Gini coefficients as well as $P_i/g_i$ for EU countries. (Source: own study)*

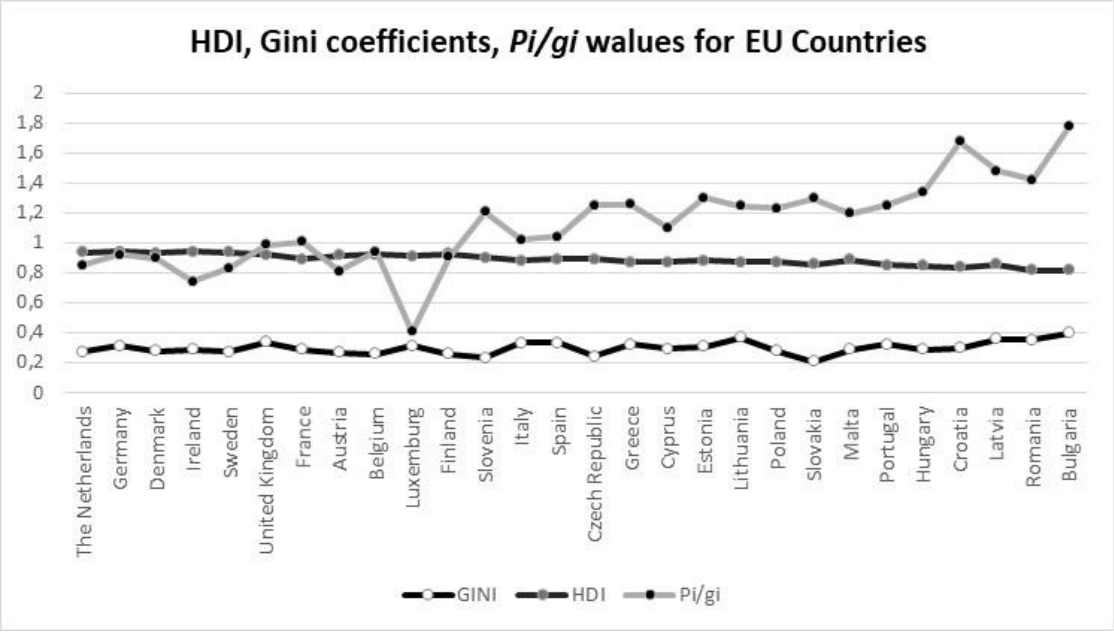
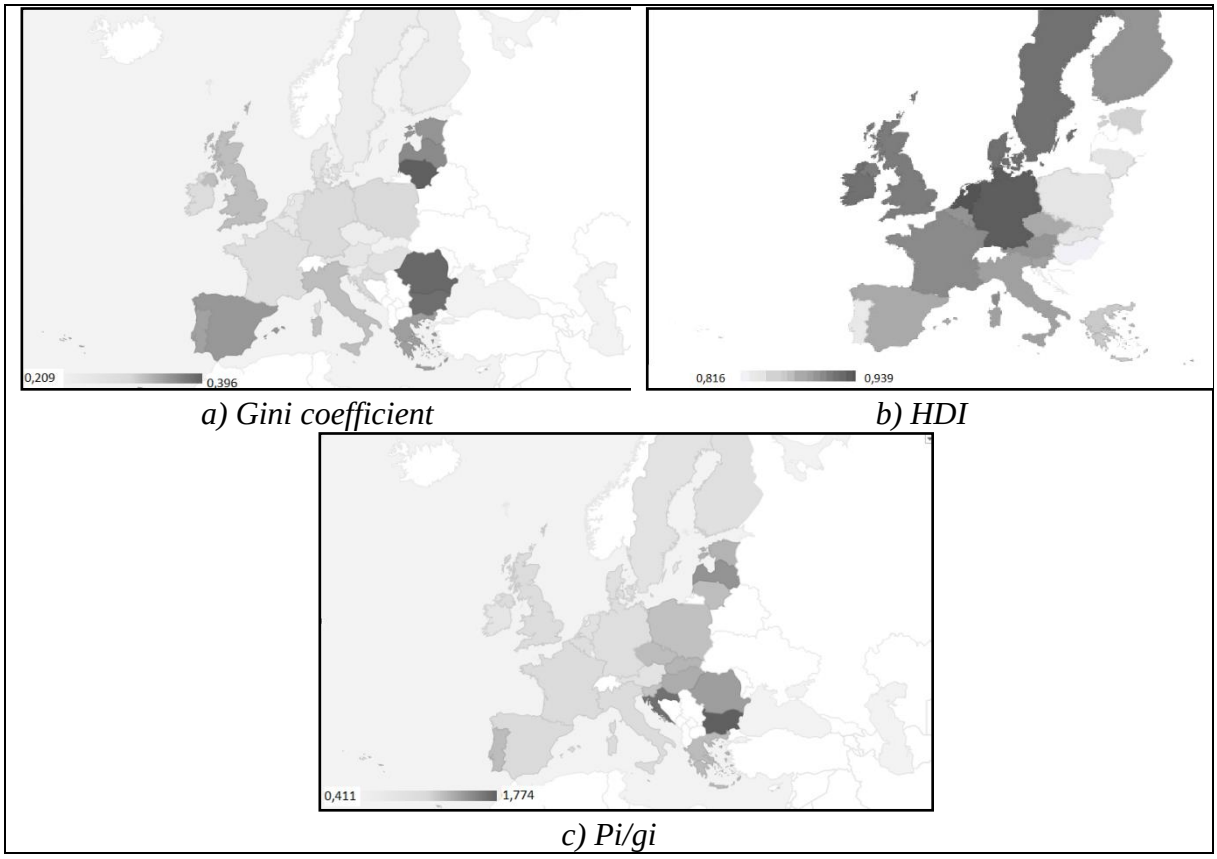



*Figure 2: Values of HDI and Gini coefficients and Pi/gi for EU countries. (Source: own study)*

The socio-economic development of the EU countries measured by the HDI index is at a very high level (11 out of 28 countries have HDI> 0.9). The Gini index belongs to the range (0.209; 0.396). Countries with the lowest level of income inequality are: Slovakia, Slovenia and the Czech Republic, while the highest level of inequality was recorded for Lithuania and Bulgaria. For the 10 countries (the richest) there is a relation. $P_i < g_i$. For the remaining 18 countries, there is a relation of the highest values $P_i / g_i$ for countries with low income. Pearson's correlation coefficients between the measures were determined. It can be written that:

- There is a significant negative relationship between HDI and *Pi/gi* (Pearson's value -0.85). Thus, the higher the level of socio-economic development (and thus also the higher GPD), the smaller the impact of the environment on a given country. The lower the level of socio-economic development (poorer countries), the stronger the influence of the environment.
- There was a moderate negative correlation between HDI and the Gini index (Pearson -0.43). Thus, the higher the level of development of a country, the lower the income inequality. The highest level of income inequality occurs in countries with the lowest HDI
- There is a moderate, positive relationship between HDI and GDP per capita (Pearson 0.67). GPD per capita is one of the three components of HDI, it explains about 46% of the HDI variation. The rest are the components of health and education.
- A moderate, positive relationship was found between the following values: Gini coefficient and *Pi/gi* (Pearson 0.32). The higher the level of income inequality, the country more dependent on the environment.
- There is a low, negative correlation between GDP per capita and the Gini coefficient (Pearson -0.38). About 14% of income inequality can be explained by the level of income in EU countries.




*a) Gini coefficient* *b) HDI*

*c) Pi/gi*

*Figure 3: Value map of selected measures for EU countries (Source: own study)*

## 4. CONCLUSION

All analysed indices: HDI, Gini coefficient and *Pi/gi* values affect the standard of living of the population. In countries with high GDP per capita, high socio-economic development index, relatively low Gini index, the standard of living of the population is significantly higher than in less developed countries. The level of the labour market development largely determines all the indicators discussed in the paper. The problem of many EU Member States is the high level of unemployment (Spain, Greece), especially among young people (Spain, Greece, Croatia, Italy). Therefore, in order to describe the socio-economic situation of countries more fully, indicators should be considered not only about the level of income, education and health, but also income disparities (income inequalities), the economic environment and the level of the labour market. In countries with high GDP per capita, high socioeconomic development index, relatively low Gini index, the standard of living of the population is significantly higher than in less developed countries. The level of the labour market development largely determines all the indicators discussed in the paper. Thus, in order to describe the socio-economic situation of countries more fully, indicators should be considered not only about the level of income, education and health, but also income disparities (income inequalities), the economic environment and the level of the labour market. Socio-economic development of EU countries is diversified, both in terms of the level of education and health, as well as social and income inequalities. There are highly developed countries with high GDP and low income inequalities. There are also poorer and less developed countries where income inequalities are significant, and the environment plays an important role in the process of shaping economic life.

## LITERATURE:

**1.** Anselin L., Florax R., Rey S. (2004). *Advances in spatial econometrics methodology tools and applications*. Springer Verlag, New York
2. Brakman S., Garretsen H., van Marrewijk Ch. (2001). *An Introduction to Geographical Economics*, Cambridge University Press.
3. Combes P-P, Mayer T., Thisse J-F., (2006). Economie Geographique, *Economica*, Paris.
4. Duncan C.J., Scott S. (1998). *Human Demography and Disease*, University Press, Cambrodge, UK.
5. Fingleton B (2003). *European regional growth*. Springer Verlag, Berlin
6. Getis A., Mur J., Zoller H. (2004). *Spatial Econometrics and Spatial Statistics*, Palgrave Macmillan, New York.
7. Giri C.N. (2004). *Multivariate Statistical Analysis*, USA Marcel Dekker.
8. Matyas L., Sevestre P. (ed.) (2006). *The Econometrics of Panel Data*, Kluwer Acedemic Publishers, Dordrecht.
9. Paelinck J.H.P. Klaassen L.H. (1983). *Ekonometria przestrzenna*, Warszawa, PWN.
10. Rencher, A. C., Christensen W.F. (2012). *Methods of Multivariate Analysis*,. USA, John Wiley & Sons.
11. Rich D.C., (1980). Potential Models in Human Geography. Concepts and Techniques in Modern Geography, *Geo Abstracts*, nr 26, Norwich.
12. Santon E.A. (2007). *Inequality and the Human Development Index*, ProQuest LLC.
13. Suchecka J. (2014). *Statystyka przestrzenna. Metody analizy struktur przestrzennych*. Wydawnictwo Beck, Warszawa.
14. Suchecki B. (2010). *Ekonometria przestrzenna*, Wydawnictwo Beck, Warszawa.
15. Waller L.A., Gotway C.A.(2004). *Applied Spatial Statistics for Public Health Data*, J Wilej & Sons Inc. Pub., Heboken, New Jersey.
16. Woolridge G (2002). *Econometric analysis of cross section and panel data*. MIT Press, Cambridge.
17. www.stat.gov.pl

18. www.ec.europa.eu/eurostat
19. www.undp.org

# DECISION-MAKING PROCESS OF TOP MANAGERS IN SLOVENIA AND COMPANIES' ORIENTATION TO FOREIGN MARKETS

**Damjan Grusovnik**
*Mariborska cesta 65, 2250 Ptuj, Slovenia*
*damjan.grusovnik@gmail.com*

**Dusko Ursic**
*Faculty of Economics and Business, University of Maribor,*
*Department of General Management and Organization*
*Razlagova 14, 2000 Maribor, Slovenia*
*dusko.ursic@um.si*

**Alenka Kavkler**
*Faculty of Economics and Business, University of Maribor,*
*Department of Quantitative Economic Analysis*
*Razlagova 14, 2000 Maribor, Slovenia*
*alenka.kavkler@um.si*

***ABSTRACT***

*In this study, top managers in Slovenia were questioned about their past decisions. More specifically, they were asked about the quality of their decision-making process when they made important (high-impact) decisions. The quality of the decision-making process was measured using four reflective dimension measures. The goal of this paper was to determine if there is a relationship between the quality of the decision-making process of managers and companies' scope of orientation to foreign markets as measured by the share of revenues generated in foreign markets. The findings reveal that the differences in scope of orientation to foreign markets between companies with above-average and below-average quality of decision-making process of managers are not statistically significant. The differences between the first and the last ($10^{th}$) decile of companies in the quality of decision-making process of managers, on the other hand, are statistically significant at the 10 % level.*

***Keywords:*** *company performance, decision-making process quality, foreign markets*

## 1. INTRODUCTION

The true essence of management is reflected in the true success of managers' decisions over time (Harrison, 1999, 2000). Guillemette et al. (2014) pointed out that an important distinction must be made between the performance of the decision-making process and the quality of the decision itself; or between the results of the process and the results of the decision. In the business world, decision-making process performance is an important prerequisite (required as a prior condition) for a quality decision. A relationship appears to exist between these two distinct constructs (Van Bruggen et al., 1998; Lilien et al., 2004; Bernd-Mathias et al., 2011). The Guillemette et al. (2014) study concentrated on evaluating the decision-making process, rather than on the consequences of the dimensions. Meissner and Meissner and Wulf (2014) also confirm that an increasingly dominant school of thought in the strategy process literature argues that decision-making processes should be evaluated on the basis of the quality of the process itself, rather than on the basis of the decision-making outcomes (e.g., financial performance) (Amason, 1996; Keren & de Bruin, 2005). The decision-making process consists of five phases: intelligence phase (i.e., information search, problem identification), design phase (i.e., criteria choice, search for alternatives, predicting and measuring outcomes), choice phase (i.e., final solution, implementation planning), implementation phase and a monitoring

phase (i.e., feedback and correction) (Simon, 1977; Turban et al., 2011). Performance is influenced by several factors that may mask the effect of the decision-making process (Dean & Sharfman, 1996; Meissner & Wulf, 2014). These factors can include organizational and environmental influence factors that are unrelated to the decision-making process itself (Hansen & Wernerfelt, 1989; Meissner & Wulf, 2014). In contrast, the process based measures of the quality of the decision-making process are less likely to be influenced by exogenous factors and are more likely to be linked to the decision-making process (Meissner & Wulf, 2014). Several studies have also stressed that the quality of the strategic decision-making process is one of the most important determinants of organizational performance (Eisenhardt, 1989; Meissner & Wulf, 2014). Empirical studies have found that a high quality decision-making process can increase total shareholder returns (TSR) and the return on investment (ROI) by six to seven percentage points (Blenko et al., 2010; Lovallo & Sibony, 2010). Decision-making quality is based on the thoroughness with which all relevant leadership and technical issues are considered (Rausch, 2007). Chen et al. (2012) identified seven key principles of decision-making quality: 1) immediate and rich information, 2) including complete data from the past; 3) a precise forecasting model; 4) key forecasting parameters and random factors; 5) the distance between the forecasting point and the current time point, where the closer they are, the more precise the forecasting value is; 6) an immediate and multi-frequency feedback rate in a decision-making process missile control model; and 7) overall system thinking and rational decision-making evaluations. The quality of the decision-making process and the company's success is considerably influenced by who makes the decisions, what skills and capabilities they have, what managerial style they apply, and the techniques and methods they apply in the course of the decision-making process. Consequently, it is not only an applied decision-making approach and a managerial style that leaves their mark on the decision-making process. It is also the level of professional ability, education and experience that the manager possesses (Zoltay-Paprika et al., 2008). Guillemette et al. (2014) developed a construct model of the decision-making performance. This multidimensional construct is composed of four reflective dimensions (which are also used in our study). The decision-making quality construct was measured via formative measures of the decision-making quality and the satisfaction measures of the effectiveness of the user's decision-making process. All formative and reflective variables were measured through a user's perception. The study focused on high-impact decisions. These decisions are mostly ill-structured, relatively complex, and important for the organization (tactical or strategic decisions). Such decisions are not made in total isolation and are influenced by other stakeholders. The study proved that the relationship between the decision-making performance and the decision-making quality was significant. The study also calculated the size of the weights of the dimensions of the decision-making performance. All four dimensions of the decision-making performance were found to positively contribute to the perceived decision-making quality. This paper is structured as follows. Next chapter describes the setting of our survey of top managers in Slovenia and the used questionnaire. Chapter 3 examines how to measure quality of the decision-making process of managers and its dimensions, following Guillemette et al. (2014). Main results are described in the fourth chapter, while chapter five concludes.

## 2. SURVEY

In March of 2015, we distributed an anonymous survey to the top managers of the 500 largest companies in Slovenia (see also Grušovnik et. al. (2015) and Grušovnik et. al. (2017)). Annual review in the fiscal year of 2013 was used to determine which companies were the largest (Javornik, 2014). We developed two versions of the questionnaire; one was written in Slovenian and the other in English. The survey was an internet survey. Respondents received a link to the survey through a personalized e-mail.

Of the 500 e-mails that were sent out, 255 managers clicked on the survey and 112 of those managers fully completed the questionnaire. Hence, the data collected represents 22,4% of the target audience. 210 of the managers accessed the survey through a personal computer, 25 through a smart phone and 20 through a tablet computer. 86 managers out of 112 were working in companies that participated in foreign markets. The questionnaire consisted of 26 questions, where 22 questions referred to the quality of decision-making process. The other 4 questions referred to company employees and company performance measure. Managers were answering questions for the fiscal year 2014. The performance measures that was chosen is scope of orientation to foreign markets (measured by the share of revenues generated in foreign markets in relation to total revenues, for the year 2014, in percent). The primary goals of our research model involved answering the following questions:

- *Is there a positive correlation between the quality of the decision-making process of managers' in Slovenia and the company's orientation to the foreign markets?*
- *Have companies in Slovenia, whose managers' exhibit an above-average quality decision-making process, on average, a higher orientation to foreign markets than companies where managers show a below-average quality decision-making process?*

## 3. MEASURING THE QUALITY OF THE DECISION-MAKING PROCESS

The first 22 questions in our survey were related to the dimensions of the quality of the decision-making process. These questions are identical to the questions in the Guillemette-Laroche-Caudieux survey on the reflective measures of decision-making performance (Guillemette et al., 2014). Each individual dimension of the quality of the decision-making process included a 7 point Likert scaled question where: 1 - strongly disagree, 2 - disagree, 3 - partly disagree, 4 - neither disagree nor agree, 5 - partly agree, 6 - agree, and 7 - completely agree. The scale of the 22nd question was reversed. Since the range of the scale was not evident from the content of the scientific article, we established contact with the main author of the paper and obtained this information. The research model included the following four dimensions. Each question, or dimension, was weighted according to the importance of the quality of the decision-making process:

- *Procedural rationality (7 questions - No.: 1, 5, 9, 10, 16, 17, 18);*
- *Exhaustivity of information (5 questions - No.: 3, 12, 14, 19, 22);*
- *Effort (5 questions - No.: 2, 4, 6, 8, 20);*
- *Openness of spirit (5 questions - No.: 7, 11, 13, 15, 21).*

The values of the original weights were: 0,208 + 0,255 + 0,382 + 0,2 = 1,045. For a more logical display, we converted the values so the sum was the following: 0,199 + 0,244 + 0,366 + 0,191 = 1 or 100%. The sums of the answers of the individual dimensions for each manager were entered into Equation (1). This allowed us to calculate a comparable value for the quality of the decision-making process for each individual manager. The equation for an individual manager's quality in terms of their decision-making process (abbreviated as D.M.P.) is as follows:

$$Q(m)_{D.M.P.} = \left(\frac{D1_{act}}{D1_{max}}\ w_{D1}\right) + \left(\frac{D2_{act}}{D2_{max}}\ w_{D2}\right) + \left(\frac{D3_{act}}{D3_{max}}\ w_{D3}\right) + \left(\frac{D4_{act}}{D4_{max}}\ w_{D4}\right) \qquad (1)$$

$D(1, 2, 3, 4)_{act}$ – actual sum of manager's achieved points from the answers for each dimension
$D1_{max}$ – $(7 \times 7 = 49)$ sum of maximum possible points from the dimension of procedural rationality
$D2_{max}$ – $(5 \times 7 = 35)$ sum of maximum possible points from the dimension of information exhaustivity

$D3_{max}$ – (5 × 7 = 35) sum of maximum possible points from the dimension of effort
$D4_{max}$ – (5 × 7 = 35) sum of maximum possible points from the dimension of openness of spirit
$w_{D1}$ = 0,199 – weight of the dimension of procedural rationality
$w_{D2}$ = 0,244 – weight of the dimension of the exhaustivity of the information
$w_{D3}$ = 0,366 – weight of the dimension of effort
$w_{D4}$ = 0,191 – weight of the dimension of the openness of spirit

### 3.1. A practical example explaining Equation (1)

Since in the dimension of procedural rationality, there is a maximum of 49 possible points, these 49 points represent 0.199, or 19.9%, of the manager's quality of the decision-making process. The results of the answers will rarely reach the maximum value. If we assume that the manager, in the dimension of procedural rationality, scores 40 points, then this is $\frac{40}{49}$ = 0.816, or 81.6%, of 0.199 (0.816 x 0.199 = 0.162). In this case, the value 0.162 represents the actual comparable value of the manager's dimension of procedural rationality against the other managers' (the weight of the dimension is still 0.199, only in relation to the other managers' actual comparable value, which is 0.162). We calculated the mean/median values for all decision-making quality values for an individual manager (Equation 1). All the companies above the mean/median value, belonged to the group where the managers are above-average successful in the quality of the decision-making process. Other companies that were below or equal to the mean/median value, belonged to the group where the managers are below-average successful in the quality of the decision-making process.

## 4. EMPIRICAL RESULTS

Table 1 illustrates the results of our statistical analysis. We performed the usual tests for both of our research questions. We calculated the Spearman correlation coefficient and to compare the means of two groups, we performed the t-test and its nonparametric alternative, namely the Mann-Whitney test. In majority of cases, the results are not statistically significant (e. g. the Spearman correlation, most t-tests and most Mann-Whitney tests). Different success measures (mean/median) did not sufficiently alter our results. We also analyzed data on managers in the upper and lower quartiles and deciles of the values of the decision-making quality. For quartiles, our results were still not statistically significant, therefore we also compared the first and tenth decile of quality of the decision-making process of managers from companies that are present on foreign markets. The p-value of the Mann-Whitney U test and of the t-test for the 1st and 10th decile are 0,062 and 0,074, respectively. Thus both tests are statistically significant at the 10 % level. Since our sample for the deciles was small (only 16 companies), it would be difficult to obtain significant results at a lower level of significance. For this purpose, we would probably need a larger sample of companies.

*Table following on the next page*

*Table 1: Results of the statistical tests*

| Perfor-mance | Group size | Measure of success | Test method | $r_s$ | p | Below average | Above average |
|---|---|---|---|---|---|---|---|
| **Orientation on foreign markets** | Foreign (86) | / | Spearman | 0,083 | 0,450 | / | / |
| | Foreign (86) | M | t-test | / | 0,805 | M 52,48 | M 54,46 |
| | | | MWU | / | 0,794 | $M_R$ 42,73 | $M_R$ 44,14 |
| | | MD | t-test | / | 0,919 | M 53,16 | M 53,97 |
| | | | MWU | / | 0,924 | $M_R$ 43,24 | $M_R$ 43,76 |
| | Foreign Quartiles (42) | M=MD | t-test | / | 0,080 | M 34,95 | M 54,42 |
| | | | MWU | / | 0,102 | $M_R$ 18,40 | $M_R$ 24,60 |
| | Foreign Deciles (16) | M=MD | t-test | / | 0,074 | M 25,75 | M 57,00 |
| | | | MWU | / | 0,062 | $M_R$ 6,88 | $M_R$ 11,60 |

*Note: M – Mean value; MD – Median value; $M_R$ – Mean of ranks; MWU – Mann Whitney U test; t-test (two tailed); $r_s$ – Spearman correlation coefficient; p - significance level; M=MD – both measures off success, divide the managers into groups, the same way.*
*Source: Own survey (2015)*

The results of the statistical tests are as follows:

- There is no positive correlation between the quality of the decision-making process of managers' in Slovenia and the scope of orientation on the foreign markets.
- Companies in Slovenia, whose managers' exhibit an above-average quality in the decision-making process, on average, do not have a higher orientation to foreign markets than companies where managers show a below-average quality in the decision-making process.
- The differences between the first and the last (10th) decile of companies in the quality of decision-making process of managers, on the other hand, are statistically significant at the 10 % level.

We also analyzed the differences between the averages of the single questions (items) from our survey about the quality in the decision-making process of managers, between companies with above-average and below-average orientations to foreign markets (86 managers; measure of success: mean value). For almost all of the questions, the above-average companies in terms of foreign market orientation had, on average, better (i.e. higher) values than the below-average companies (ratio 19:3 in favor of above-average). Only the last three smallest differences were in favor of the below-average. The five largest differences were in the following questions: question 20 (I was completely immersed in solving my problems), question 16 (I considered the risks associated with each alternative), question 8 (I have shown my eagerness to address the problems), question 4 (I made the required effort to solve the problems), and question 2 (I put a great deal of effort into achieving my tasks).

## 5. CONCLUSION

No positive correlation between the variables of quality in the decision-making process of managers in Slovenia and the performance of the companies was found. In addition, companies in Slovenia, whose managers exhibit an above-average quality in the decision-making process, on average, do not have higher performance measure than companies where managers show a below-average quality in the decision-making process.

Only when restricting the analysis to the first and last decile of companies in the quality of decision-making process of managers, the differences became statistically significant. We used, as performance measure, the percentage of the revenues created on foreign markets. To improve the results for future surveys, we could give the following recommendations for future research:

- Increase the size of the Likert scale from 7-point to 9-point scale. Managers were very focused on the range of values between 4 and 7. They want to provide you with answers that are positioned above the middle. If you make the correction that is concentrated on a larger range of values (5-9), then the values will be more dispersed. Managers strive to provide answers in the higher half of the value interval.
- Consider another performance indicator (e.g., return on investment (ROI)) and determine whether the results will fluctuate less with the increasing quality in the decision-making process. One of the approaches of other authors was that managers evaluated several performance indicators on a 7-point scale in relation to their main competitors. The performance indicator with excellent results is the balanced scorecard (Ling Sim & Chie Koh, 2001), which measures company performance via four dimensions (i.e., financial, costumer, internal business processes, innovation and learning). The disadvantage of this approach is that the questionnaire becomes quite long.

**LITERATURE:**

1. Amason, A.C. (1996). Distinguishing the effects of functional and dysfunctional conflict on strategic decision making: Resolving a paradox for top management teams. *The Academy for Management Journal*, 39(1), 123-148.
2. Bernd-Mathias, A., Baets W.B., & König R. (2011). A complexity perspective on collaborative decision making in organizations: The ecology of group-performance. *Information & Management*, 48, 157-165.
3. Blenko, M.W., Mankins, M.C., & Rogers, P. (2010). The decision-driven organization. *Harvard Business Review*, 88(6), 54-62.
4. Dean, J.W. Jr., & Sharfman, M.P. (1996). Does decision process matter? A study of strategic decision-making effectiveness. *Academy of Management Journal*, 39(2), 368-396.
5. Eisenhardt, K.M. (1989). Making fast strategic decision in high velocity environments. *Academy of Management Journal*, 32, 543–576.
6. Grušovnik. D., Uršič, D., & Kavkler A. (2015). Dimensions of quality of managerial decision-making process. In K. Vuković, R. Brčić & M. Klačmer Čalopa (Eds.). *Entrepreneurial society: current trends and future prospects in entrepreneurship, organization and management*. Varaždin: Faculty of Organization and Informatics, 67-73.
7. Grušovnik. D., Kavkler A. & Uršič, D. (2017). Dimensions of Decision-Making Process Quality and Company Performance: A Study of Top Managers in Slovenia. *Naše gospodarstvo / Our Economy*, 63(4), 66-75.
8. Guillemette, M.G., Laroche, M., & Cadieux, J. (2014). Defining decision making process performance: Conceptualization and validation of an index. *Information & Management*, 51(6), 618-626.
9. Hansen, G.S., & Wernerfelt, B. (1989). Determinants of firm performance: The relative importance of economic and organizational factors. *Strategic Management Journal*, 10(5), 399-411.
10. Harrison, E.F. (1999). *The Managerial Decision making Process*, 5th ed. Boston, MA: Houghton Mifflin.
11. Harrison, E.F., & Pelletier, M.A. (2000). The essence of management decision. *Management Decision*, 38(7), 462-469.

12. Keren, G., & de Bruin, W.B. (2005). On the assessment of decision quality: Considerations regarding utility, conflict and accountability. In D.J. Hardtman & L. Macchi (Eds.), *Thinking: Psychological Perspectives on Reasoning, Judgment and Decision Making* (pp. 347-363). Chichester: John Wiley & Sons Ltd.
13. Lilien, G.L., Rangaswamy, A., Van Bruggen, G.H., & Starke, K. (2004). DSS effectiveness in marketing resource allocation decisions: Reality vs. perception. *Information Systems Research*, 15, 216-235.
14. Lovallo, D., & Sibony, O. (2010). The case for behavioral strategy. *McKinsey Quarterly*, 1-16.
15. Meissner, P., & Wulf, T. (2014). Antecedents and effects of decision comprehensiveness: The role of decision quality and perceived uncertainty. *European Management Journal*, 32, 625-635.
16. Rausch, E. (2007). Leadership in management education and development: Criteria for quality decisions. *European Business Review*, 19(3), 257-268.
17. Simon, H. (1977). *The New Science of Management Decision.* Englewood Cliffs, NJ: Prentice Hall.
18. Turban, E., Sharda, R., & Delen, D. (2011). *Decision Support and Business Intelligence Systems*, 9th ed. New Jersey: Prentice Hall.
19. Van Bruggen, G.H., Smidts, A., & Wierenga, B. (1998). Improving decision making by means of a marketing decision support system. *Management Science*, 44, 645-658.
20. Zoltay-Paprika, Z., Wimmer, A., & Szanto, R. (2008). Managerial decision making and competitiveness: The case of Hungary. *Competitiveness Review: An International Business Journal*, *18* (1/2), 154-167.

# A THEORETICAL APPROACH TO THE CONCEPT OF THE CLUSTER

**Jose G. Vargas-Hernandez**
*Research professor, Department of Administration,*
*University Center for economic and Managerial Sciences, University of Guadalajara,*
*Periférico Norte 799 Edif. G201-7 Núcleo Universitario los Belenes,*
*Zapopan, Jalisco, 45100, Mexico*
*jvargas2006@gmail.com*

**Jose Sergio Morones Servin**
*Master in Busines and economic Studies,*
*University Center for economic and Managerial Sciences,*
*University of Guadalajara, Mexico*

**Omar Cristian Vargas Gonzalez**
*Master in Computer Systems,*
*Tecnológico Nacional de México - Instituto Tecnológico de Ciudad Guzmán,*
*Av. Tecnológico 100, Ciudad Guzmán, Jalisco, 49000, Mexico*
*ocvargas@itcg.edu,mx*

***ABSTRACT***
*The main objective of this research is to provide a general overview of the concept of the cluster, through the review of theoretical-empirical studies and some proposed models as well as its importance as a strategy for regional development and its operation.*
***Keywords:*** *cluster, regional development, functioning*

## 1. INTRODUCTION

There is no single formal definition about the concept of the industrial cluster. Some authors such as Porter (2003), Rosenfeld (1996), Altemburg (2001), Hoen (1999), among others, propose definitions regarding this concept, but the concept of the cluster goes beyond the networks developed by companies that operate in the same market of final goods, which are part of the same industry and which cooperate in certain areas, including strategic alliances. To approach the concept, it is necessary to analyze the theoretical approaches of the cluster, starting from the approach of classical economists such as Marshall (1890), the theory of industrial location of Weber (1929), the theory of industrial interactions and industrial districts. Becattini (1992) and the new economic geography of Krugman (1995), in addition to the competitive advantages of Porter (1990) among others. Another of the key aspects is to place the cluster as a global or regional development strategy in the global and local context, due to which it allows to interrogate the impact through its analytical theoretical bases and study the success cases and their contributions to the economies local. To know the formation of industrial clusters it is necessary to know the value chains and identify the processes and the interrelated parts that compose it. Some key factors to identify a cluster are technological development, commercial linkages, cooperation between firms and, according to Porter, subcontracting (Corrales, 2007, page 171). Many researchers agree that the cluster consists of a critical mass of companies, generally small and medium-sized, specialized in the same sector or related productive activities, located in a specific and relatively small geographical area. Other authors suggest that a cluster includes institutions that interact with companies that affect their competitive performance.

Finally, some others explicitly refer to the existence of collaborative relationships between all these actors and highlight the importance of social, historical, political and cultural factors that promote or hinder collaboration between actors

## 2. CONCEPTUAL THEORETICAL BACKGROUND

### 2.1. Analysis of the concept

This concept has its origins in the industrial districts of Alfred Marshall (1963) when he tried to analyze the reasons why industry emerges concentrated in certain localities in which he points out, that some elements that constitute industrial concentration: physical conditions, for example, nature of climate and soil, needs of local consumers, families and businesses, infrastructure (roads) and access roads (transport). This author emphasizes three aspects: mutual proximity of companies in an industrial district, which exchange information, new ideas and inventions; appearance of subsidiary activities or companies that reduce costs, and concentration of specialized labor (Garnica & Rivero, 2004, page 144). To this Krugman agrees with Marshall. However, Krugman (1992) adds that other aspects to consider in the conformation and growth of an industrial belt are: increasing returns to scale, arbitrary and accidental components, and historical and cumulative phenomena. The convergence of these processes contributes to the integration of a specialized labor market (Garnica & Rivero, 2004, page 145). But it was Becattini (1992) who reused it to describe and analyze the success of industrial conglomerates in Italy in the modern era; nevertheless, it corresponded to Piore and Sabel, (1984) through a Second Industrial Divide of 1984, to make known to the world the success of some regions of Italy through industrial districts (Corrales, 2007, pp. 186-187). According to Vera (2007, pp. 303-306), a cluster is a sectoral and / or geographical concentration of companies that work in the same activities or in closely related activities, both backwards, towards suppliers of inputs and equipment, and forward and to the sides, towards processing and user industries as well as services and activities closely related to important and cumulative external economies, agglomeration and specialization due to the presence of producers, suppliers and specialized labor and services annexed to the sector and with the possibility of carrying out a joint action in search of collective efficiency. For Porter cited in (Vera, 2007, page 306) the clusters are geographical concentrations of interconnected companies, specialized suppliers, service providers, related sector companies and related institutions that compete but also cooperate. In its character of critical masses of unusual competitive success in determined areas of activity, in an activity characteristic of all or almost all national, regional and even metropolitan economies, especially that of the most advanced countries. Not only applies to local geographic sectors but also to the national environment, an important fact is that, as there are rival companies within the cluster, this will promote innovation and the competitive development of firms. While for Roldan (2019) a cluster is a geographical concentration of support institutions and companies that produce and complement each other in a specific field. Functionally, it is articulated in associative schemes with value network structures, with the main objective of improving its profitability and competitiveness. Another author who defines the cluster and is a pioneer in the new economic geography is Gala (2005, pp. 9-10), who in a general way can define the clusters as a group, geographically close, of interconnected companies and associated institutions in a particular field and linked by externalities of various types, which can be seen as processes in the sense that they can be considered a way of understanding how the economy works and organizes its strategies, as well as results, observing the clusters as a critical mass of firms interconnected geographically. On the other hand, Krugman (1991) considers the cluster is a product of history and economies of scale propitious by the behavior of the market; for Scott (1986), clusters are the spatial consequence of the vertical disintegration of large companies; while for Harrison (1992), the cluster is constituted by companies specialized in one or more phases of the production

processes, which leads to cooperation and to exchange tools and information to improve the collective processes of the regional industry. On the other hand, Storper (1992 and 1997), based on the findings of Piore and Sabel (1984), suggests that the clusters are the result of flexible specialization. A simpler way to define it is the one proposed by Rosenfeld (1997) cited in the Regional Quantitative Analysis Research Group of the University of Barcelona (2005), a cluster is used very simply to represent concentrations of companies that are capable of producing synergies due its geographical proximity and the existence of interdependencies between them, despite the fact that their weight in total employment is not preponderant or even relevant. It is necessary to consider that economic clusters do not only have to do with sectors and support institutions, but they have to do with them as much as they are more competitive due to the relationships they establish between them, this facilitates the exchange, potentiates the synergies and minimizes transaction costs. Altemburg adds that a cluster is an agglomeration of a significant number of companies in a defined geographical area that has a clear profile of specialization and in which the degree of division of work and interactions between companies is high (Garnica & Rivero, 2004). Then the clusters are in the majority networks, trans-sectorial networks that comprise complementary companies and specialized in a link or knowledge base in the value chain.

## 2.2. Theoretical approaches

The first proposed approach is that of the classical economists who divide this approach into two basic currents: The Marshallian perspective or the theory of interaction and the industrial districts, exposed by Marshall (1890) and the theory of industrial location with contributions from Weber (1929) and Hoover (1937) later Krugman (1995) and Borja and Castells (1997). On the one hand, the theory of industrial location and economic geography tries to explain why activities tend to be concentrated in certain areas and are not distributed randomly. It emphasizes the relative weight of the cost of transport in the final cost, which would explain why some activities are usually located close to natural resources, close to markets and others anywhere, in which benefits are produced and called economies of agglomeration and on the other the theory of interaction aims to explain that the most propitious conditions for there to be learning are based on interaction. What, according to this approach, would explain the success of the industrial districts. Likewise, the interaction accelerates the dissemination of knowledge and innovation, which is a social good internalized by all the companies in the district (Garnica & Contreras, 2007, page 311). The theory of cluster growth and sectoral agglomeration in turn attempts to explain the development of clusters, whether or not they are based on natural resources. First, these new theories have demonstrated the importance of the accumulation of a specific resource to explain economic growth (Garnica & Rivero, 2004, page 312). The new economic geography explains why certain activities agglomerate in a certain region. The decisions of firms' locations depend on the interrelation between production costs and the ease of access to markets (of goods, factors, etc.). If transport costs are reduced, then the sites of the firms are highly sensitive to the differentials of productive costs. On the other hand, if the above costs are high, companies will find themselves more linked to certain given markets and, consequently, they are less sensitive to disparities in production costs. It promotes growth through the innovation of economic activities, which in turn benefits a reduction in the costs of innovation and, consequently, a higher growth, so that a circular causality is generated between growth and geographical concentration of economic activities (Garnica & Contreras, 2007, page 313). Another approach is that of the industrial districts and the collective efficiency in which two mechanisms that lead to the formation of this are distinguished, on the one hand, are the positive external economies that are the savings that a company can make due to the actions of other actors. These arise when the actors cannot incorporate all the costs and benefits of an activity and on the other side is the joint action that acts as a deliberate measure, by

including the association with other stakeholders to ensure the interests of the union, exchange information or contract a service that shares the costs. This action can take place directly between two or more companies or comes through trade associations and promotion institutions (Vera, 2007, page 315). Within the theoretical approaches, the one of the competitive advantage of the nation stands out that according to Porter (1990) it indicates that the competitiveness of a nation depends on the capacity of its industry to innovate and improve. The competitive advantage is created and maintained through a very localized process influenced by very characteristic of a nation, such as its values, culture, economic structure, institutions and history, and for this the theory of resources and capabilities is taken into account. Because in the clusters a collective strategy originates, which recognizes the existence of a strategy of a strategic scope superior to that of the cooperation and the business unit and that would be shared by the organizations of the same field or niche, this when referring to a cooperative strategy on the part of the companies involved and that share in such a way resources and specialization. The following is a summary of the various types of approaches (See Table 1).

*Table 1: Cluster theoretical approaches*

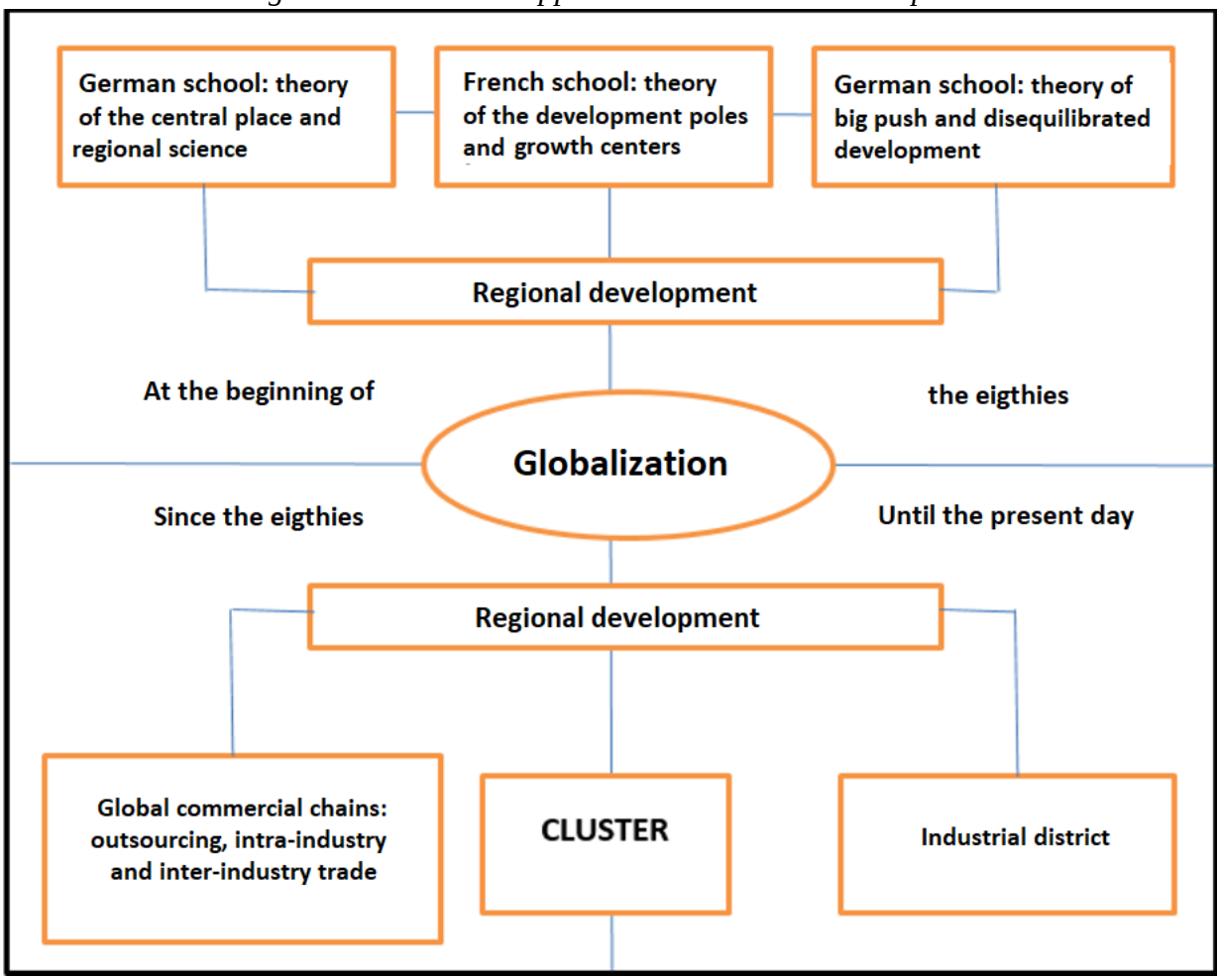
| **Theoretical approach** | **Author** | **Description** |
|---|---|---|
| New Economic Geography | P. Krugman | Prepared from A. Marshall's pioneering contributions: The agglomerations result from the cumulative action induced by the presence of local external economies. External economies are incidental and the spatial structure of the economy is determined by processes of invisible forces. There is little space for public policies. |
| Business economics | M. Porter | Emphasizes the importance of geographically restrictive external economies, concentration of highly specialized skills and knowledge, institutions, competitors, related activities and sophisticated consumers, also in international competition.<br>Local strategies are part of the business strategy. The government must provide education, physical infrastructure and rules for competition. |
| Regional Economy | A. Scout | Economic geography and industrial performance are interrelated. There is an endemic tendency in capitalism in the direction of local clusters that are constituted in intensive regional economies and in transactions that, in turn, are linked by structures of dispersed interdependence. The construction of competitive advantages lies in the extra market coordination and public policies. |
| Innovation economy | D.B. Audretsch | Local proximity facilitates the flow of information and the dimension of knowledge. Economic activities based on new knowledge are likely to be grouped into geographical regions. |
| Small businesses and industrial districts | H. Scmitz | In addition to the incidental or spontaneous local external economies, there is a strength derived from the consistent cooperation between private agents and the public sector. The concept of collective efficiency combines the spontaneous effects (unplanned) and those consciously sought (planned), and is defined as the competitive advantage derived from local external economies and joint action. |

*Source: recovered from (Roldan, 2019, page 14)*

Beyond the reasons for the initial location of a cluster, once the specialization pattern is established, cumulative trade gains are generated. There is a strong path dependence in the patterns of specialization and commerce. Commerce and location are integrated. When an industry has a leading development within a region, that region will continue to specialize in that industry Quintanar and Gatto (1992), the Italian industrial districts were characterized as small and medium industrial firms with successful recent experiences for their dynamic development and highly competitive internationally that they managed to harmonize (Gala, 2005). According to Rebelloti (1995) this model was constructed from the presence of four main characteristics. In the first place, it was constituted by small and medium-sized companies that were geographically concentrated and specialized sectorially. Second, they established ties back and forth based on the exchange of goods, people and services both by means of market mechanisms and outside of it. Third, these companies were characterized by having common cultural and social backgrounds that favored the creation of codes of conduct both explicit and implicit. Finally, they were characterized by the presence of a network of local institutions, both public and private, that supported economic agents within the cluster (Gala, 2005, page 15). The focus of global value chains looks at the recent changes in production systems, distribution channels and financial markets, which gained speed as a result of the globalization of product markets and the spill of IT technologies, suggest that it is necessary pay more attention to external linkages. In this regard, the approach of global value chains allows to account for the activities that occur outside the cluster and, above all, to understand the meaning of the relationships of local producers with the main external actors. This approach is nourished by two theoretical sets (Pyke, 1998, Helmsing, 2001 and Nadvi, 1995). On the one hand, it uses the literature on industrial clusters to account for the role of local institutions and networks in strengthening the conditions for the upgrading of local producers (Gereffi and Kaplinsky, 2001). On the other, it applies the literature on value chains to emphasize how the role of global buyers and the way of organizing the value chain define the opportunities for modernization of local companies. This model, as developed by Pietrobelli and Rabelloti (2004), is based on four elements: value chains, governance, upgrading and tactical knowledge (Gala, 2005, page 17). On the other hand, Gordon and McCann (2000) suggest three basic types of industrial cluster: 1) The classical model of pure agglomeration, based on Marshall's ideas and characterized by the absence of cooperation between agents, free membership and the importance of the co-location. 2) The model of the industrial complex, characterized by the existence of stable and identifiable relationships between companies, which give rise to a closed club, and the need to share the same location in space. 3) The model of the social network, based on the strength of social interactions between companies, in which personal trust plays a preponderant role and where membership is not completely free although it is not a completely closed club. Spatial localization is not essential, although it favors the establishment of the bonds of trust that sustains the network (Regional Quantitative Analysis Research Group of the University of Barcelona, 2005). Thus, we see how both the sectoral dimension and the geographical dimension play a fundamental role in the definition, although the problem arises when it comes to delimiting both dimensions. Although for this Porter mentions that the delimitation of a cluster is often a matter of nuance. Involving a creative process that must be determined by knowledge of the links and complementarities between companies and institutions (Figure 1).

*Figure following on the next page*

*Figure 1: Theoretical approaches and cluster development*




*Source: own elaboration from (Garnica & Contreras, 2007).*

## 3. CLUSTER AS DEVELOPMENT STRATEGIES

For Latin America, Altenburg and Meyer-Stamer (1999) propose a typology of clusters with three different characteristics: those of survival, composed of micro enterprises and small businesses that generate low quality consumer products for local markets, have a low degree of labor force specialization; the clusters that produce for the massive consumption, that prospered in the stage of substantive industrialization of imports, whose production destined it to the national market; and the clusters that supply transnational corporations (Corrales, 2007, pp. 190-191):

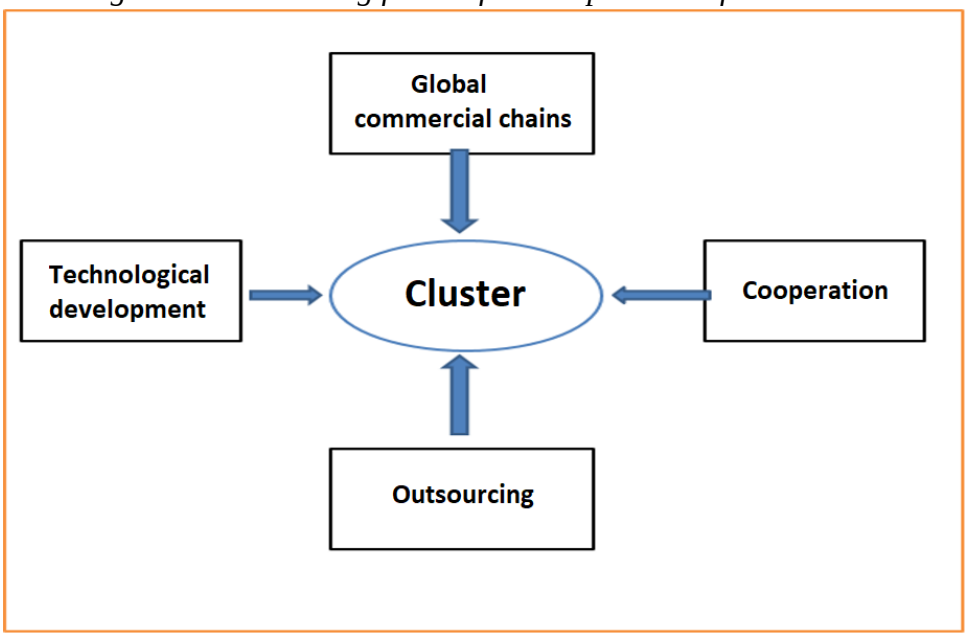
a) The survival clusters were developed in poor areas and are dedicated to the manufacture of shoes, furniture, clothing, among other products and services. Altenburg and Meyer-Stamer (1999) and Altenburg (2001) found imitation practices among their promoters, low levels of education and trust, as well as predatory and opportunistic attitudes.
b) The clusters that produce massively to the national market are constituted by medium and large companies with good administrative organization and technological capacity. These clusters lack technological innovation, with the exception of their suppliers, who buy automated machinery with state-of-the-art technology.
c) The clusters formed around the transnational companies carry out a set of activities more technologically complex, such as the assembly and manufacture of parts for the electronics and automotive industry. Given the technological level with which they operate, there are many barriers to the entry of local companies as suppliers or subcontractors.

Another way to develop a cluster is through sector analysis Porter (1998) cited in (Garnica & Rivero, 2004, pp. 145-146) which is to understand the competition is the sector. A sector (manufacturer or service) is a group of competitors that manufacture products or provide services and compete directly with others. Sectors differ from the nature of competition and not all sectors offer the same opportunities to achieve sustained profitability. The second essential issue in the strategy is the positioning within the sector. Some positions are more profitable than others, regardless of what the average profitability of the sector may be. Although it is worth mentioning that according to (Garnica & Rivero, 2004) there are studies mentioning that the sectoral analysis is limited because it concentrates on quantitative or statistical aspects, therefore, qualitative interconnections linked to knowledge flows arising between inter-network networks are neglected. business, focuses only on groups of companies producing similar final goods, are not considered links that the company can create with customers, suppliers and specialized institutions, there are doubts about whether the companies that make up the sector can establish cooperation ties with their rivals and seeks diversity in existing industrial trajectories, rather than synergies. A central element to consider the analysis of the cluster is that of inter-company networks. A network is defined as: a set of explicit, selected links with preferential patterns that occur jointly of companies based on complementary advantages and market relations, with the static and dynamic reduction of uncertainty as the main goal (Freeman, 1991: 501) cited in (Garnica & Rivero, 2004, page 150), where this type of networks arises for several reasons:

a) Need to coordinate processes of productive and technological specialization of companies
b) Rapid and widespread introduction of new information and communication technologies
c) Rediscovery of the influences of static and dynamic externalities) in the different members of a group.
d) Decrease in the trend towards vertical integration and boom in outsourcing processes

Social and institutional innovations that contribute to the solution of complex socio-economic problems, that neither the market nor the company can offer an adequate response. An important element for the emergence of the cluster is cooperation and this is achieved through networks and trust ties, because this reduces transaction costs and generates linkages (see Figure 2).

*Figure 2: Determining factors for the operation of the cluster*




*Source: own elaboration from (Corrales, 2007)*

Clusters are not the magic formula for economic growth and sustainable regional industrial development, but in several parts of the world they have yielded results and generated economies of scale. The proximity between companies and the establishment of institutions and processes to support industries within a specific geographical area has advantages. Some of them include the proximity of raw materials and markets, a constant supply of skilled labor and the support of institutions and government. There are also elements that can hinder the growth of geographically agglomerated companies, the model of development through clusters also has considerable disadvantages (Martin and Sunley, 2003, Pacheco-Vega, 2004, Palazuelos, 2005). The negative aspects include the increase in competition between companies (predatory behavior), both in the aspect of final customers and in terms of the availability of skilled labor (Pacheco-Vega, 2007). The popularity of the clusters is due not only to the Italian literature and its analyzes of the economic boom and the industrial regional development of the Third Italy (Becattini, 2002, Grandinetti and Tabacco, 2003, Paniccia, 1998, Rabellotti, 1995), but also to the interest in Saxon literature by industrial groupings (Feldman et al., 2005, Harrison, 1992, Porter, 1998, 2000, Quadrio-Curzio and Fortis, 2002) (Pacheco-Vega, 2007). The spatial distribution of the cluster feeds the commercial and non-commercial relationships and also generates resource supply indirectly to some sub-sectors of the related economy. The emergence of a cluster is part of the process of restructuring the economy in the focused delegations of a city (Mercado & Moreno, 2011).

## 4. CONCLUSIONS

Although all the theoretical approaches to the concept are relevant, we can conclude that several authors coincide in the assumptions and some parts of the conceptual definition subtracting a simple definition is that the cluster is a group of companies that perform in the same activities or activities closely related both backward, forward and sideways. The cluster according to the authors cited can be a natural or artificial, natural regional development strategy like the one that has already been formed due to supply and demand and the artificial ones created through public policies to encourage the development of a region. Although several theoretical approaches have been analyzed, it is pertinent to mention that all of them subscribe to this topic of relevance, the cluster cannot be defined by means of a focal lens or through a perspective. For future empirical research it is necessary to start from the theory because there are empirical studies that do not give great value to the theory, this being the support of knowledge generated through the application in case studies.

## LITERATURE:

1. Altenburg T. (2001). La promoción de clusters industriales en América Latina. Buenos Aires: Focopyme.
2. *Altenburg*, T, & *Meyer-Stamer*, J,, (*1999)*. How to Promote Clusters: Policy Experiences from Latin America, World Development, Elsevier, vol. 27(9), pages 1693-1713, September.
3. Becattini, G. (2002), Industrial Sectors and Industrial Districts: Tools for Industrial Analysis, *European Planning Studies*, vol. 10, núm. 4, pp. 483-493
4. Becattini, G. (1992). El distrito industrial marshaliano como concepto socioeconómico, en Pyke, F., G. Becattini y W Sengenberger (eds.), *Los distritos industriales y las pequeñas empresas,* vol. Distritos industriales y cooperación interempresarial en Italia", Madrid, Ministerio del Trabajo, 1992.
5. Borja, J. y Castells, M. (1997). *Local y global, la gestión de las ciudades en la era de la información,* Madrid, Taurus, 1997.
6. Corrales, S. (2007). Importancia del clúster en el desarrollo regional actual. *Frontera Norte, 19*(37), 173-191.

7. Feldman, M. P., Francis, J. y Bercovitz, J. (2005), Creating a Cluster while Building a Firm: Entrepreneurs and the Formation of Industrial Clusters, Regional Studies, vol. 39, núm. 1, pp. 129-141.
8. Freeman, Ch. (1991). Networks of Innovators: A Synthesis of Research Issue, Research Policy 20, NorthHolland, 1991, pp. 499-514.
9. Gala, M. (2005). Competitividad y complejos productivos: teoría y lecciones de política. *Serie: Estudios y Perspectivas*, 9-10.
10. Garnica, A., & Rivero, A. (2004). Clúster y coo-petencia (cooperación y competencia) industrial: algunos elementos teóricos para considerar. *Problemas de desarrollo, Revista Latinoamericana de Economía, 35*(139), 144-145.
11. Garnica, J., & Contreras, F. (2007). Los Clúster Industriales: Precisión Conceptual y Desarrollo Teórico. *Cuadernos de Administración*, 303-322.
12. Gereffi, G. and Kaplinsky, R. (eds) (2001) The Value of Value Chains,IDS Bulletin,32(3), special issue
13. Gordon, I.R., McCann, P. (2000) Industrial clusters: complexes, agglomeration and/or social networks? Urban Studies, 37: 513–532
14. Grandinetti, R. y R. Tabacco (2003), Formation and Evolution of Industrial Districts: a Knowledge-based Perspective for Industrial District Research, *Reinventing Regions in a Global Economy: Regional Studies Association International Conference*, Pisa, Italia.
15. Grupo de Investigación Análisis Cuantitativo Regional de la Universidad de Barcelona. (2005). *Definición de la metodología de detección e identificación de clústers industriales en España*. Obtenido de www.ipyme.org/Publicaciones/lopezbazo.pdf
16. Harrison, B., (1992). Industrial Districts: Old Wine in New Bottles, *Regional Studies,* vol. 26, núm. 5, 1992.
17. Helmsing, B. (2001) *Externalities, Learning and Governan-ce: New Perspectives on Local Economic Development*,Development and Change, 32: 277-308.
18. Hoen, A. (1999). Three variations on identifying clusters. [Documento www]. Dirección en Internet: http:/www.oecd.org/dsti/sti/s_t/inte/nis/Clusters/clusters.htm
19. Hoover, E. (1937). Spatial price discrimination. Review of Economic Studies, 4, 182-191
20. Krugman, P. (1995). *Development, Geography, and Economic Theory*, Estados Unidos de América, Massachusetts Institute of Technology, 1995.
21. Krugman, P. (1992). Geografía y Comercio, Barcelona, Antoni Bosch Editor, 1992.
22. Krugman, P. (1991). Increasing returns and economics geography. Journal of Political Economy, 99 (3), 483-499
23. Marshall, A. (1963). La Concentración de las Industrias Especializadas en las Localidades Particulares, en Principios de Economía, Madrid, Editorial Aguilar, 1963, pp. 223-232.
24. Marshall, A. (1890). Principles of economics: An introductory volume. Canada: McMaster University.
25. Martin, R. y Sunley, P. (2003), Deconstructing Clusters: Chaotic Concept or Policy Panacea?, *Journal of Economic Geography*, vol. 3, núm. 1, pp. 5-35.
26. Mercado, A., & Moreno, M. (2011). *La ciudad de México y sus clústers*. México: Juan Pablo SA.
27. Nadvi, K. (1995), *Industrial Clusters and Networks: Case Stu-dies of SME Growth and Innovation*, Sussex, Institute ofDevelopment Studies-University of Sussex.
28. Pacheco-Vega, R. (2007). Una crítica al paradigma de desarrollo regional mediante clusters industriales forzados. *Estudios Sociológicos, 25*(3), 683-707.
29. Pacheco-Vega, R. (2004), Historia de dos ciudades: un análisis comparativo de los distritos industriales del cuero y calzado en León y Guadalajara, *Meeting of the Latin American Studies Association*, Las Vegas, Nevada.

30. Palazuelos, M. (2005), Clusters: Myth or Realistic Ambition for Policymakers?, *Local Economy*, vol. 20, núm. 2, pp. 131-140.
31. Paniccia, I. (1998), One, a Hundred, Thousands of Industrial Districts. Organizational Variety in Local Networks of Small and Medium-sized Enterprises, *Organization Studies*, vol. 19, núm. 4, pp. 667-699
32. Piore, M. J. y Charles F. S. (1984) *The Second Industrial Divide, Possibilities for Prosperity,* Nueva York, Harper Collins Publishers, 1984
33. Porter, M. (2003). Ser competitivo: nuevas aportaciones y conclusiones. Bilbao: Ediciones Deusto.
34. Porter, M. E. (1998) *The Competitive Advantage: Creating and Sustaining Superior Performance*. NY: Free Press, 1985. (Republished with a new introduction, 1998.)
35. Porter, M. (1990). The competitive advantage of the nations. New York: The Free Press.
36. Pietrobelli, C., & Rabellotti, R. (2004). U*pgrading inclusters and value chains in Latin America: The roleof policies.* InSustainable Development DepartmentBest Practices Series. Washington, DC: Inter Amer-ican Development Bank
37. Pyke, F. (1998), *Local Development Initiatives and the Management of Change in Europe,* Discussion Paper, Employment Department, International Labour Office, Geneva.
38. Quadrio-Curzio, A. y Fortis, M. (2002), *Complexity and Industrial Clusters: Dynamics and Models in Theory and Practice,* Heidelberg, Nueva York, PhysicaVerlag.
39. Quintanar, A. y Gatto, F. (1992). Distritos industriales italianos. Experiencias y aportaciones para et desarrollo de políticas industriales locales. Documento de trabajo PRIDES, num. 29, publicaciones CEPAL, Argentina, 1992
40. Rabellotti, R. (1995). *Is there an `industrial district model'? Footwear districts in Italy and Mexico compared*. World Development23, 29-41.
41. Roldan, C. (17 de Mayo de 2019). *Conceptos y fundamentos de los clúster insdustriales*. Obtenido de http://www.ptolomeo.unam.mx:8080/xmlui/bitstream/handle/132.248.52.100/528/A4.pdf?sequence=4
42. Rosenfeld A., S. (1999). Estados Unidos: Las concentraciones empresariales, *Redes de empresas y desarrollo local*, París, Organización para la Cooperación y el Desarrollo Económico, 1999.
43. Scott, A. J. (1986). Industrial Organization and Location on Labor, the Firm and Spatial Process, *Economic Geography*, vol. 62, núm. 3, 1986.
44. Storper, M. (1992). The Limits to Globalization: Technology Districts and International Trade, *Economy Geography*, vol. 68, núm. 1, 1992.
45. Vera, R. (2007). Los clúster industriales: precisión conceptual y desarrollo teórico. *Revista Cuadernos de Administración, 20*(33), 303-322.
46. Weber, A. (1929). Theory of the location of industries. Chicago: University of Chicago Press

# TYPES OF INNOVATIONS AND FIRM PRODUCTIVITY IN RUSSIA

**Karina Nagieva**
*Ural Federal University, Ekaterinburg, Russia*
*nagieva1995@list.ru*

**Andrey Pushkarev**
*Ural Federal University, Ekaterinburg, Russia*
*empdtj@gmail.com*

**Natalia Davidson**
*Ural Federal University, Ekaterinburg, Russia*
*natalya.davidson@gmail.com*

**Oleg Mariev**
*Ural Federal University, Ekaterinburg, Russia*
*olegmariev@mail.ru*

***ABSTRACT***
*This paper analyzes the factors behind the firm-level innovations and the effects of various types of innovations on firm productivity in Russia. We apply CDM model and use BEEPS data on the Russian companies for the years 2012-2014. Several types of innovations are considered: product, process, organizational and marketing innovations. The results suggest that all types of innovations increase productivity, both if introduced individually and in combination. We also find that cooperation of firms in implementing innovations strongly facilitates innovative activity. In addition, business climate and state policies substantially affect firm innovation activity. In particular, improving the quality of institutions and human capital, facilitating competition, and increasing the efficiency of government spending are measures especially important for increasing innovative activity of Russian firms.*
***Keywords:*** *business climate, CDM model, human capital, productivity, types of innovations*

## 1. INTRODUCTION

Being essential for enterprise competitiveness, innovation is also a source of sustainable economic growth and improved living standards. Moreover, while technological development creates controversy in terms of employment, innovation as a broader phenomenon generates new sectors and jobs through technology (World Bank, 2019). In this paper, we explore the impact of innovations on productivity of manufacturing enterprises. Although there is a lot of research on this issue, which is particularly important in the era of digitalization, the relationship between innovations and productivity is not evident. The reasons for this ambiguity are twofold. Firstly, all firms deal with innovations differently: some of them are more inclined to pursue innovations than the others; some firms are relatively more efficient in performing innovations and so on. Secondly, endogeneity is likely to be present, in other words, while innovative firms are more productive, more productive firms tend to introduce innovations. We study the factors affecting firm level innovations and productivity employing Business Environment and Enterprise Performance Survey (BEEPS) micro-level dataset of the Russian firms and using three-stage CDM model. This firm level survey is performed by EBRD and the World Bank. Managers are asked about the quality of business environment. Our research takes into account both firm characteristics and a number of exogenous factors, such as business climate, human capital, and governmental support reflected in the Survey. The case of Russia is especially interesting, when it comes to the connection between intention to innovate and productivity

gains. Currently, Russian economic environment combines low level of innovative activity, relatively high level of human capital and low level of labour productivity and its growth. In other words, understanding how decisions to innovate are connected to actual productivity in Russia may be important for elaboration of the relevant policy improvements and uncovering obstacles for innovation in Russia and other transition countries with similar features. The existing literature is expanded with analysis of different types of innovations in Russia and their impact on the firm performance. Our results suggest that it is more effective for the firms to combine several types of innovations than to introduce them separately. Further, not only internal factors, but also external ones, such as competition and obstacles to business activity, are found to be significant for the innovative capacity of firms. The rest of the work is structured as follows. In the next section, a brief review of research papers is provided. Following section is devoted to description of data and methodology. Then we present and discuss the results of econometric analysis. The last section concludes and discusses possible policy implications.

## 2. BACKGROUND AND THE EXISTING RESEARCH

There are a number of studies on the relationship between innovation and productivity. For our research we employ a CDM-model (Crépon-Duguet-Mairesse model). This model links the intensity of R&D, introduction of innovations and productivity in a single chain for the French firms (Crépon et al., 1998). In this section we review mainly the papers where this model is employed. Besides, we are interested in the studies devoted to transition economies, particularly to Russia. The CDM-model studies the channels through which decisions to invest in development affect innovation activities, which, in turn, affect productivity. The original CDM model consists of 3 stages with 4 equations, dependent variables being predicted and included in the next equation. Based on the sample of 4,164 French firms from the national innovation survey, Crépon et al. (1998) reveal positive effect of R&D activities and innovations on value added per employee. Various forms and modifications of the original CDM model were suggested depending on the aims of the authors. In particular, a variety of innovations indicators were introduced. For example, Lööf et al. (2003) and Janz et al. (2003) use innovative sales per employee of Swedish and German firms as an innovative result. Hall et al. (2008) and Duguet (2006) measure innovations as probability for Slovenian firms to introduce various types of innovations (product, process, etc.). Another important subject related to transferring R&D into innovations and further into productivity gains is various types of innovations that a firm can pursue. Cirera (2015) analyzes 500 Kenyan firms for 2013-2014 based on CDM-model and finds that international competition, market pressure on product diversification and access to finance have the strongest effect on the intensity of research and development, and that innovative firms invest more in knowledge resources. Authors devote attention to firms' internal characteristics affecting various types of innovations. Junge et al. (2012) based on CDM model and Danish Community Innovation Surveys for 2004, 2007 and 2008 finds that education in technical sciences is significant for all types of innovations, while education in social sciences and humanities is especially important for organizational and marketing innovations. Moreover, the firms implementing more than one innovation are more productive than the firms that introduce only one of them. Higher level of employee's education and managers' perceived knowledge, as well as presence of R&D department and cooperation with universities and research institutions was found to be favorable for innovations in Chili and Colombia (Marotta et al., 2007). Eastern European countries are inefficient at converting their R&D, innovation and production capabilities into improvement of productivity, as firms working in transition economies have to deal with complicated institutional environment (Kravtsova & Radosevic, 2012). In Russia innovation activity of firms in the high-tech manufacturing sector was found to be limited by the lack of financial resources and by unfair competition caused by the non-uniform state support (Roud, 2007).

There remains a lack of studies on the topic of external factors determining various types of innovations in Russia. We intend to shed some light on this issue. In the next section we discuss methods and data used in our research.

## 3. DATA AND METHODS

While studying the determinants and effects of firms' innovative activities, we focus on the endogeneity of innovations performed by the firms. With this in mind, we have chosen CDM model as the main tool for the analysis. We employ data from the Business Environment and Enterprise Performance Survey (BEEPS) conducted by the World Bank and the European Bank for Reconstruction and Development for 2012-2014 on firms from transition countries. This survey involves 1564 manufacturing enterprises from 37 regions of the Russian Federation. At the first stage, firms decide whether and how much to invest in R&D. Using the goodness-of-fit test after estimating Poisson regression model, we found that the most appropriate model for the first step is the negative binomial regression. Such model allows taking into account the firms with zero investments. At the first stage, the following determinants were identified: 1) external factors, such as number of competitors, status of importer, business environment conditions; 2) individual characteristics of firms, such as age, size, being a part of a large association or enterprise (Bozic & Botric, 2011). Dependent variable at the first stage is expenditures on R&D in thousands of rubles. At the second stage, a predicted amount of R&D is used in the model with an innovative result as a dependent variable. We analyze four classic types of innovations: product, process, organizational and marketing ones. Given a binary nature of the dependent variables (1, if any innovations were implemented, and 0 otherwise), the equations are estimated using the probit model. The impact of human capital at the firm level is of particular interest, as special skills and knowledge are essential for successful implementation of innovations. Besides, dummy variables of firms' cooperation with various stakeholders are introduced, and they are all compared to the case of the companies that did not cooperate with anyone on innovations. When studying the types of innovations, the question arises as to what extent they are substitutes or complements for each other. Technological innovations (product and process) tend to be relatively more researched. Organizational innovations seem to be the most hidden type of innovations, since they can be observed mainly within the company. We constructed the following combinations with organizational innovations:

- Product and organizational innovations
- Process and organizational innovations
- Marketing and organizational innovations
- Product, process and organizational innovations
- Product, marketing and organizational innovations

The first three combinations are evaluated using the binary probit model, and for the last two ones the multivariate probit model is employed. At stage three, the innovative result predicted at the second stage is used to estimate its impact on firm productivity. To evaluate the third step, a standard Cobb-Douglas production function was chosen and modified based on Cirera (2015):

$$\log(Y_i/L_i) = \delta_0 + \delta_0 \log H_i + \alpha \log(K_i/L_i) + (\beta + \alpha - 1) \log L_i + \varepsilon_i ,$$

where *Y, H, K, L* is revenue in thousands of rubles, innovative result, capital as replacement cost for machines and labor costs in thousands of rubles of the *i*-th company respectively.

In all three steps of the CDM-model we included control variables such as industrial and regional dummies. The results of estimating the CDM-model are presented in the next section.

## 4. RESULTS AND DISCUSSION

In all equations of the CDM model robust standard errors are used to deal with heteroscedasticity. Below are the results of the first stage of the model. The dependent variable at this stage is R&D expenditures within the firm (see Table 1).

| Variables | The sum of R&D expenditures within the firm (own expenditures) |
|---|---|
| Size | 0.583** (0.228) |
| Age | -0.015* (0.008) |
| Competition | -0.004* (0.002) |
| Part of a larger enterprise | 0.667** (0.283) |
| Subsidies | 0.372 (0.293) |
| Taxes | 0.221 (0.188) |
| Inadequacy of the workers' qualification | 0.650*** (0.186) |
| Import | 0.711*** (0.231) |
| Business licensing and permits | 0.560*** (0.208) |
| Industry, regional dummies | YES |
| Constant | 10.74*** (1.115) |
| LR test | 229.62*** |
| Pseudo $R^2$ | 0.039 |
| Observations | 1,505 |

*Table 1: The CDM model for the Russian firms: the first stage*
*(Source: Author's calculations based on the BEEPS data)*
*Notes: *** significant at the 1% level, ** - at the 5% level, * - at the 10% level. The standard errors are in parentheses*

The results of the first stage of the CDM-model are in line with our hypotheses. As it can be seen from the table, large firms are more inclined to invest in research and development. This could be expected, since research and development require substantial financing, which is more likely to be provided by larger firms. Age coefficient shows that the younger the firm, the more it invests in R&D. This is an expected result, since new firms must be as competitive as possible so that they could establish themselves on the market. Concerning the role of competition, the results show that an increase in the number of competitors has a negative impact on investment into research and development. An increase in the number of competitors probably puts additional pressure on firms, which as a result may reduce R&D funds. It might occur due to the nature of competition in the transition economy of Russia. However, weak competition may be among the reasons for low innovation activity in the Russian Federation, and competition could potentially be a driver for innovations in the market. Firms owned by a large enterprise are observed to spend relatively more on research and development. Such firms, as a rule, have access to knowledge and skills within the enterprise. In addition, based on our data and model specification the impact of subsidies turned out to be positive, but not significant. This may indicate that subsidies could have been directed to the purposes other than innovations. Moreover, enterprises might know little about state support programs, and firms might possibly have unequal access to subsidies. Business barriers, except for tax rates, turned out to be significant for R&D expenditures. A positive sign indicates that innovative firms tend to face some obstacles and are burdened by them. In particular, positive impact of business licensing and permits indicates problems in the Russian institutional environment that innovative companies face. Positive relation between inadequacy of the employees' educational level and intensity of R&D investment can arise because innovative companies have higher requirements

and are less satisfied with employees' qualification. Bozic & Botric (2011) also received a positive impact of the barriers to doing business on the propensity to innovate, based on the BEEPS 2009 survey, which included 12,000 enterprises from 29 transitional countries (EU candidate countries). Results indicate that import as an indicator of international economic activity is positive and significant for R&D. In other words, a company being involved in foreign trade has an opportunity not only to acquire foreign technologies, but also to gain knowledge on business practices. Industry and regional dummies are both significant for R&D investment. At the next stage possible combinations of types of innovations are analyzed. These combinations were introduced after considering specific features of each type of innovations. In Table 2 below the results of the second stage of the CDM model are presented.

| Variables | Probability of introducing product innovation | Probability of introducing process innovation | Probability of introducing organizational innovation | Probability of introducing marketing innovation |
|---|---|---|---|---|
| Predicted sum of R&D expenditures within the firm | 0.0000667** (0.0000303) | 0.0000837*** (0.0000266) | 0.0000646*** (0.0000203) | 0.0000264 (0.0000198) |
| Licensing | - | 0.266*** (0.093) | 0.180* (0.093) | 0.100 (0.098) |
| Domestic suppliers | - | 0.212*** (0.059) | 0.116** (0.056) | 0.127** (0.061) |
| Foreign suppliers | - | 0.263*** (0.095) | 0.123 (0.091) | 0.071 (0.091) |
| Domestic consumers | - | 0.309*** (0.081) | 0.206*** (0.077) | 0.225*** (0.076) |
| Foreign consumers | - | - | 0.510*** (0.184) | 0.516*** (0.189) |
| Cooperation with universities or research institutions | - | 0.451*** (0.120) | 0.290*** (0.091) | 0.148 (0.099) |
| Training of personnel | 0.098*** (0.025) | 0.169*** (0.022) | 0.159*** (0.021) | 0.146*** (0.022) |
| Industry dummies | NO | NO | NO | YES |
| Regional dummies | YES | YES | YES | YES |
| Wald test | 141.62*** | 237.92*** | 246.86*** | 205.94*** |
| Pseudo $R^2$ | 0.101 | 0.142 | 0.145 | 0.118 |
| Observations | 1,328 | 1,503 | 1,503 | 1,499 |

*Table 2: The CDM model for the Russian firms: the second stage (marginal effects of probit model)*

*(Source: Author's calculations based on the BEEPS data)*

*Notes: *** significant at the 1% level, ** - at the 5% level, * - at the 10% level. The standard errors are in parentheses*

As it can be seen from the table, the return on investment in R&D is significant for all types of innovations excluding marketing innovations. We argue that the reason for such result is that this kind of innovations does not require as much R&D investments as the others. Alternatively, the effect of the investments could only be noticeable if they were jointly introduced with other types of innovations. The results show that almost all sources of innovations are positive and significant for an innovative result. These sources are compared with the firm's own idea, and they prove to increase the innovative potential of enterprises. The exception is product innovations with all sources of innovations being insignificant. Training of personnel proved to be positive and significant for innovative results, which indicates the importance of special skills and knowledge of personnel for innovations regardless of their type.

In terms of control variables, only marketing innovations were sensitive to industry differences. Below are the results of the last stage of the CDM modeling (see Table 3).

| Variables | The logarithm of labor productivity | | | |
|---|---|---|---|---|
| Predicted probability of introducing product innovation | 1.906** (0.886) | | | |
| Predicted probability of introducing process innovation | | 0.743** (0.291) | | |
| Predicted probability of introducing organizational innovation | | | 1.013*** (0.352) | |
| Predicted probability of introducing marketing innovation | | | | 1.055** (0.451) |
| Cost of capital per unit of labor cost | 0.081*** (0.024) | 0.080*** (0.022) | 0.080*** (0.022) | 0.081*** (0.022) |
| Logarithm of labor cost | -0.170*** (0.042) | -0.169*** (0.035) | -0.170*** (0.035) | -0.163*** (0.035) |
| Industry, regional dummies | YES | YES | YES | YES |
| Constant | 4.036*** (0.660) | 4.439*** (0.569) | 4.558*** (0.574) | 4.369*** (0.564) |
| Observations | 304 | 355 | 357 | 356 |
| R-squared | 0.360 | 0.360 | 0.360 | 0.354 |

*Table 3: The CDM model for the Russian firms: the third stage*
*(Source: Author's calculations based on the BEEPS data)*
*Notes: *** significant at the 1% level, ** - at the 5% level, * - at the 10% level. The standard errors are in parentheses*

Results show that all types of innovations are positive and significant for labor productivity, i.e. the firms' investments in research and development lead to successful commercialization. Concerning the remaining variables of traditional production factors, an increase in capital per unit of labor costs leads to an increase in labor productivity as it would be expected. A negative sign of the logarithm of labor costs indicates an inverse mathematical relationship between productivity and labor costs in the final equation. Industry and regional dummies are both significant for productivity. Next we perform a robustness check. Bivariate and multivariate probit models are estimated at the second stage of the CDM model to test complementarity between the types of innovations (see Table 4).

*Table following on the next page*

| | Bivariate model | | | Multivariate probit | |
|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) |
| Variables | Probability of introducing product and organizational innovation | Probability of introducing process and organizational innovation | Probability of introducing marketing and organizational innovation | Probability of introducing product, process and organizational innovation | Probability of introducing product, marketing and organizational innovation |
| Predicted sum of R&D expenditures within the firm | 0.0000489*** (0.0000133) | 0.0000581*** (0.0000154) | 0.0000361*** (0.0000129) | 0.000232** (0.0000988) | 0.000209** (0.0000873) |
| Licensing | 0.760*** (0.0656) | 0.174** (0.074) | 0.127* (0.073) | 6.986*** (0.430) | 7.031*** (0.450) |
| Domestic suppliers | 1.052*** (0.059) | 0.131*** (0.038) | 0.101** (0.042) | 10.22*** (0.384) | 10.19*** (0.347) |
| Foreign suppliers | 0.648*** (0.0513) | 0.141*** (0.0523) | 0.087 (0.0754) | 6.398*** (0.172) | 6.419*** (0.145) |
| Domestic consumers | 0.697*** (0.0493) | 0.207*** (0.0499) | 0.185*** (0.0542) | 4.047* (2.181) | 3.377*** (0.651) |
| Foreign consumers | 0.826*** (0.095) | 0.952*** (0.096) | 0.447*** (0.167) | 5.859*** (0.173) | 5.985*** (0.267) |
| Cooperation with universities or research institutions | 0.749*** (0.055) | 0.308*** (0.069) | 0.182*** (0.070) | 6.222*** (0.195) | 6.329*** (0.192) |
| Training of personnel | 0.105*** (0.014) | 0.132*** (0.016) | 0.131*** (0.017) | 0.296*** (0.076) | 0.290*** (0.077) |
| Industry, regional dummies | YES | YES | YES | YES | YES |
| Wald test | 30622.87*** | 7543.99*** | | | |
| rho | 0.460*** | 0.631*** | 0.809*** | | |
| rho21 | | | | 0.613*** | 0.366*** |
| rho31 | | | | 0.395*** | 0.382*** |
| rho32 | | | | 0.595*** | 0.757*** |
| Observations | 1,505 | 1,505 | 1,505 | 1,505 | 1,505 |

*Table 4: Results of the second stage of the CDM model for the Russian firms: marginal effects of bivariate and multivariate probit model*
*(Source: Author's calculations based on the BEEPS data)*
*Notes: *** significant at the 1% level, ** - at the 5% level, * - at the 10% level. The standard errors are in parentheses*

The results show that joint probability of the suggested combinations is significant in all specifications of the binary and multiple probit models. This is indicated by the correlations *rho*. In particular, the closest relationship is observed between marketing and organizational innovations (0.81) and process and organizational innovations (0.63) in equations (3) and (2) respectively. In multiple probit models a high correlation can be traced between product and process innovations (0.61) and process and organizational innovation (0.59) in equation (4), and also between marketing and organizational innovation (0.76) in equation (5). In other words, introducing one type of innovation may not be enough to generate benefits, and therefore firms decide to introduce several types of innovations at a time. Organizational innovations complement all combinations. In all regressions, investing in R&D is positively significant for the joint probability of various types of innovations, and the marginal effects are greater in multiple probit models than in individual ones.

This suggests that the returns from R&D are higher in case when various innovations are introduced simultaneously. The same applies to the ways of introducing innovations. Almost all variants of cooperation, with the exception of foreign suppliers in equation (3), have a positive effect on the joint likelihood of different innovations. Training of personnel is significant for all combinations. Sectoral and regional dummies are also significant in all specifications of the model. Below are the results for the last stage of the CDM model with joint probabilities of innovations (see Table 5).

| | Predicted joint probabilities | | | | |
|---|---|---|---|---|---|
| | Product and organizational innovation | Process and organizational innovation | Marketing and organizational innovation | Product, process and organizational innovation | Product, marketing and organizational innovation |
| The logarithm of labor productivity | 0.773** (0.299) | 0.875*** (0.331) | 0.9262** (0.4321) | 0.0263* (0.0151) | 0.0268* (0.0152) |

*Table 5: Effects of joint probabilities of innovations on the productivity*
*(Source: Author's calculations based on the BEEPS data)*
*Notes: *** significant at the 1% level, ** - at the 5% level, * - at the 10% level. The standard errors are in parentheses*

Table 5 shows that all combinations of innovations are positive and significant for productivity. In particular, when combined with organizational innovations, process innovations provide greater productivity than when they are implemented alone. Among all the combinations, marketing and organizational innovations have the greatest effect on productivity. The results of the CDM-model show the relationship between different types of innovations. Namely it was revealed that organizational innovations are usually implemented jointly with the other types of innovations. Individual and joint probabilities of innovation positively affect productivity. The results for Russian enterprises are somewhat different from those obtained by Cirera (2015) for Kenyan firms, for which the effect of joint introduction of organizational innovations with product and process innovations was not significant. The obtained results contribute to understanding the ways to improve innovation policy measures. In particular, they shed some light on the institutional conditions in the regions, as well as on the role of education and training. Firms need to think about introducing not only technological innovations (product and process), but also non-technological ones (marketing and organizational). When introduced together, they are more successful in improving enterprise competitiveness.

## 5. CONCLUSION

The results of the CDM model show that investment in R&D is significant for innovations, and all types of innovations are positive and significant for labor productivity. In particular, investing in R&D brings greater returns for implementing several types of innovations jointly. This indicates greater efficiency in terms of R&D if introducing several types of innovations. Our study has confirmed that business environment and state policy substantially affect firms' innovative activity. A range of problems important for innovations in Russia are revealed: underdevelopment of institutions, not high enough quality of human capital, low competition and inefficient spending. In the present circumstances, in order to facilitate innovative activity and by doing so improve enterprise productivity, the following measures need to be considered. It is important to develop competitive environment. It is also necessary to simplify bureaucratic procedures for business so that start-ups and small firms could work on the market. As far as human capital and R&D are concerned, it is important both to pay attention to fundamental science and education, and to aim education at the needs of innovative enterprises.

A good example would be dual education, that is, a program combining theory and practice. In order to facilitate training of personnel, state could also help by organizing special training centers or participate in their financing. This is especially important for the firms with lack of resources. We also find that ineffective licensing and protection of intellectual property are a substantial problem. It leads to the conclusion that legislation should be improved. Moreover, cooperation of large and small firms should probably be more intensive, since small firms often require financial support and since the amount of time needed to implement an innovative project can be too long for small firms. Large companies could form innovative ecosystems, which would include small and medium-sized companies. Such ecosystems could include other stakeholders, researchers, consumers, suppliers, and so on. We recognize the limitations of this research. Apart from the standard limitations of the CDM modelling itself they are mainly connected to subjective estimates of external factors affecting R&D expenses in BEEPS. Besides, we consider only limited set of firms not covering all markets and industries. In future, we plan to consider objective indicators of possible barriers on the regional level.

***ACKNOWLEDGEMENT:*** *Research was supported by the grant of the Russian Science Foundation № 19-18-00262 "Empirical modelling of balanced technological and socioeconomic development in the Russian regions".*

**LITERATURE:**

1. Bozic, L., Botric, V. (2011). Innovation Propensity in the EU Candidate Countries. *Transition Studies Review*, 2011(18), 405–417.
2. Cirera, X. (2015). Catching up to the technological frontier? Understanding firm-level innovation and productivity in Kenya. *Innovation and Entrepreneurship, Trade and Competitiveness Global Practice, the World Bank*, 2015(94671), 1–45.
3. Crépon, B., Duguet, E., Mairesse, J. (1998). Research, innovation and productivity: an econometric analysis at the firm level. *Economics of Innovation and New Technology*, 1998(7(2)), 115–158.
4. Duguet, E. (2006). Innovation height, spillovers and TFP growth at the firm level: Evidence from French manufacturing. *Economics of Innovation and New technology*, 2006(15(4-5)), 415-442.
5. Hall, B. H., Lotti, F., & Mairesse, J. (2008). Employment, innovation, and productivity: evidence from Italian microdata. *Industrial and corporate change*, 2008(17(4)), 813-839.
6. Janz, N., Lööf, H., & Peters, B. (2003). Firm level innovation and productivity-is there a common story across countries? *ZEW Discussion Papers*, 2003(3(26)), 1-35.
7. Junge, M., Severgnini, B., Srensen, A. (2012). *Evidence on the Impact of Education on Innovation and Productivity*. Copenhagen: Copenhagen Business School.
8. Kravtsova, V., Radosevic, S. (2012). Are systems of innovation in Eastern Europe efficient? *Economic Systems*, 2012(36(1)), 109–126.
9. Lööf, H., Heshmati, A. (2003). The link between firm-level innovation and aggregate productivity growth: a cross-country examination. *Research evaluation*, 2003(12(2)), 131-147.
10. Marotta, D., Mark, M., Blom, A., Thorn, K. (2007). *Human capital and university-industry linkages' role in fostering firm innovation: an empirical study of Chile and Colombia*. Washington: World Bank.
11. Roud, V. (2007). *Firm-level research on innovation and productivity: Russian experience*. Maastricht: UNU-MERIT.
12. World Bank. (2019). *World Development Report 2019: The Changing Nature of Work*. Washington, DC: World Bank.

# THE INFLUENCE OF VALUE ADDED TAX ON THE FORMATION OF PRICES IN HOSPITALITY ON THE TERRITORY OF THE REPUBLIC OF CROATIA

**Anita Grubisic**
*Veleučilište u Šibeniku*
*Trg Andrije Hebranga 11, 22 000 Šibenik, Croatia*
*anita@vus.hr*

**Toni Miljak**
*Međimursko veleučilište u Čakovcu*
*Ul. bana Josipa Jelačića 22, 40000, Čakovec, Croatia*
*toni.miljak@mev.hr*

**Andela Mustafovski**
*Student*
*Kroz Smiljanovac 1, 21210 Solin, Croatia*
*andela.mustafovski1950@gmail.com*

***ABSTRACT***

*Tourism, as an economic branch, is extremely important in the Republic of Croatia and as such should be given special attention when defining legislative frameworks. In addition to regulations and ordinances governing the business and conduct of business entities in the tourism market, the legislator also enacts tax provisions that apply to all market stakeholders. Frequent changes in tax regulations do not contribute to the stability and competitiveness of the hospitality industry and tourism in general. Since January 2020, two value added tax rates of 13 and 25% have been applied to the hospitality industry as an activity. To this must be added the consumption tax, which also affects the final price of the product or service in the hospitality industry. The maximum amount of consumption tax is 3%. On the other hand, only the value added tax rate of 13% is applied to accommodation services. When we look at the Croatian economy as a whole, we can see an exceptional dependence on overall tourism, which accounts for up to 20% of GDP. By comparison, in other competing countries, tourism accounts for 5 to 10% of GDP. Also, the Croatian tax system is much more complex and burdens the economy more than the tax systems of other countries. The aim of this paper is to show the extent to which the tax burden affects the formation of the final price in catering, which can be crucial in attracting individual guests.*

***Keywords:*** *calculation, price formation, tax system, tourism*

## 1. INTRODUCTION

Historically, the emergence of taxes has been linked to the emergence of common public functions. For a long period of time, thinking about taxes was not continuous. The idea of taxing turnover by applying value added tax for 1918 and 1919 appears for the first time in the financial literature. The first idea, about the introduction of value added tax, was proposed by the factory owner and tax advisor Wilhelm von Simens, and he put forward the idea that Germany should introduce a refined sales tax (Šinković, 2010.). Value added tax is a form of tax that is calculated and paid in all phases of the production and turnover cycle, whereby in each phase only the amount of value added that was realized in that phase of the production and turnover cycle is taxed. it is one of the forms of general sales tax on goods and services.

## 2. VALUE ADDED TAX

Value added tax is a modern form of consumption taxation and is paid on goods supplied and services rendered. Goods include real estate, equipment, products, goods, etc. The main advantage of VAT is the fact that it contributes large revenues to the budget (up to 2/3 of revenues). Of the European Union member states, France was the first to introduce VAT in 1958 (Miljak, 2013.). Value added tax - VAT is the revenue of the state budget of the Republic of Croatia. VAT is calculated and paid according to the provisions:

- The Value Added Tax Act (Official Gazette Nos. NN 73/13, 99/13, 148/13, 153/13, 143/14, 115/16, 106/18, 121/19) and
- Ordinance on value added tax (Official Gazette no. 79/13, 85/13-correction, 160/13, 35/14, 157/14, 130/15, 1/17, 41/17, 128/17, 1/19, 1/20).

### 2.1. Taxpayer

According to the Value Added Tax Act, a taxpayer is any person who independently performs any economic activity, regardless of the purpose and result of performing that activity. Economic activity is any activity of producers, traders or persons performing services, including mining and agricultural activities and activities of free professions. The use of tangible or intangible assets for the purpose of permanent income is also considered an economic activity. Taxpayers are not considered state authorities, state administration bodies, bodies and units of local and regional self-government, chambers and other bodies with public authority even in the case when they collect fees, charges and other payments related to the performance of activities or transactions within its scope or authority. If the pursuit of such activities, as if they were not taxable persons, would lead to a significant distortion of the principles of competition in the performance of such activities or transactions, those authorities shall be considered taxable persons in respect of those activities or transactions (Zakon o porezu na dodanu vrijednost, 2020).

### 2.2. VAT rates

In the Republic of Croatia, the general VAT rate is 25%, while the reduced rates are 5% and 13%. VAT at the rate of 5% is paid on (Zakon o porezu na dodanu vrijednost, 2020.):

a) all types of bread,
b) all types of milk,
c) books of professional, scientific, artistic, cultural and educational content, textbooks for pedagogical education,
d) medicinal products approved by the competent authority for medicinal products and medical devices in accordance with special regulations,
e) medical equipment, aids and other devices used to alleviate the treatment of disability,
f) scientific journals,
g) cinema tickets,
h) newspapers of a newspaper publisher with a media statute, which are published daily, except for those that contain in whole or in part (more than 50%) advertisements or serve advertising and in addition to those that consist in whole or in part (more than 50%) from videos or music content.

VAT at the rate of 13% is paid on:

a) accommodation or bed and breakfast, half board or full board services in hotels or facilities of similar purpose, including holiday accommodation and rental of accommodation in holiday camps or in places designated for camping and accommodation in nautical tourism vessels. Facilities of similar purpose are considered to be all types of commercial catering facilities.

b) newspapers and magazines of a newspaper publisher that has a media statute and newspapers and magazines of a publisher for which there is no obligation to adopt a media statute according to a special regulation, except for those referred to in paragraph 1, item h) of this Article, which are published periodically; they mostly contain advertisements or serve advertising (more than 50%) and except for those that consist entirely or mostly of videos or music content (more than 50%),
c) edible oils and fats, of vegetable and animal origin, in accordance with a special regulation on edible oils and fats and olive oil.
d) child car seats and baby diapers
e) the supply of water, other than bottled or otherwise packaged water. Water supply is considered to be services directly related to water supply or performance of water service of public water supply and public drainage, ie delivery to another supplier or end user according to a special regulation on water,
f) concert tickets,
g) delivery of electricity to another supplier or end user, including fees related to that delivery,
h) public service of collection of mixed municipal waste, biodegradable municipal waste and separate waste collection according to a special regulation on sustainable waste management,
i) urns and coffins placed on the market under that name,
j) seedlings and seeds.

### 2.3. VAT refund

The taxpayer, who in the tax period is entitled to deduct input tax, the amount of which is greater than his tax liability, is entitled to a refund of this difference or may transfer the amount of overpaid VAT to the next tax period. If the taxpayer requests a refund of overpaid VAT, the Tax Administration is obliged to return the difference within 30 days from the date of submission of the VAT return, and no later than 90 days from the date of initiation of tax supervision (Zakon o porezu na dodanu vrijednost, 2020). A taxpayer who does not have a registered office, permanent establishment from the territory of the European Union from which deliveries, residence or usual abode are entitled under the conditions prescribed by this Act to a refund of VAT charged on movable goods and services provided by other taxpayers in the Republic Croatia or which is charged to him when importing goods in the Republic of Croatia. The right to a VAT refund is exercised provided that in the applicant's country of origin the domestic taxpayer is also entitled to a VAT refund, which is determined by the exchange of information between the tax authority of the Republic of Croatia and the tax authority of a third country. A taxpayer, who is not established in the Republic of Croatia but is established in another member state of EU, is entitled to a refund of VAT charged on goods and services supplied or performed by other taxpayers in the country or for goods imported into the country. If a taxpayer with a registered office, residence or habitual residence in the Republic of Croatia submits a request for VAT refund from another Member State, he must submit it via the electronic portal of the Tax Administration of the Republic of Croatia no later than September 30 of the calendar year following the refund period. submitted only if the applicant has filled in all the necessary information for VAT refund. An electronic acknowledgment of receipt of the request shall be sent to the applicant without delay (Zakon o porezu na dodanu vrijednost, 2020).

## 3. PRICE FORMATION IN HOSPITALITY

When conducting a pricing policy, it would be necessary to take into account the formation of a selling price that is attractive to the buyer. It should be competitive with the prices of similar bidders in the market. Then the price should be high enough to ensure a profitable business.

The price decision is made after a detailed analysis of information from different areas that can be external and internal. Pricing should ensure a sufficient volume of turnover, and thus profitable business. Internal factors in price formation are:

- costs (determine the lower price limit below which losses are generated),
- working conditions (directly affect labor productivity).

External factors in price formation are:

- development of supply and demand,
- stage in the life cycle of the product,
- product differentiation,
- consumer buying styles,
- price elasticity (Karić, 2009.).

Some of the pricing methods are the method of determining the margin, target yield method and by the method of perceived value. In the method of determining the margin, it is necessary to include fixed costs, variable costs, expected sales and the desired yield - margin. While the application of the target return method takes into account fixed costs, then variable costs, expected sales, invested capital and the desired return on invested capital.

### 3.1. Calculation and its elements

Calculation is a calculation procedure through which the price is calculated (purchase, sale, cost price). The task of the calculation is to include all costs according to a certain point of view as well as the type and place of costs. Also included is a comparison of costs, etc. The basic characteristic of the calculations is accurate and adapted to the way the company operates documented by bookkeeping, it is uniform for all products and of course can be compared with other calculations (Ekonomski fakultet Banja Luka, 2020.). The elements of the calculation are:

- invoice price, ie the purchase price of goods that the entrepreneur pays to suppliers per invoice less discounts (if the supplier approves the discount),
- dependent purchase cost is the cost incurred on the way of the goods from the supplier's warehouse to the customer,
- conversion costs are the costs of processing and finishing that occur in the business,
- purchase price is the trade price of the cost of purchased goods; if the dependent purchase costs were borne by the supplier with no conversion costs, then the purchase price is equal to the invoice price.
- the difference in price is the difference between the purchase and sale price and occurs in the form of a margin or rebate,
- value added tax is calculated in each phase of the production and turnover cycle, on the amount of value added that occurred in that phase,
- consumption tax is an integral part of the calculation only in cities and municipalities that have prescribed the consumption tax rate,
- selling price is the price at which a trading company sells goods.

### 3.2. An example of the formation of the retail price in the hospitality industry on the example of the main course

As an example of the formation of the retail price, a dish of lamb leg steaks with vegetables in the Mediterranean way from a well-known Zagreb restaurant was taken as an example. In order to form a price, it is first necessary to know the norm of the dish.

| Dish: lamb leg steaks with vegetables in the Mediterranean way (for 4 persons) | Norm of the dish |
|---|---|
| Lamb leg | 800 g |
| Lemon | 5 g |
| Oregano | 5 g |
| Olives | 120 g |
| Red pepper | 200 g |
| Celery stalks | 100 g |
| White wine | 0,1 l |
| Smooth flour | 100 g |
| Extra virgin olive oil | 0,05 l |
| Salt | 10 g |
| Pepper | 5 g |

*Table 1: Norm of the dish*
*(Source: authors according to restaurant Kaptol data)*

Taking into account the norm and the price of food, it is necessary to calculate the purchase value of these foods. The purchase value is calculated in such a way that VAT must be deducted from the sales price of the food. An overview of the cost calculation is shown in Table 2:

| Main course (4 people) | Calculation of the purchase price according to the given norm |
|---|---|
| Lamb leg | 69,99-(69,99*13/113)=61,93/1000*800=49,54 kn |
| Lemon | 16,99-(16,99*13/113)=15,03/1000*5=0,07 kn |
| Oregano | 811,25-(811,25*25/125)=649/1000*5=3,25 kn |
| Olives | 59,34-(59,34*25/125)=47,47/1000*120= 5,70 kn |
| Red pepper | 9,99-(9,99*13/113)=8,84/1000*200=1,77 kn |
| Celery stalks | 9,99-(9,99*13/113)=8,84/1000*100=0,88 kn |
| White wine | 21,99-(21,99*25/125)=17,59/1000*100=1,76kn |
| Smooth flour | 4,99-(4,99*25/125)=3,99/1000*100=0,40 kn |
| Extra virgin olive oil | 99,99-(99,99*13/113)=88,49/1000*50=4,42 kn |
| Salt | 5,49-(4,49*25/125)=4,59/1000*10=0,05 kn |
| Pepper | 99,99-(99,99*25/125)=79,99/1000*5=0,40 kn |
| TOTAL | N.V. = 68,24 kn |

*Table 2: Calculation of the purchase price according to the given norm*
*(Source: authors according to restaurant Kaptol data)*

The purchase value of this dish is 68,24 kn (for 4 people), or 17,06 kn per person. Then it is necessary to calculate the retail price of the dish by calculation. The margin in the observed restaurant is 320%. In the calculation process, the margin is first added to the purchase value. The sum of purchase value and margin represents the wholesale price to which VAT is then added. VAT rate on food service in catering is 13%. The sum of the wholesale price and VAT represents the retail price:

| | |
|---|---|
| Purchase value | = 17,06 kn |
| Margin (320%) | = 54,59 kn |
| Wholesale price | = 71,65 kn |
| VAT (13%) | = 9,31 kn |
| Retail price | = 80,96 kn |

### 3.3. An example of the formation of the retail price in the hospitality industry on the example of beverages

When forming the retail price of beverages in catering facilities, the consumption tax should also be taken into account. Consumption tax is a special tax that is calculated on the taxpayer who provides beverage services in a catering facility (Carina, 2020). Regardless of the company's headquarters, it is paid in the city or municipality where the income from the sale of beverages originated. The tax base is the selling price of beverages sold in restaurants. Consumption tax is paid on the consumption of alcoholic beverages (brandy, brandy and spirits) of natural wines, special wines, beers and non-alcoholic beverages in catering facilities, which does not include value added tax. The highest consumption tax rate can be 3%. When calculating the wholesale price, in addition to VAT, consumption tax should also be calculated. (Zakon o lokalnim porezima, 2017.). If the purchase price of a bottle of carbonated juice is 3,50 kn (VAT is deducted from the purchase price) then the calculation of the retail price will look like (margin is still 320% and consumption tax is 3%):

| | |
|---|---|
| Purchase value | = 3,50 kn |
| Margin (320%) | = 11,20 kn |
| Wholesale price | = 14,70 kn |
| VAT (25%) | = 3,68 kn |
| Consumption tax (3%) | = 0,44 kn |
| Retail price | = 18,82 kn |

## 4. CONCLUSION

Since the Republic of Croatia is highly dependent on tourism (it accounts for one fifth of GDP), work should be done to improve price competitiveness in tourism. The Croatian tax system is extremely complex and very often creates doubts for entrepreneurs. According to the current tax regulations, value added tax is calculated in catering at a reduced rate of 13% only on food (including sweets) while the general VAT rate is calculated on the serving of all beverages. This VAT calculation system puts Croatia in a very unfavorable position in the Mediterranean. For example, from the competition, Italy has a VAT rate on catering of 10%, in France the rate is 5.5%, in Greece 13%, in Spain 8%. In addition to the above, in Croatia as much as a quarter of the price, ie 25% of the price of a drink goes to VAT, while in Spain, for example, only 8% of the price of a drink goes to VAT. Croatia needs to adopt a single reduced VAT rate on catering services. The result of the reduced VAT rate results in the creation of new jobs, new investments in the hospitality sector and lower and attractive prices for guests. Thus, the gray market, which is strengthening due to high taxation of the hospitality industry, would be reduced.

**LITERATURE:**

1. *Kalkulacija cijena koštanja*, Ekonomski fakultet Banja Luka, https://ef.unibl.org/literatura/954471_br.4_-_Kalkulacije_cijena_ko0tanja.pdf, (retrived 24.10.2020)
2. Karić, M., (2009.) *Ekonomika poduzeća*, Ekonomski fakultet u Osijeku, Osijek
3. Miljak, T. (2013). *Accounting treatment of VAT at entrepreneurs after the accession of the Republic Croatia in the European Union*, Učenje za poduzetništvo, 3(2), Zagreb
4. *Posebni porezi*, Carinska uprava: https://carina.gov.hr/propisi-i-sporazumi/trosarinsko-postupanje/najcesca-pitanja-i-odgovori-3645/kava-i-bezalkoholna-pica-3861/posebni-porez-na-bezalkoholna-pica-3890/3890 (retrived 20.10.2020)
5. *Pravilnik o porezu na dodanu vrijednost* (NN 79/13, 85/13, 160/13, 35/14, 157/14, 130/15, 1/17, 41/17, 128/17, 1/19, 1/20)
6. Šinković, Z., (2010) *Priručnik iz Financijskog prava za internu uporabu (teoretski i praktični dio)*, Sveučilište u Splitu, Pravni fakultet, Split
7. *Zakon o lokalnim porezima* (NN 115/16, 101/17)
8. *Zakon o porezu na dodanu vrijednost* (NN 73/13, 99/13, 148/13, 153/13, 143/14, 115/16, 106/18, 121/19)

# THE INFORMATION SOCIETY AGAINST THE BACKGROUND OF CONTEMPORARY PROBLEMS OF GLOBALISATION

**Anna Janiga-Cmiel**
*University of Economics in Katowice, Faculty of Management,*
*Department of Statistics, Econometrics and Mathematics,*
*1 Maja 50, 40-287 Katowice, Poland*
*anna.janiga-cmiel@ue.katowice.pl*

***ABSTRACT***
*The study aimed to determine the position of particular EU Member States in terms of the level of internet and IC technology usage based on selected indicators describing the subject of the study. To this end, the classical and positional taxonomic methods were employed. In addition, the same methods were used to organize the EU Member States into groups made up of countries featuring a similar level of development. The study compared the data for the years 2010, 2015 and 2019.*
***Keywords:*** *Econometric Methods, Globalisation, Information Society, Mathematical Methods, Taxonomic analysis*

## 1. INTRODUCTION

Economic growth significantly correlates with the development and adoption of ever newer IC technologies, whose deployment leads to continual changes in the socio-economic life at both the national and global levels. We can observe ongoing advances in IC technologies facilitating data collection, processing and transfer. What is more, the development of these technologies against a background of globalization contributes to the emergence and gradual transformation of an increasingly globalized information society. Globalization impacts on the creation of the information society and its evolution towards more advanced stages (Kempty, 1998). The literature offers a variety of definitions of the information society. L. Drelichowski defines it as: " *…. all the people who are able to communicate easily and widely and who have access to the necessary information which enhances living conditions, improves work performance as well as helps fulfill civic duties*" (Drelichowski, 2001). The development of the information society depends on numerous factors, such as the level of informatization and computerization, geographical barriers, economic changes and the level of economic development, the degree of urbanization, the level of education, employment structure, access to and geographic coverage of internet services, state telecommunications policy, and the size of population, which is of particular significance as high density areas are the most attractive in terms of investment return. The negative factors include lack of internet access, lack of ICT literacy and skills, digital exclusion, lack of access to hosts. The price of telecommunications services is also becoming a serious problem. It is worth noting that the COVID-19 pandemic we are currently experiencing has resulted in changes to our daily lives, and the situation is posing a challenge to the new technologies. ICT skills, the internet and the new technologies are being even more commonly used to communicate and transfer big data. They have proved of utmost importance as a tool which enables companies and public and educational institutions to operate on a daily basis, achieve their operational and business goals as well as fulfil society's needs.

## 2. THE TAXONOMIC MEASURE OF DEVELOPMENT – HELLWIG CLASSICAL MEASURE AND POSITIONAL MEASURE BASED ON WEBER MEDIAN VECTOR

The analysis was conducted by means of the following research tools: the taxonomic measure of development – Hellwig classical measure and positional measure based on Weber median vector (Młodak, 2006), (Panek, 2009), (Panek, 2009), (Pociecha, Podolec, Sokołowski, and

Zając, 1988). The first stage of the analysis involved calculating the variability of the potential diagnostic features. A classical variation coefficient and a positional coefficient were used in accordance with the formula (Młodak, 2006):

$$V_j = \frac{s_j}{\overline{x_j}}, \quad (1)$$

where $\overline{x_j}$ – arithmetic mean, $S_j$ – standard deviation, $j$ =1,…,$m$.

$$\zeta_j = \frac{mad\,(X_j)}{med\,(X_j)}, \quad (2)$$

Where:

$med(X_j)$- median $X_j$, $mad(X_j) = \underset{i=1,2,\ldots,n}{\text{med}} |x_{ij} - med(X_j)|$.

The Hellwig method of selecting potential diagnostic features was used. Next, the nature of the features was determined, which meant identifying stimulants and destimulants, and standardization was carried out. The standardization procedure - classical:

$$z_{ij} = \frac{x_{ij} - \overline{x_j}}{s_j}, \; i = 1,\ldots,n, \; j = 1,\ldots,m \quad (3)$$

and positional approach (Młodak, 2006):

$$z_{ij} = \frac{x_{ij} - \theta_{0j}}{1{,}4826 \cdot \widetilde{mad}\,(X_j)} \; i = 1,\ldots,n \quad (4)$$

where:
$\theta_0 = (\theta_{01}, \theta_{02}, \ldots, \theta_{0m})$ – the Weber median,

$\widetilde{mad}(X_j)$ – absolute median deviation, where instead of measuring the distance of the features to the median, their distance to the Weber vector is calculated:
$\widetilde{mad}(X_j) = \underset{i=1,2,\ldots,n}{\text{med}} |x_{ij} - \theta_{ij}|, \; j = 1,\ldots,m$

At the next stage of the linear ordering of the objects, the synthetic indicator was calculated. In the case of the first measure, i.e. Hellwig synthetic measure, for the calculated measures of development a higher value of the measure means that the object is closer to the pattern. Detailed information on the measure construction as well as on the grouping method (the three median method) can be found in (Grabiński, Wydymus, Zeliaś, 1989), (Panek, 2009), (Pociecha, Podolec, Sokołowski, and Zając, 1988), (Młodak, 2006). Based on the calculated values of the measure, the objects were ordered linearly and the countries under study were divided into four typological groups. Another measure applied in the study was the positional measure based on Weber median vector. The analysis of some complex phenomena requires the application of Weber spatial median, and thus Hellwig classical method can be converted into a positional one (Młodak, 2006).

The development pattern is defined as:

$$\varphi_j = \max_{i=1,\dots n} z_{ij} \quad (5)$$

$j = 1,\dots,m$.

Aggregate measure is calculated according to formula:

$$\mu_i = 1 - \frac{d_i}{d_-} \quad (6)$$

where:

$$d_- = med(\boldsymbol{d}) + 2{,}5mad(\boldsymbol{d}),\ \boldsymbol{d} = (d_1, d_2, \dots, d_n) \quad (7)$$

Distance from the development pattern (Młodak, 2006) :

$$d_i = \operatorname*{med}_{j=1,\dots,m} \left| z_{ij} - \varphi_j \right| \quad (7)$$

In the last step of the analysis, the countries were grouped according to the level of internet and IC technology usage. For this purpose, the three median method was employed. Based on the taxonomic measure of development, the objects bearing similarity in the level of development are grouped together. Next, the set of objects is split into two subsets, one comprising the objects whose measures are higher than the overall median, the other – all the other objects. Next, in each of the groups the median is determined (Młodak, 2006):
I : $\mu_i$ >med$_1$( $\mu$);
II : med( $\mu$) < $\mu_i \leq$ med$_1$($\mu$);
III : med$_2$ ($\mu$) < $\mu_i \leq$ med($\mu$);
IV: $\mu_i \leq$ med$_2$($\mu$).

where: med$_1$($\mu_i$) and med$_2$($\mu_i$) —median of the development measure values.

Having the values of the synthetic measures calculated, we can assess the concordance between the results using Spearman's rank correlation coefficient and Kendall's tau.

## 3. THE EMPIRICAL ANALYSIS

The data comes from the statistical yearbooks published by the Central Statistical Office and from the Eurostat websites; it covers the years 2010, 2015 and 2019 (the EU Member States (also included Norway, Iceland)). The set of the diagnosic variables, which was established based on the descriptive and formal analysis of these variables, included (Janiga-Ćmiel, 2017A), (Janiga-Ćmiel, 2017B), (Janiga-Ćmiel, 2018A), (Janiga-Ćmiel, 2018B):
$X_1$ - Number of the individual lives in household without the Internet use,
$X_2$ - Percentage of individuals who used internet within the last year,
$X_3$ - Number of the individuals who have never used either the computer or the Internet,
$X_4$- Number of the individuals who finding information about goods and services - Internet use,
$X_5$ - Number of the individuals who posting messages to social media sites or instant messaging.
$X_6$ – Number of the enterprises giving portable devices for a mobile connection to the Internet to their employees.

Tables 1, 2, 3, 4 and 5 present the ordering of the EU Member States (also included Norway, Iceland) according to the level of development of the analysed phenomenon in the years 2010, 2015, 2019.

| **2010** | | | | |
|---|---|---|---|---|
| | Procedure- classical | | Procedure - Positional | |
| COUNTRY | VALUE | RANK | VALUE | RANK |
| **Belgium** | 0,839 | 10 | 0,679 | 11 |
| **Bulgaria** | 0,022 | 28 | 0,422 | 28 |
| **Czechia** | 0,019 | 29 | 0,488 | 22 |
| **Denmark** | 0,968 | 5 | 0,891 | 7 |
| **Germany** | 0,922 | 8 | 0,636 | 14 |
| **Estonia** | 0,135 | 20 | 0,363 | 20 |
| **Ireland** | 0,745 | 13 | 0,625 | 15 |
| **Greece** | 0,033 | 25 | 0,164 | 26 |
| **Spain** | 0,108 | 22 | 0,690 | 10 |
| **France** | 0,875 | 9 | 0,700 | 9 |
| **Croatia** | 0,151 | 19 | 0,522 | 23 |
| **Italy** | 0,032 | 26 | 0,122 | 29 |
| **Cyprus** | 0,067 | 23 | 0,142 | 27 |
| **Latvia** | 0,578 | 14 | 0,673 | 12 |
| **Lithuania** | 0,012 | 30 | 0,306 | 25 |
| **Luxembourg** | 0,955 | 7 | 0,754 | 8 |
| **Hungary** | 0,187 | 17 | 0,517 | 17 |
| **Malta** | 0,422 | 21 | 0,741 | 30 |
| **Netherlands** | 0,974 | 3 | 0,945 | 2 |
| **Austria** | 0,835 | 11 | 0,908 | 6 |
| **Poland** | 0,139 | 15 | 0,528 | 18 |
| **Portugal** | 0,060 | 24 | 0,436 | 21 |
| **Romania** | 0,025 | 27 | 0,657 | 19 |
| **Slovenia** | 0,158 | 18 | 0,643 | 24 |
| **Slovakia** | 0,215 | 16 | 0,545 | 16 |
| **Finland** | 0,967 | 6 | 0,936 | 4 |
| **Sweden** | 0,973 | 4 | 0,927 | 5 |
| **United Kingdom** | 0,798 | 12 | 0,654 | 13 |
| **Iceland** | 0,975 | 2 | 0,945 | 3 |
| **Norway** | 0,975 | 1 | 0,988 | 1 |

*Table 1: Synthetic measurement values for European Union countries according to selected methods - 2010 (based on own research)*

*Table following on the next page*

| 2015 | | | | |
|---|---|---|---|---|
| | Procedure-classical | | Procedure - Positional | |
| COUNTRY | VALUE | RANK | VALUE | RANK |
| **Belgium** | 0,899 | 9 | 0,810 | 10 |
| **Bulgaria** | 0,026 | 29 | 0,278 | 21 |
| **Czechia** | 0,459 | 15 | 0,349 | 20 |
| **Denmark** | 0,949 | 5 | 0,909 | 5 |
| **Germany** | 0,958 | 4 | 0,659 | 13 |
| **Estonia** | 0,073 | 26 | 0,252 | 27 |
| **Ireland** | 0,614 | 13 | 0,766 | 11 |
| **Greece** | 0,082 | 24 | 0,276 | 23 |
| **Spain** | 0,254 | 20 | 0,204 | 28 |
| **France** | 0,882 | 10 | 0,871 | 8 |
| **Croatia** | 0,291 | 19 | 0,478 | 15 |
| **Italy** | 0,028 | 28 | 0,265 | 25 |
| **Cyprus** | 0,082 | 25 | 0,175 | 29 |
| **Latvia** | 0,083 | 23 | 0,376 | 17 |
| **Lithuania** | 0,127 | 21 | 0,276 | 22 |
| **Luxembourg** | 0,944 | 6 | 0,827 | 9 |
| **Hungary** | 0,397 | 17 | 0,366 | 19 |
| **Malta** | 0,341 | 18 | 0,066 | 30 |
| **Netherlands** | 0,966 | 1 | 0,929 | 3 |
| **Austria** | 0,842 | 11 | 0,873 | 7 |
| **Poland** | 1,492 | 14 | 0,568 | 14 |
| **Portugal** | 0,067 | 27 | 0,274 | 24 |
| **Romania** | 0,020 | 30 | 0,257 | 26 |
| **Slovenia** | 0,401 | 16 | 0,369 | 18 |
| **Slovakia** | 0,123 | 22 | 0,476 | 16 |
| **Finland** | 0,962 | 2 | 0,937 | 2 |
| **Sweden** | 0,929 | 8 | 0,881 | 6 |
| **United Kingdom** | 0,935 | 7 | 0,714 | 12 |
| Iceland | 0,775 | 12 | 1,000 | 1 |
| Norway | 0,962 | 3 | 0,913 | 4 |

*Table 2: Synthetic measurement values for European Union countries according to selected methods - 2015 (based on own research)*

*Table following on the next page*

| 2019 | | | | |
|---|---|---|---|---|
| Procedure- classical | | | Procedure - Positional | |
| COUNTRY | VALUE | RANK | VALUE | RANK |
| **Belgium** | 0,766 | 9 | 0,81477 | 10 |
| **Bulgaria** | 0,458 | 20 | 0,253475 | 29 |
| **Czechia** | 0,425 | 21 | 0,37385 | 18 |
| **Denmark** | 0,802 | 5 | 0,947358 | 4 |
| **Germany** | 0,782 | 8 | 0,670702 | 13 |
| **Estonia** | 0,359 | 23 | 0,286441 | 25 |
| **Ireland** | 0,627 | 13 | 0,728814 | 11 |
| **Greece** | 0,258 | 28 | 0,378749 | 16 |
| **Spain** | 0,011 | 30 | 0,261259 | 28 |
| **France** | 0,789 | 7 | 0,819128 | 9 |
| **Croatia** | 0,283 | 27 | 0,36236 | 19 |
| **Italy** | 0,488 | 17 | 0,355481 | 20 |
| **Cyprus** | 0,473 | 18 | 0,3477 | 23 |
| **Latvia** | 0,349 | 24 | 0,274581 | 26 |
| **Lithuania** | 0,313 | 26 | 0,270944 | 27 |
| **Luxembourg** | 0,810 | 3 | 0,876755 | 7 |
| **Hungary** | 0,586 | 15 | 0,35109 | 22 |
| **Malta** | 0,374 | 22 | 0,290557 | 24 |
| **Netherlands** | 0,743 | 11 | 0,961259 | 2 |
| **Austria** | 0,804 | 4 | 0,690073 | 12 |
| **Poland** | 0,517 | 16 | 0,535109 | 14 |
| **Portugal** | 0,182 | 29 | 0,376755 | 17 |
| **Romania** | 0,466 | 19 | 0,154946 | 30 |
| **Slovenia** | 0,592 | 14 | 0,353511 | 21 |
| **Slovakia** | 0,329 | 25 | 0,456126 | 15 |
| **Finland** | 0,675 | 12 | 0,961259 | 3 |
| **Sweden** | 0,972 | 1 | 0,893462 | 5 |
| **United Kingdom** | 0,799 | 6 | 0,835351 | 8 |
| **Iceland** | 0,855 | 2 | 0,890315 | 6 |
| **Norway** | 0,761 | 10 | 0,983417 | 1 |

*Table 3: Synthetic measurement values for European Union countries according to selected methods - 2019 (based on own research)*

*Table following on the next page*

| Group | **2010** | | |
|---|---|---|---|
| I | II | III | IV |
| Norway | France | Poland | Cyprus |
| Iceland | Belgium | Slovakia | Portugal |
| Netherlands | Austria | Hungary | Greece |
| Sweden | United Kingdom | Slovenia | Italy |
| Denmark | Ireland | Croatia | Romania |
| Finland | Latvia | Estonia | Bulgaria |
| Luxembourg | | Malta | Czechia |
| Germany | | Spain | Lithuania |

**2015**

| I | II | III | IV |
|---|---|---|---|
| Netherlands | Belgium | Poland | Lithuania |
| Finland | France | Czechia | Slovakia |
| Norway | Austria | Slovenia | Latvia |
| Germany | Iceland | Hungary | Greece |
| Denmark | Ireland | Malta | Cyprus |
| Luxembourg | | Croatia | Estonia |
| United Kingdom | | Spain | Portugal |
| Sweden | | | Italy |
| | | | Bulgaria |
| | | | Romania |

**2019**

| I | II | III | IV |
|---|---|---|---|
| Sweden | Netherlands | Poland | Latvia |
| Iceland | Finland | Italy | Slovakia |
| Luxembourg | Ireland | Cyprus | Lithuania |
| Austria | Slovenia | Romania | Croatia |
| Denmark | Hungary | Bulgaria | Greece |
| United Kingdom | | Czechia | Portugal |
| France | | Malta | Spain |
| Germany | | Estonia | |
| Belgium | | | |
| Norway | | | |

*Table 4: The classification – Procedure classical - 2010, 2015, 2019 (based on own research)*

*Table following on the next page*

| Group | **2010** | | |
|---|---|---|---|
| I | II | III | IV |
| Norway | France | Slovakia | Slovenia |
| Netherlands | Spain | Hungary | Lithuania |
| Iceland | Belgium | Poland | Greece |
| Finland | Latvia | Romania | Cyprus |
| Sweden | United Kingdom | Estonia | Bulgaria |
| Austria | Germany | Portugal | Italy |
| Denmark | Ireland | Czechia | Malta |
| Luxembourg | | Croatia | |
| | **2015** | | |
| I | II | III | IV |
| Iceland | Luxembourg | Slovakia | Portugal |
| Finland | Belgium | Latvia | Italy |
| Netherlands | Ireland | Slovenia | Romania |
| Norway | United Kingdom | Hungary | Estonia |
| Denmark | Germany | Czechia | Spain |
| Sweden | Poland | Bulgaria | Cyprus |
| Austria | Croatia | Lithuania | Malta |
| France | | Greece | |
| | **2019** | | |
| I | II | III | IV |
| Norway | France | Greece | Malta |
| Netherlands | Belgium | Portugal | Estonia |
| Finland | Ireland | Czechia | Latvia |
| Denmark | Austria | Croatia | Lithuania |
| Sweden | Germany | Italy | Spain |
| Iceland | Poland | Slovenia | Bulgaria |
| Luxembourg | Slovakia | Hungary | Romania |
| United Kingdom | | Cyprus | |

*Table 5: The classification – The three median method - 2010, 2015, 2019 (based on own research)*

The results displayed in tables 1,2 and 3 show that as far as the level of internet and IC technology usage is concerned, both methods indicate: Norway, Netherlands, Finland, Denmark Sweden Iceland as top-ranked EU countries. Looking at the position of particular countries in the ranking, it can be observed that for some countries the positions based on the synthetic measure are similar in the years under study, but they differ depending on the method applied. Spearman's rank correlation coefficient and Kendall's tau show moderate concordance between the results obtained for the years under study by means of the two selected methods, i.e. there are differences between the results depending on the adopted method.

## 4. CONCLUSION

The multivariate comparative analysis performed by means of the selected method enabled the examination of ICT use, the Internet in particular , taking into consideration a set of selected features that characterize the level of ICT adoption in the selected European countries. The analysis spanned the years: 2010, 2015 and 2019. The measures applied in the study indicate a high level of internet and IC technology usage in particular countries, which remained steady, did not change much, in the years under study(Norway, Netherlands, Finland, Denmark, Sweden, Iceland). Also, the countries with the lowestlevels of were identified ( Bulgaria, Greece, Italy, Malta, Portugal, Estonia, Spain, Lithuania).The grouping methods employed in the study enabled the division of the EU Member States into four groups, each consisting of countries with a similar level of internet and IT technology usage. It can be noted that the makeup of the groups did not change much over the years covered in the study.

## LITERATURE:

1. Drelichowski L., (2002), *Społeczeństwo informacyjne a kształtowanie rozwoju zrównoważonego*, Promocje, nr2, (pp. 10).
2. Grabiński, T., Wydymus, A., and Zeliaś, A. (1989), *Metody taksonomii numerycznej w modelowaniu zjawisk społeczno-gospodarczych*. Warszawa, PWN, (pp.71-100).
3. Janiga-Ćmiel A. (2017A), *A Comparative Analysis of the Information Society In Poland and Selected Countries*. Proceedings of 35th International Conference Mathematical Methods In Economics, Hradec Kralove, Czech Republic, (pp. 283-288).
4. Janiga-Ćmiel, A. (2017B), *Globalisation and the information society in Poland and selected countries*. *Proceedings of 17th International Scientific Conference. Globalization and its socio-economic consequences*, Zilina, Czech Republic, (pp. 787-795)
5. Janiga-Ćmiel, A. (2018A), *Analysis of the level of internet - based information processing in the USA and selected countries of the European Union against a background of globalization*. *Proceedings of 18th International Scientific Conference. Globalization and its socio-economic consequences*, Zilina, Czech Republic, (pp. 2099-2106)
6. Janiga-Ćmiel, A. (2018B), *Correspondence analysis of the information society.* Contemporary issues and economic problems, ed. Martina Blaskova, Sylwia Pangsy-Kania, Karolina Drela, Aneta Sokół, Aachen: Shaker Verlag, (pp. 76-84)
7. Kempty M. (1998), *Globalizacja*. Encyklopedia socjologii, Oficyna Naukowa, Warszawa, (pp. 241)
8. Młodak, A. (2006), *Analiza taksonomiczna w statystyce regionalnej*, DIFIN, Warszawa, (pp. 1-160).
9. Panek, T. (2009), *Statystyczne metody wielowymiarowej analizy porównawczej*. Warszawa: Szkoła Główna Handlowa w Warszawie – Oficyna Wydawnicza, (pp. 58-114)
10. Pociecha, J., Podolec B., Sokołowski, A., and Zając, K. (1988), *Metody taksonomiczne w badaniach społeczno-ekonomicznych*, Warszawa, PWN, (pp. 36-100)

# SOCIO-ECONOMIC DEVELOPMENT OF INDUSTRIAL REGIONS AS A FACTOR FOR REALIZING THE POTENTIAL OF WORKING YOUTH

**Lyudmila Bannikova**
*Ural Federal University*
*named after the First President of Russia B. N. Yeltsin, Russian Federation*
*l.n.bannikova@urfu.ru*

**Anastasia Yuzhakova**
*Ural Federal University*
*named after the First President of Russia B. N. Yeltsin, Russian Federation*
*a.i.iuzhakova@urfu.ru*

***ABSTRACT***

*The article examines the influence of regional conditions on the implementation of the innovative potential of Russian working youth. Industrial regions with a high level of development of high-tech industries, the most promising for the development and implementation of the innovative potential of various social and professional groups, were used as the research space. The selection of regions was carried out on the basis of their position in the ratings of innovative development and on the basis of the type of industrial development: traditional industrial regions with a high level of industrial production, traditional industrial regions with stable de-industrialization processes and new industrial regions with growing high-tech industries. Within each region, high-tech enterprises of the industries that are priority for the development of the respective region were selected. Parameters such as region and industry were used as quota indicators of sociological research. The object of the study was young people under 30 with higher or secondary vocational education. Based on the empirical data obtained in the survey, it was found that working youth in industrial regions is characterized by a certain pragmatism, orientation towards economic indicators and technological development outside of any ideological orientations. The innovative activity of working youth is largely associated with the industry affiliation of the enterprise, partly with the level of development of the region, and the active innovation policy of regional authorities. To a greater extent, the potential of young people, their susceptibility and readiness to innovate depends on their status, on the complexity and diversity of their work functions. An increase in the official and professional status leads to an increase in the innovative resources of a young worker. The highest ratings for opportunities to participate in innovation are shown by technicians and managers.*

***Keywords:*** *Innovative potential, Youth, Industrial region*

## 1. INTRODUCTION

The problems of modernizing the economy based on innovative activities remain the most urgent for modern Russia. The creation of a national innovation system was identified as a strategic direction for the country's development at the end of the last century. For the period 2013–2020 Russia managed to significantly develop its innovative potential against the background of the world level, improving its position in the GII (Global Innovation Index) from 62nd to 43rd place [3]. Indicators characterizing the development of human capital, such as the quality of the higher education system, the number of graduates of scientific and engineering specialties, and others, remain traditionally high. At the same time, in recent years, there has been a trend towards a slowdown in the growth rates of indicators of innovation activity. The indicators of the effectiveness of innovations, the degree of impact of the results of scientific,

technical and innovative activities on the economy and society are decreasing. The problem of the insensitivity of the economy and society to innovations remains; there are no economic mechanisms stimulating both the creation of innovations and their commercialization. The analysis of the regions by the level of socio-economic development makes it possible to assess the conditions for the formation of the innovative potential of the population, primarily of that part of it that is most ready to take on entrepreneurial risks in the technological sphere. The regions are characterized by uneven development of various aspects of innovation processes, which is reflected in the rating of innovative development of the constituent entities of the Russian Federation. Based on the results of assessing the positions of the regions in certain areas, the constituent entities of the Russian Federation are ranked, and the composite Russian regional innovation index (RIRI) is calculated [4]. Regions are also assessed by the share of workers employed in high-tech and medium-tech high-level industries of industrial production in the total number of people employed in the economy, by the number of students enrolled in educational programs of higher education. Differences between regions in terms of the conditions and results of the development of high technologies, digital inequality, network readiness, the development of high-tech business, and support practices for start-ups are no less important in assessing the possibilities of realizing the potential of working youth [6]. The most promising resource for accelerating the country's technological development is Russian youth. At the present time, in the conditions of economic and technological crises, a pandemic, young people are exposed to numerous risks, which jeopardize their ability to form and then realize their innovative potential. In the world social and psychological science, the problems of social expectations, the processes of growing up and adaptation of young people are actively investigated. The socio-economic and psychological factors of socialization and the associated numerous indicators of well-being and social support are analyzed [8]. In the context of the problems of youth choice of life path, education, place of work, the problem of overestimated expectations, “unreasonable ambitions” is especially emphasized [9; 7]. Quite a lot of works related to the study of professional and career development, professionalization of youth are presented [1; 2; 5; 10]. Much less attention is paid to issues related to the innovativeness of youth, with the study of its innovative potential. The use of the concept of "potential" in sociology means a holistic view of the latent possibilities of a social community in reserve, which are capable of being realized under favorable conditions. At the same time, researchers pay attention not only to the already established social and professional properties of the community, but also to the process of formation of the corresponding properties. An insufficiently developed direction is the study of the most promising part of young people - working young people in terms of their success in realizing their professional and educational potential in innovative spheres of the economy.

## 2. METHODOLOGY

To accomplish the set task, we conducted a survey of working youth employed at industrial enterprises in six regions of Russia. The survey was implemented in May - September 2018; using a questionnaire on the Googleform platform, as well as using a traditional printed version of the questionnaire. 1050 young workers under the age of 30 with higher and specialized secondary education were interviewed. A targeted quota sample was used, with the region of residence and industry being used as quota indicators. The industrial regions with a high level of development of high-tech industries, the most promising for the development and implementation of the innovative potential of various social and professional groups, were used as the research space. The selection of regions was carried out on the basis of their position in the ratings of innovative development. The sample presents regions with different values of the RIRI indicator (Russian regional innovation index): from a high level (RRII = 7) in the Sverdlovsk region to a level below the average (RRII = 41) in the Volgograd region.

The second parameter was the type of industrial development: traditional industrial regions with a high level of industrial production (Republic of Bashkortostan, Kaluga region), traditional industrial regions with stable deindustrialization processes (Sverdlovsk region, Krasnoyarsk region) and new industrial regions with growing high-tech industries (Perm region, Volgograd region). Within each region, high-tech enterprises of the industries that are priority for the development of the respective region were selected. The survey of working youth was held at enterprises of aircraft and rocket engineering, mechanical engineering, instrument making and transport, information technology, the space industry and communications enterprises, the chemical and pharmaceutical industry, oil production and oil refining, metallurgical production [11].

## 3. RESULTS

Based on the empirical data obtained in the survey, it was found that working youth in industrial regions is characterized by a certain pragmatism, orientation towards economic indicators and technological development outside of any ideological orientations. Study of youth in industrial regions, their social feelings and moods, showed a number of interesting facts and trends. In general, working youth are characterized by optimism in assessing the overall satisfaction with life and a sense of confidence in the future. When transition to assessments of the state of affairs in various spheres of society (economy, politics, social sphere and cultural sphere) optimism decreases significantly. Young people assess the state of affairs in the economy most negatively, and a significant portion of young people show dissatisfaction with their personal economic status, which is an important indicator of an individual's social well-being. In the definitions of the main life goals and landmarks, there are no significant differences among the youth of the studied regions. Young people value family and a high standard of living with its inherent attributes - high income, career and achievement of high official positions. These points form the ideal of a successful life trajectory for young people. The importance of creativity and the ability to embody their ideas (this orientation serves as a value foundation specifically for innovative human behavior) is characteristic of less than 10% of young workers (Table 1).

| Evaluation parameters | in % |
|---|---|
| Good family, successful children | 28 |
| High economic status, income level | 20 |
| High professional achievements | 16 |
| Own housing | 10 |
| Career, achievement of high official positions | 10 |
| *The opportunity to be creative, to embody your ideas* | 9 |
| Own business, independence from the employer | 7 |
| TOTAL: | 100 |

*Table 1: Life strategies of working youth*

For working youth, the dominant means of achieving success in work is hard work and hard work. Young people assess these qualities significantly higher than the presence of start-up capital, social connections and support from influential relatives [11, p. 171]. Formation of innovative openness and youth activity, its readiness to take part in innovative changes in the organization, society depends on the degree of interest and trust in science, technology, perception of their role in modern society. An attempt to link the level of interest of working young people to scientific information with the “innovative background” of a particular territory was unsuccessful. To a greater extent, the level of interest of working youth in scientific issues depends on the industry affiliation of the enterprise. A double gap in the number of people actively involved in innovation exists between young workers employed in the field

of IT technologies, communications and at enterprises of the metallurgical industry, where the wear of fixed assets is more than 70%. Assessment of the degree of readiness of working youth to innovation is determined not only by the involvement of young people in problems scientific and technological research and achievements, value attitude to science, but also the presence of technological, financial conditions for the adoption and support of innovation as in production activities and in everyday life. Quarter to a third of respondents work with high technologies, often use and innovate. Every third respondent noted that he is often engaged in the development of new technologies at his workplace. The innovative activity of working youth depends on the innovation policy of the regional authorities, interest in business and production innovations. Among the factors influencing the development of innovative potential, every second respondent noted the absence or lack of government programs to support youth initiatives and business disinterest in innovation, the pursuit of momentary profit. Along with this, part of the respondents, among the reasons that prevent young people from putting forward and implementing new ideas, indicated the mentality of modern youth, their unwillingness and indifference. To a high degree, the potential of young people, their susceptibility and readiness to innovate depends on their status, on the complexity and diversity of their work functions. An increase in official and professional status leads to building up the innovative resources of a young worker. The highest assessments of opportunities to participate in innovation are demonstrated by technicians and managers. The official status largely determines the motivation for participation in innovative activities at the enterprise. For qualified workers, both material factors, receiving monetary rewards, and factors associated with increasing the level of industrial safety, improving the ecological situation in the region. Motivation of technicians connected with the content of their professional activities, improving the technical characteristics of products. According to managers, the introduction of innovations will help improve the quality of products and, as a result, increase the competitiveness of the enterprise.

## 4. CONCLUSION

A significant part of working youth shows an active interest in the innovation field, have creative and innovative thinking, and are ready for innovation. The most active agents of innovative development are young specialists and managers. Under certain conditions, the innovative potential of young people can be successfully used, realized, and may remain unclaimed. The negative factors that hinder the development of innovative processes and, as a result, the innovative potential of young people include the lack of regulatory legal acts and government programs that support the innovative activity of young people at the macro level; lack of local incentive systems at enterprises; lack of interest in business innovation; low level of professional and managerial training of decision-makers on the implementation of innovations. The social well-being of working youth has regional specificity. Regions with the highest assessments of social well-being are distinguished, and regions whose youth assess the current situation and the current state of affairs in different spheres of society is rather pessimistic. To a large extent, the differences in the assessments of young workers are explained by the peculiarities of the socio-economic development of industrial regions, their current position on the trajectory of the modernization process. The innovative activity of working youth is largely associated with the industry affiliation of the enterprise, partly with the level of development of the region, and the active innovation policy of regional authorities.

***ACKNOWLEDGEMENT:*** *The research was supported by the Russian Foundation for Basic Research (RFBR), the project №18-011-00907 "Youth of Russian Industrial Regions: The Image of Social Future as a Factor in the Development of Innovation Potential".*

**LITERATURE:**

1. Begu L. S., Vasilescu M. D. (2017). School-to-work transition: european youth's perception of labour market opportunities. Economic computation and economic cybernetics studies and research. Vol. 51. Issue: 1. 5-20 pages.
2. Didkovskaya Ya.V. (2011). Sociocultural analysis of professional
3. Global Innovation Index. (2019). Who Will Finance Innovation? Retrieved 01.11.2020 from http://www.globalinnovationindex.org.
4. Gokhberg, L.M. (2020). Article title: Rating of innovative development of constituent entities of the Russian Federation. Issue 6 Nat. issled. University Higher School of Economics - 264 page.
5. Gorshkov M.K., Sheregi F.E. (2010). Youth of Russia: Sociological portrait. TsSPiM. 592 page.
6. National report. (2018). High-tech business in the regions Russia Retrieved 01.11.2020 https://www.researchgate.net/publication/322656032.
7. Sabates R. Harris A.L., Staff J. (2016) Ambition Gone Awry: The Long-Term Socioeconomic Consequences of Misaligned and Uncertain Ambitions in Adolescence. Social science quarterly. Vol. 92. Issue 4. 959-977 pages.
8. Scales, P.C. (2011). Youth Developmental Assets in Global Perspective: Results from International Adaptations of the Developmental Assets Profile. Child indicators research. 2011. Vol. 4, issue 4. Special issue. 619-645 pages. Self-determination and careers of youth. UrFU. 125 page.
9. Van Mol C. (2016). Migration aspirations of European youth in times of crisis. Journal of youth studies. Vol. 19. Issue 10. 1303-1320 pages.
10. Wang M., Ye F., Degol J.L. (2017). Who Chooses STEM Careers? Using A Relative Cognitive Strength and Interest Model to Predict Careers in Science, Technology, Engineering, and Mathematics. Journal of youth and adolescence. Vol. 46. Issue 8. 1805-1820 pages.
11. Youth of the industrial regions of Russia: the image of the social future and innovative capacity (2018). Monograph. Publishing house Ural University. 215 page.

# CROATIAN CUSTOMERS ATTITUDE TOWARDS MOBILE ADVERTISING - SEM APPROACH

**Valentina Slunjski**
*Faculty of organization and informatics, University of Zagreb,*
*Varaždin, Pavlinska 2, Croatia*
*vslunjski@foi.unizg.hr*

**Damir Dobrinic**
*Faculty of organization and informatics, University of Zagreb,*
*Varaždin, Pavlinska 2, Croatia*
*damir.dobrinic@foi.unizg.hr*

**Iva Gregurec**
*Faculty of organization and informatics, University of Zagreb,*
*Varaždin, Pavlinska 2, Croatia*
*iva.gregurec@foi.unizg.hr*

***ABSTRACT***
*This paper aims to research the advertising value model initially developed by Ducoffe (1995). The model will explore the relationship between the factors of entertainment, information, credibility, and irritability of ads displayed on mobile devices with the perception of their value, and the relationship of factors of entertainment, credibility, and value with the attitude of mobile advertising. For the research purposes, a conceptual framework was developed and hypotheses formed, which were tested using the structural equation modeling method using the statistical software package SPSS AMOS 26. Empirical research was conducted on a sample of 150 respondent's users of the social network Facebook. Based on the obtained results, it was determined that there is a statistically significant correlation between the factors of entertainment and credibility with the perception of the value of mobile ads. At the same time, in the case of informativeness and irritability, there is no such correlation. Furthermore, the research results show that there is a statistically significant correlation between entertainment and attitudes about mobile phone advertising and that there are no correlations between the credibility of the ad and the attitude about mobile advertising. Also, no statistically significant correlation was found between mobile ads' value and the attitude towards mobile advertising. In addition to scientific knowledge, the results can be useful for experts to shape marketing and sales strategies.*
***Keywords:*** *advertising value model, ad value, advertising attitude, mobile advertising*

## 1. INTRODUCTION

The everyday life of people is subject to various changes. These changes can be caused by various social or technological factors that can, to a greater or lesser extent, change the individual's current habits and life, but also and society as a whole. Mobile communication devices are certainly a technological factor that has caused several changes in human life. With the advent and initial use of mobile devices, one could not even guess how advanced this technology would be. Due to the further development of this technology and the development of smart mobile devices, it is assumed that by the end of 2023, it will sell about 1.48 billion mobile devices to users. (S.O`Dea, 2020) The fact that the representation of mobile devices is growing is evidenced by data showing that by 2025, more than 5 billion people will use mobile phones, and half of them will be smart mobile devices. (Priyanka Chowdhury, 2019) Most users have their mobile devices on hand at all times.

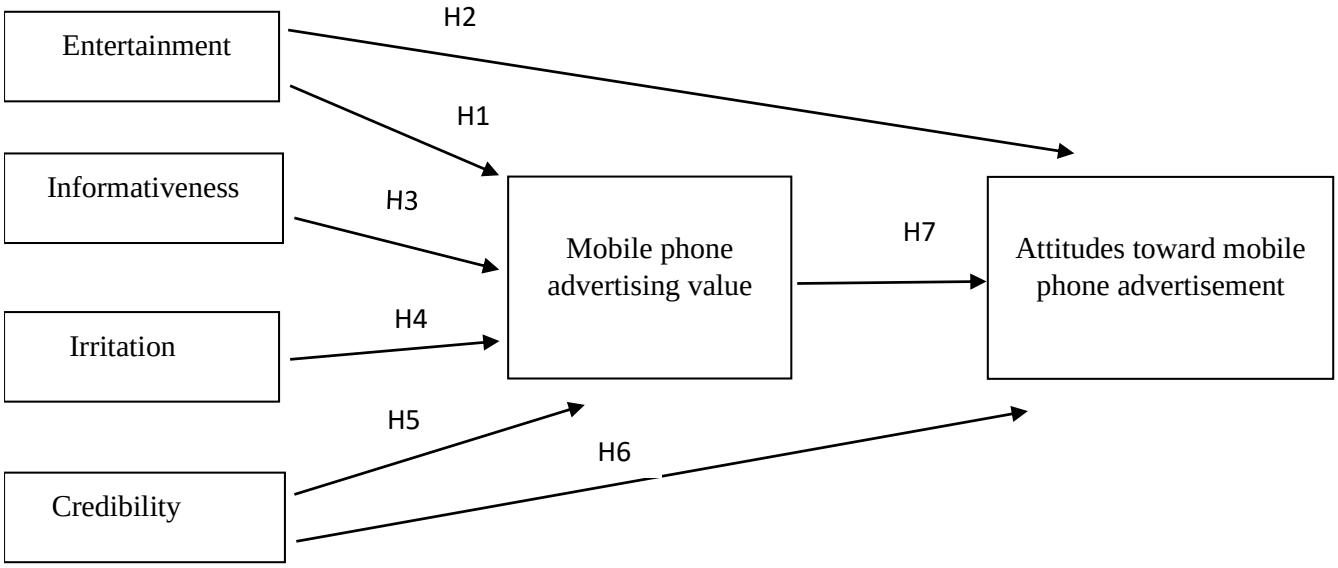
With their help, they can communicate at any time but also get information about everything that is of interest to them at a given time. With all the benefits that mobile devices provide to their users, their excessive use can lead to addiction, which leads to less and less face-to-face communication. (Alpana et al., 2016) The characteristics of mobile devices and their possibilities to both users and mobile operators or advertisers make it an excellent advertising medium. In order to ensure competitiveness in the market, it is necessary to continually improve promotional strategies and find advertising media that will give the best results and the greatest efficiency. In this regard, and considering the importance of mobile devices for each individual, the increasingly common way of advertising is mobile advertising. It is assumed that mobile advertising's global cost in 2022 will amount to more than 280 billion dollars. (Guttmann, 2019) Previous research on mobile advertising appropriateness by consumers shows that young consumers are more receptive to and view mobile ads than older consumers. (Ünal et al., 2011) Granting prior permission by users also contributes to better acceptance of such advertisements. (Standing et al., 2005), (He and Lu, 2007). On the other hand, the main reasons why consumers do not accept advertising messages on mobile devices are obstruction, interference, or irritation caused by these ads. (Bauer and Stephen, 1968). This leads to different conclusions about the usefulness of mobile ads. Zhang and Xiong (2012) point out in their paper that the consumer's attitude towards mobile advertising is mostly negative and irritating. The existence of negative attitudes about mobile advertising is also determined by Tsang et al. (2004). In order to change consumer attitudes about mobile ads, it is necessary to invest in the effectiveness of advertising messages constantly. With good market research, advertising messages need to be tailored to consumers' needs to avoid advertising's negative consequences. This paper aims to research the impact of entertainment, information, credibility, and irritability of ads on user perception of mobile ads' value and the impact of entertainment, credibility, and value on the attitude about mobile advertising. The research results will help define new insights related to the formation of values and attitudes about advertising. The research's practical contribution is reflected in the possibilities of adapting promotional strategies that include mobile devices as an advertising medium. After the introductory part, an overview of previous research is presented, and hypotheses are formed. The third part of the paper presents the research methodology, followed by data analysis. A conclusion with implications, limitations, and recommendations for future research are given in the paper's final part.

## 2. LITERATURE OVERVIEW AND HYPOTHESES DEVELOPMENT

The growing presence and use of smart mobile devices allow customers to access information and products at any time. (Mejda, 2014) Such a need and high representation of mobile devices have spurred the development of mobile advertising. The function of advertising in achieving business goals is indisputable. By using different media, advertising enables disseminating information related to an idea, product, or service. (Tatarević and Krnjić, 2019) In addition to informing consumers about products, advertising seeks to entertain, make people laugh, and educate consumers. (Balog and Leko, 2017) Although every company, when creating advertising messages, strives to be entirely tailored to consumers, many advertising messages do not provoke the desired reaction. On the contrary, they are considered irritating. Thus, for example, in the case of the very popular online advertising, its main disadvantage is a large amount of advertising and thus the high saturation of product information. (Mejda, 2014) Consumer attitude is one of the more important elements observed when conducting particular research on customer behavior. (Zeheer and Kline, 2018) Numerous researches are also focused on examining the attitudes of consumers towards mobile advertising. (Tsang et al., 2004), (Ünal et al., 2011), (Feng et al., 2011), (Gauzente et al., 2008). The displayed advertising messages try to influence the formation of positive consumer attitudes about the product or try to change negative consumer attitudes into positive ones (Nakic, 2014b).

Although the creation of advertising messages seeks to impact consumers positively, some of the research also finds the existence of negative attitudes about mobile advertising. (Yang, 2004), (Tsang et al., 2004). The observed negative attitudes of consumers require companies to increase investment in the promotion of a new product (Nakić, 2014a). Getting information about a particular product is the most common reason for opening ad messages on a mobile device. This is why some consumers find advertising messages useful and valuable. The value of advertising messages is related to the subjective assessment of the value or usefulness of advertising for the consumer. (Ducoffe, 1995). Therefore, numerous studies are focused on examining the value of mobile ads among consumers. (Kim, 2019), (Kim and Han, 2014), (Liu et al., 2012) Ducoffe (1995) develops a model of advertising value in which he highlights several factors influencing the perception of ad value and attitudes about advertising. Based on this model and a review of the research in which this model was tested, a conceptual research framework was developed in this paper. Based on the conceptual framework (Figure 1), the impact of entertainment, credibility, value, and irritability of mobile ads on the perception of their value and attitudes about mobile advertising will be explored.

*Figure 1: Conceptual model*




*Source: The authors*

## 2.1. Entertainment

According to Ducoff (1995), ads must be entertaining in order for the perception of their value to be higher. Sternthal and Craig (1973) agree that entertainment ads attract consumers' attention, which is associated with creating a positive attitude (Elliott and Speck, 1998). One of the reasons for the growing presence of mobile devices among young people is the greater possibility of entertainment due to the numerous applications that can be installed on mobile devices. (Grant and O`Donohoe, 2007) Entertainment, as Hug et al. (2015) point out, is an important factor in mobile marketing. That there is a positive influence of entertainment on the formation of attitudes about advertising in their works is confirmed by several authors. (Ducoffe, 1995), (Gao & Zang, 2014), (Huq et al., 2015), (Qin and Yan, 2017), (Sigurdsson et al., 2017), (Murillo et al., 2016). Also, numerous studies prove a positive link between entertainment and ad value. Kim and Han (2014), Tsang et al. (2004), Zhang and Wang (2005) Zhang and Wang (2005) Based on the results of previous research and their findings, hypotheses H1 and H2 were formed.

*H1: There is a significant positive correlation (impact) between mobile ad entertainment and mobile ad value.*

*H2: There is a significant positive correlation between mobile ad entertainment and attitudes about mobile advertising.*

**2.2. Informativeness**

Having the right information at the right time is the desire of every consumer. Such information facilitates the buying process, which has a positive effect on his ultimate satisfaction. Martins et al. (2018) point out that ads are a good source of information and, therefore, useful and enjoyable. Therefore, when advertising products and services of the company, information is considered one of the most important characteristics that contribute to the effectiveness of the advertising process. (Chowdhury et al., 2006) Quality information about the products found on the company's website has a direct impact on user perception. (Kaasinen, 2003) It is this information that directs consumers to their further behavior. (İnanç et al., 2020) Ducoffe (1996) also emphasizes that information plays a vital role in achieving overall consumer satisfaction. Authors Brackett and Carr (2001) point out that advertising messages displayed to consumers must be as informative as possible because they influence consumers' final attitudes. Numerous studies indicate that information has a positive effect on the perception of ad value. (Ducoffe, 1996), (Tsang et al., 2004), (Kim and Han, 2014), (Aydogan et al., 2016). Hypothesis H3 was formed in accordance with the results of previous research.

*H3: There is a significant positive correlation between mobile ad informativeness and mobile ad value.*

**2.3. Irritation**

Negative aspects of advertising that lead to a reduction in advertising effectiveness are associated with irritation. (Ducoffe, 1995) Irritation refers to a condition in which an advertising message irritates and slows consumers. (Kim and Han, 2014) The prevalence of irritation among consumers has a negative impact on the achievement of company goals. Irritation leads to a reduction in purchases, which is associated with a reduction in company earnings. As various techniques are used when creating ads, some of them can leave a bad impression on consumers, which causes irritation. (Ducoffe, 1996). With the realization that mobile devices are used for different purposes today, when advertising products via a mobile device, one can come across information that disturbs and irritates consumers. (Stawart and Pavlou, 2002) Due to the relatively low cost of mobile advertising, most companies send messages en masse to all their consumers. (Hug et al., 2015) It is precisely these marketing ways of advertising that distract and irritate most people. (Rittippant et al., 2009) Irritating ads to consumers are associated with a decrease in its effectiveness. (Loureiro, 2017) Therefore, numerous research papers state that irritation is the reason for the negative perception of advertisements' value and final attitudes about advertisements. (Ducoff, 1995), (Tsang et al., 2004), (Xu, 2006), (Kim and Han, 2014). Based on these studies, hypothesis H4 was formed.

*H4: There is a significant negative correlation between mobile ad irritability and mobile ad value.*

**2.4. Credibility**

The credibility of the advertising messages themselves is significant in their perception and thus in their more lasting attachment to the company. According to the author MacKenzie and Lutz (1989), credibility shows the extent to which the consumer believes that certain claims about

the product brand being advertised are true and credible. Messages that lack credibility are most often ignored and bypassed. (Moore and Rogers, 2005) Research by Kelly et al. (2010) indicates that credibility in young people plays an important role because they move away from unreliable advertisements and ignore them. Research examining the credibility of ads concludes that the credibility of messages transmitted to a user's mobile device can affect a consumer's attitude toward advertising. (Chowdhury et al., 2006) According to previous research, it can be concluded that the credibility of advertising messages affects the creation of a positive perception of the value of advertising and positive attitudes about advertising. (Azeem & Haq, 2012), (Murillo et al., 2016), (Braket and Carr, 2001), (Chia-Ling et al., 2012). Hypotheses H5 and H6 were formed based on these studies.

*H5: There is a significant positive correlation between mobile ads' credibility and mobile ads' value.*

*H6: There is a significant positive correlation between mobile ads' credibility and the attitude about advertising.*

### 2.5. The value of mobile ads and the attitude towards mobile advertising

Most authors in their research use Ducoff's model to determine consumers' final value because, in his work, he lists the key factors that affect the value of mobile ads and the final attitude of consumers about advertising. (Ducoff, 1995). In a study by Liu et al. (2012), the perceived value of advertising contributes to the growth of good attitudes toward ads because consumers focus on message applications and eliminate irrelevant thoughts. (Hoffman and Novak, 1996) Also, it is assumed that informative, entertaining, credible, and unobtrusive ads will positively affect consumers' final attitude within the prediction of consumer behavior. (Tahereh and Zahra, 2012.) This is confirmed by the results of research by Blanco et al. (2010), Kim and Han (2014), Murillo et al. (2016), which indicate that there is a positive relationship between values and attitudes about advertising. According to previous research showing that there is a positive relationship between value and attitude about advertising, hypothesis H7 was formed.

*H7: The value of mobile ads is positively related to the attitude of customers towards mobile advertising.*

## 3. RESEARCH METHODOLOGY

### 3.1. Scale development

This research aims to test the Ducoffe model of determining mobile ads' value and consumers' attitudes about mobile advertising. According to previous research results, the value of advertising affects the creation of final consumer attitudes about a particular advertising type. Taking these results into account, this research tests the ad value model in the context of mobile advertising. In this regard, the following are examined: A) the impact of entertainment, information, irritability, and credibility on the value of mobile ads, B) the impact of entertainment and credibility on the mobile advertising attitude, and C) the connection and impact of the value of mobile ads on the final mobile advertising attitude. Variables from the model were measured using a 5-point Likert scale in which subjects expressed a degree of agreement or disagreement with absolute statements (scale ranging from 1 = strongly disagree to 5 = strongly agree). The sources used to form the scale are shown below. (Table 1)

*Table following on the next page*

*Table 1: Sources – measuring scales*

| ***Construct*** | ***Source*** | *The initial number of items* | *The final number of items* |
|---|---|---|---|
| Entertainment | Ducoffe (1996) | 5 | 5 |
| Informativeness | Ducoffe (1996) | 6 | 6 |
| Irritation | Ducoffe (1996); Bracket and Car (2003) | 5 | 3 |
| Credibility | Bracket &Car (2003) | 5 | 4 |
| Mobile phone advertising value | Ducoffe (1996); Bracket &Car (2003) | 3 | 3 |
| Attitudes toward mobile phone advertisement | Tsang i sur. (2004); Pollay and Mittal, (1993) | 4 | 4 |

*Source: The authors*

Some questions were left out in the continuation of the research due to low factor load (Table 2).

*Table 2: Original measurement items*

| ***Construct*** | ***Measurement items*** | |
|---|---|---|
| Entertainment | EN1 | Mobile phone ads are entertaining. |
| | EN2 | Mobile phone ads are pleasing. |
| | EN3 | Mobile phone ads are pleasing. |
| | EN4 | Mobile phone ads are enjoyable. |
| | EN5 | Mobile phone ads are fun to use. |
| Informativeness | IN1 | Mobile phone ads are good sources of product/service information. |
| | IN2 | Mobile phone ads supply relevant product information. |
| | IN3 | Mobile phone ads provide timely information. |
| | IN4 | Mobile phone ads are good sources of up-to-date product/service information. |
| | IN5 | Mobile phone ads are convenient sources of product/service information. |
| | IN6 | Mobile phone ads make product/service information immediately accessible. |
| Irritation | IR1 | Mobile phone ads are annoying. |
| | IR2 | Mobile phone ads are irritating. |
| | IR3* | **Mobile phone ads are deceptive.** |
| | IR4* | **Mobile phone ads are confusing.** |
| | IR5 | Mobile phone ads insult people's intelligence. |
| Credibility | CR1* | **Mobile phone ads are convincing.** |
| | CR2 | Mobile phone ads are credible. |
| | CR3 | Mobile phone ads are trustworthy. |
| | CR4 | Mobile phone ads are believable. |
| | CR5 | I believe that mobile phone ads are a useful reference for purchasing products. |
| Mobile phone advertising value | VA1 | Mobile phone ads are useful. |
| | VA2 | Mobile phone ads flyers are valuable. |
| | VA3 | Mobile phone ads are important. |
| Attitudes toward mobile phone advertisement | AT1 | Overall, I consider mobile phone ads a good thing. |
| | AT2 | Overall, I like mobile phone ads. |
| | AT3 | My general opinion about mobile phone ads is favourable. |
| | AT4 | I like to watch mobile phone ads. |

*Source: The author*

**Problematic items excluded from further analysis (low factor loading and not adequate model fit).*

### 3.2. Data collection and sample used

A survey of consumers' value and final attitudes about mobile advertising was conducted through a survey during May and June 2020 by posting on various Facebook groups. One hundred and fifty (150) valid questionnaires were collected. The majority of respondents are female, 82% of them, while the largest number of respondents belongs to the group of 20 to 25 years. A detailed presentation of the basic demographic characteristics of the respondents can be seen in Table 3. Table 4 shows the answers to the questions related to the use of mobile devices. According to these data, it can be concluded that most respondents use these devices for at least 3 hours a day, mostly using them for access and activities on social networks.

*Table 3: Basic demographic characteristics of the survey respondents*

| ***Demographic characteristics*** | | **%** |
|---|---|---|
| Gender | Female | 82% |
| | Male | 18% |
| Age | 0-19 | 4,7% |
| | 20-25 | 72% |
| | 26-40 | 17,3% |
| | 41-54 | 4% |
| | More than 55 | 2% |
| Education degree | Primary school | - |
| | High school | 38,7% |
| | Bachelor | 31,3% |
| | College | 20% |
| | Univ.spec/PhD | 10% |

*Source: The authors*

*Table 4: Use of mobile devices*

| | | % |
|---|---|---|
| Time of using the mobile device | At least 3 hours a day | 53,3% |
| | At least 6 hours a day | 25,3% |
| | More than 6 hours a day | 21,3% |
| I am using a mobile device for… | Calls | 6% |
| | Messages | 11,3% |
| | Social networks | 80,7% |
| | Other | 2% (e-mail, useful pages, all of the above) |

*Source: The authors*

## 4. DATA ANALYSIS

During the analysis of the collected data, the measurement construct's reliability was measured using the statistical software package SPSS 23. In contrast, in testing hypotheses and relationships between variables, confirmatory factor analysis (CFA) was used, using the software package SPSS AMOS 26.

### 4.1. Internal reliability of a measuring instrument

The internal reliability of the measuring instrument construct was measured using the Cronbach's alpha coefficient, whose values for each construct in the measuring instrument are higher than the reference value (0.7). Internal reliability is shown in Table 5.

*Table 5: Internal reliability of the measuring instrument*

| | | INTERNAL RELIABILITY | | | |
|---|---|---|---|---|---|
| **Construct** | **Items** | **Cronbach`s alpha** | **Item-total correlation** | **MEAN** | **SD** |
| Entertainment | EN1 | 0,953 | ,852 | 2,322 | 1,220 |
| | EN2 | | ,883 | 2,418 | 1,224 |
| | EN3 | | ,877 | 2,100 | 1,098 |
| | EN4 | | ,881 | 2,521 | 1,221 |
| | EN5 | | ,881 | 2,096 | 1,193 |
| Informativeness | IN1 | 0,884 | ,661 | 3,288 | 1,063 |
| | IN2 | | ,719 | 2,904 | 0,991 |
| | IN3 | | ,721 | 3,199 | 1,071 |
| | IN4 | | ,684 | 3,555 | 1,089 |
| | IN5 | | ,639 | 3,644 | 1,068 |
| | IN6 | | ,754 | 3,301 | 1,110 |
| Irritation | IR1 | 0,725 | ,705 | 3,829 | 1,091 |
| | IR2 | | ,647 | 3,884 | 1,141 |
| | IR5 | | ,330 | 2,534 | 1,187 |
| Credibility | CR2 | 0,876 | ,731 | 2,644 | 0,884 |
| | CR3 | | ,803 | 2,575 | 0,931 |
| | CR4 | | ,766 | 2,705 | 0,940 |
| | CR5 | | ,646 | 2,719 | 1,035 |
| Mobile phone advertising value | VA1 | 0,898 | ,761 | 2,993 | 0,993 |
| | VA2 | | ,836 | 2,651 | 1,014 |
| | VA3 | | ,802 | 2,596 | 1,105 |
| Attitudes toward mobile phone advertisement | AT1 | 0,902 | ,808 | 2,733 | 1,164 |
| | AT2 | | ,839 | 2,411 | 1,171 |
| | AT3 | | ,734 | 2,904 | 1,097 |
| | AT4 | | ,744 | 2,050 | 1,202 |

*Source: The authors*

### 4.2. Confirmatory factor analysis (cfa)

To check the connections between the constructs within the conceptual model and to test the hypotheses, the structural equation modelling method was used using the software package SPSS AMOS 26. The relationships between the variables defined by the conceptual framework were tested by measuring fit indices: GFI, AGFI, IFI, TLI, CFI, RMSEA, and SRMR. The tested model did not show adequate values (GFI <0.8, AGFI <0.8, IFI> 0.9, TLI <0.9, CFI <0.9, RMSEA = 0.089 and SRMR> 0.089). By modifying the measuring instrument, the statements IR3, IR4, and CR1 were eliminated, and satisfactory results were obtained (good model fit). Table 6 shows the modified structured model's values, while Figure 2 shows the structural model.

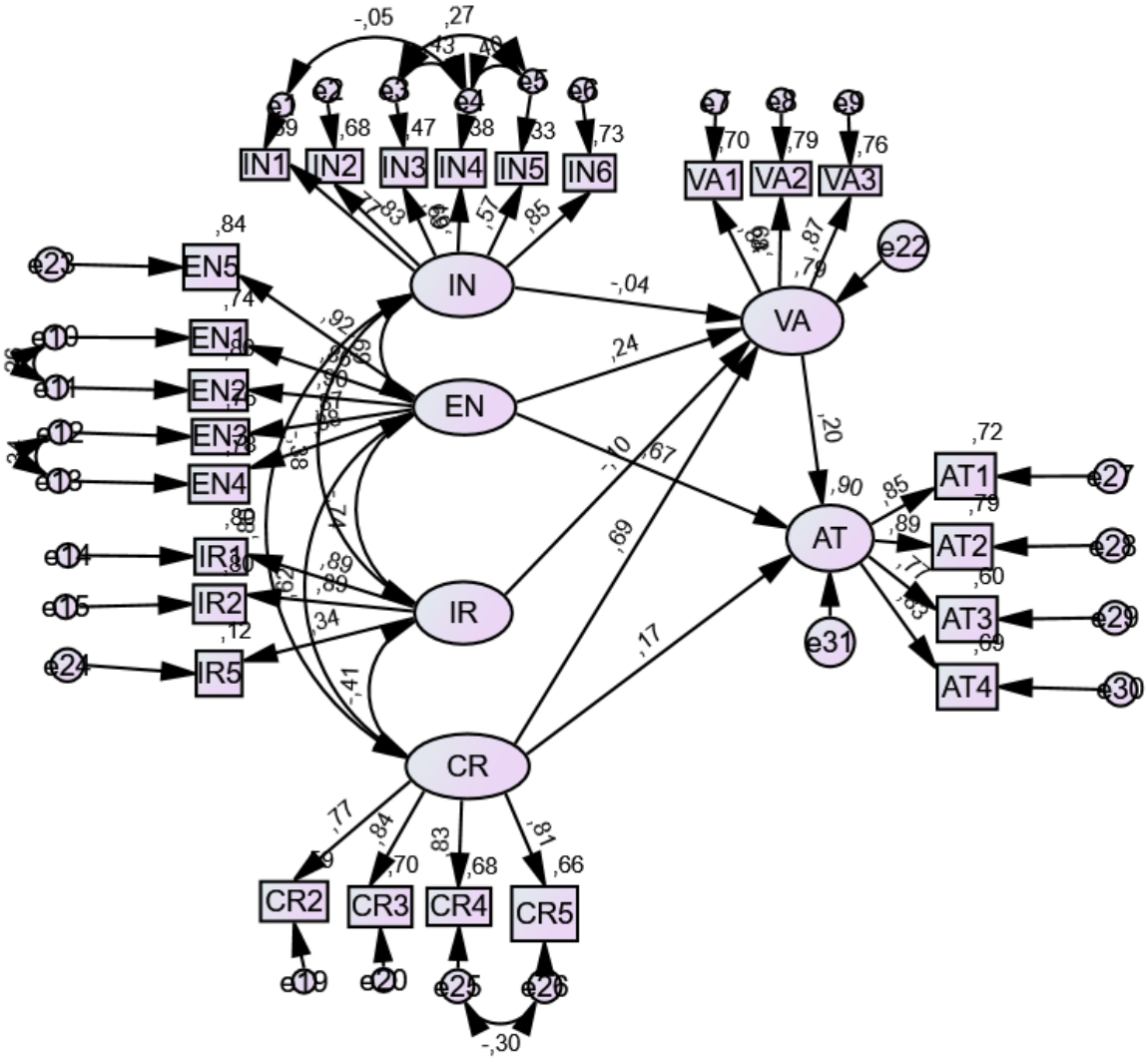
*Table following on the next page*

*Table 6: Fit indices*

| Fit indices | Test Model | Modification model | Recommended value | Source |
|---|---|---|---|---|
| Chi-square | 1289,4:df=337 P<0,001 | 437,748; 255 P<0,001 | | |
| $x^2$/df | 3,82 | 1,717 | <5 | Park&Kim(2014) |
| GFI | 0,765 | 0,805 | >0,8 | Halmi, (2016) |
| AGFI | 0,717 | 0,751 | >0,8 | Halmi, (2016) |
| IFI | 0,885 | 0,942 | >0,9 | Park&Kim(2014) |
| TLI | 0,871 | 0,931 | >0,9 | Kim&Han,(2014) |
| NFI | 0,851 | 0,871 | >0,9 | Park&Kim(2014) |
| CFI | 0,885 | 0,941 | >0,9 | Hu&Bentler, (1999) |
| RMSEA | 0,089 | 0,070 | 0,03 do 0,08 | Hair i sur., (2014) |
| SRMR | 0,089 | 0,0589 | <0,08 | Hair i sur., (2014) |

*Source: The authors*

*Figure 2: Structural model*




*Source: The authors*

### 4.3. Hypothesis tests

The results of hypothesis testing show the following:

- Hypothesis H1 is not supported (β=0,245, C.R. =1,947, p>0,05).
- **Hypothesis H2 is supported (β=0,667, C.R. =8,771, p<0,001).**
- Hypothesis H3 is not supported (β=-0,041, C.R. =-0,318, p>0,05).
- Hypothesis H4 is not supported (β=-0,102, C.R. =-1,049, p>0,05).
- **Hypothesis H5 is supported (β=0,687, C.R. =5,560, p<0,001).**
- Hypothesis H6 is not supported (β=0,171, C.R. =1,780, p>0,05).
- Hypothesis H7 is not supported (β=0,198, C.R. =1,779, p>0,05).

A more detailed presentation of the results is shown below. (Table 7 and Figure 3).

*Table 7: Summary of the hypothesis testing results*

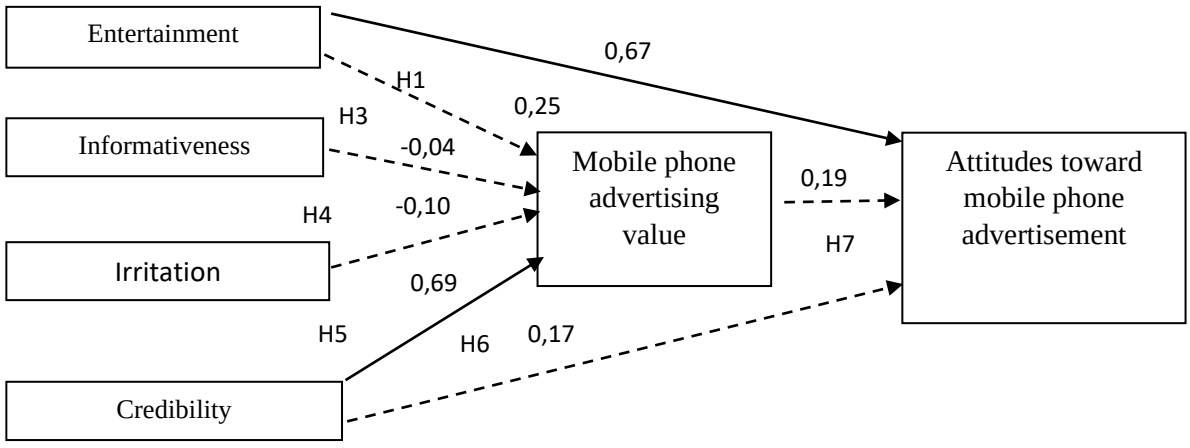
| ***Hypothesis*** | ***Independent variable*** | ***Dependent variable*** | ***Standard estimate*** | **CR** | **P-value** | ***Supported*** |
|---|---|---|---|---|---|---|
| H1 (+) | EN | VA | 0,245 | 1,947 | 0,051* | ***Not supported*** |
| H2 (+) | EN | AT | 0,667 | 8,771 | *** | ***Supported*** |
| H3 (+) | IN | VA | -0,041 | -0,318 | 0,750* | ***Not supported*** |
| H4 (-) | IR | VA | -0,102 | -1,049 | 0,294* | ***Not supported*** |
| H5 (+) | CR | VA | 0,687 | 5,560 | *** | ***Supported*** |
| H6 (+) | CR | AT | 0,171 | 1,780 | 0,075* | ***Not supported*** |
| H7 (+) | VA | AT | 0,198 | 1,779 | 0,075* | ***Not supported*** |

*Source: The authors*

**** p < 0,001; *p > 0,05*

*IN- Informativeness, EN – Entertainment, IR – Irritation, CR- Credibility, VA- Advertising value, AT – Attitude toward mobile phone advertising.*

*Figure 3: Results of a hypothesis test*




*Source: The authors*

The representativeness of the research model was checked using the coefficient of determination (R2). The measured values are shown in Table 8. According to the results, it can be seen that entertainment, information, irritability, and credibility explain 78.8% of the variance in the perception of the value of ads, while entertainment, credibility, and value explain 90.2% of the variance of the attitude about mobile advertising. The results show good representativeness of the model.

*Table 8: Squared multiple correlations of the proposed research model*

| Construct | Values |
|---|---|
| Mobile phone advertising value | 78,8 (0,788) |
| Attitudes toward mobile phone advertisement | 90,2 (0,902) |

*Source: The authors*

## 5. DISCUSSION, IMPLICATIONS, AND LIMITATIONS

Encouraged by the knowledge of daily advances in technology and the growing prevalence of product advertising through mobile devices, this research determines the relationship of factors (entertainment, information, credibility, and irritability) with the perception of mobile ads' value attitudes about mobile advertising. The research was conducted through a survey conducted in the Republic of Croatia. Based on the conceptual model, hypotheses were formed and tested by research. Hypotheses H1 and H5 were confirmed while hypotheses H2, H3, H4, H5, and H6 were not. It has been found that there is a positive correlation of credibility with the perception of the value of mobile phone ads. No negative correlation between ad irritability and ad value was found. Observing the irritability (mean in the ranges from 2.53 to 3.84 on a scale of 1 to 5), it is evident that there is no decisive agreement of respondents with the statement that mobile ads are irritating and negatively affect the value of mobile ads. This concludes that irritation is not a reason for not accepting mobile ads, as shown in previous research. (Bauer and Stehpen, 1968), (Xu, 2006), (Wang and Genç, 2019) Unexpectedly, this research found that there is no correlation between information and the value of mobile ads, which is not in line with previous research. Considering the mean, which ranges from 2.90 to 3.64, it is evident that there is certain neutrality regarding the informativeness of the advertisement. There was also no statistically significant correlation between entertainment and the perception of the value of mobile ads. Mean ranges from 2,096 to 2,521, which means that there is no agreement about the entertainment of ads, i.e., entertainment is not crucial in forming the perception of mobile ads' value. The model also measured the level of correlation between entertainment, credibility, and ad value with the attitude towards mobile advertising. The research results show that there is a statistically significant correlation between entertainment and attitudes about mobile advertising, as shown in previous research. (Sigurdsson et al., 2017), (Gao and Zang, 2014). Furthermore, unexpected research results show that there are no correlations of ad credibility with an attitude about mobile advertising. Mean responses range from 2.57 to 2.72 on a scale of 1 to 5, indicating a low perception of mobile ads' credibility. Also, unexpectedly, no statistically significant correlation was found between mobile ads' value and the attitude towards mobile advertising, which is contrary to previous research. Mean responses answers to questions about the perception of mobile ads' value range from 2.59 to 2.99, which shows disagreements or certain neutrality regarding mobile ads' value. Respondents' answers regarding the attitude towards mobile advertising are also interesting, name. Namely mean of the answers ranges from 2.05 to 2.90, which also shows their somewhat negative (or neutral) attitude towards mobile advertising. In addition to new knowledge about the perception of mobile ads' value and the formation of attitudes about mobile advertising, the practical contribution of this research is reflected in more efficient planning and implementation of promotional activities through mobile networks. The main limitation of the research is the sample used. The survey was conducted exclusively through one social network, and 89% of respondents are in the age group of 20 to 40 years. In this regard, the results cannot apply to the entire population. The following research recommendation is to expand the sample and include older age structures and investigate the relationship of demographic variables with values and attitudes about mobile advertising.

**LITERATURE:**

1. Alpana V., Vinayak P., Ajay V. (2016). Mobile Phone Usage among Youth. *International Journal of Applied Research and Studies*, 5(3), 25-35
2. Azeem, A. & Haq, ul. Z., (2012). Perceptions towards Internet advertising: a study with reference to three different demographic grups, *Global Businnes and Menagement Research: An International Journal*, 4 (1),28-45
3. Aydogan, S., Aysuna C., Aktan, M. (2016). Web Advertising Value and Student's Attitude Towards Web Advertising, *European Journal of Business and Management*, 8 (9), 86-96
4. Balog, A. i Leko, D. (2017). Moralno rasuđivanje u marketinškom oglašavanju. *Ekonomski vjesnik*, 30 (1), 239-248
5. Bauer, Raymond A. and Greyser, Stehpen A. (1968). Advertising in America: The Consumer View, Boston:Division of Research, *Graduate School of Business Administration, Harward University*, 67 (4),874-880
6. Blanco, C.F., Blasco, M.G., I Azorin, I. I. (2010). Entertainment and informativeness as precursory factors of successful mobile advertising messages, *Communications of the Ibima*, 1-11
7. Brackett, L. K., & Carr, B. N. (2001). Cyberspace Advertising vs. Other Media: Consumer vs. Mature Student Attitudes. *Journal of Advertising Research*, 41(5), 23–32.
8. Chia-Ling, L., Sinkovics, R., Pezderka, N. and Haghirian, P. (2012), "Determinants of consumer perceptions toward mobile advertising: a comparison between Japan and Austria", *Journal of Interactive Marketing*, 26 (1), 21-32.
9. Chodhury, H.K., Parvin, N., Weitenberner, C. & Becker, M. (2006). Consumer attitude toward mobile advertising in an emerging market: An empirical study. *International Journali of Mobile Marketing*, 1(2),33-41
10. Ducoffe, RH (1995). How Consumers Assess the Value of Advertising, *Journal of Current Issues & Research in Advertising*, 17 (1), 1–18.
11. Ducoffe, R.H. (1996). Advertising value and advertising on the web, *Journal of Advertising Research*,36(5), 21-35
12. Elliott, Michael T. and Paul Surgi Speck. (1998). "Consumer perceptions of advertising clutter and its impact across various media." *Journal of Advertising Research*, 38 (1)
13. Feng, X., Fu, S., & Qin, J. (2016). *Determinants of consumers' attitudes toward mobile advertising: The mediating roles of intrinsic and extrinsic motivations. Computers in Human Behavior, 63, 334–*
14. Gao, S., & Zang, Z. (2014). An empirical examination of users' adoption of mobile advertising in China. *Information Development*, 32(2), 203–215.
15. Gauzente, C. (2008). Attitude toward M-Advertising, Perceived Intrusiveness, Perceived Ad-Clutter and Behavioral Consequences: A Preliminary Study. 2008 19th International Conference on Database and Expert Systems Applications.
16. Grant, I., & O'Donohoe, S. (2007). Why young consumers are not open to mobile marketing communication. *International Journal of Advertising*, 26(2), 223–246.
17. Guttmann A. (2019). Mobile Internet advertising revenue Available at: https://www.statista.com/statistics/303817/mobile-internet-advertising-revenue-worldwide (Retrieved : 08.07.2020 )
18. Hair Jr. F.J., Black, R.E., Babin, J.B. & Anderson, E.R., (2014). Multivariate Dana Analysis-7th Edition, Pearson, Harlov, 2014,99.579
19. Halmi, A., (2016). *Multivarijantna analiza*, Alineja, Zagreb, 2016, 99.175
20. He, D., & Lu, Y. (2007). Consumers Perceptions and Acceptances Towards Mobile Advertising: An Empirical Study in China. *2007 International Conference on Wireless Communications, Networking and Mobile Computing*

21. Hoffman D., & Novak T.(1996). Marketing in hypermedia environment foundations: Conceptual foundations. *Journal of Marketing* , 60 (3),50-68
22. Hu, L.& Bentler, P.M. (1999). Cutoff criteria for fit indexe sin covariance structure analysis: Conventional criteria versus new alternatives, Structural Equation modeling, 6(1), 1-55
23. Huq, S. M., Alam S.M., Nekmahmud, M.,Aktar,M.S. & Ala,S.M.S.(2015). Customer's Attitude Towards Mobile Advertising in Bangladesh. *International Journal of Business and Economics Research*.4(6), 281-292
24. İnanç, S.A., Gökaliler, E.& Gülay, (2020). Do bumper ads bump consumers?: An empirical research on YouTube video viewers, El profesional de la información, 29 (1), 1-13
25. Kaasinen, E. (2003). User Needs for Location-Aware Mobile Services, Personal and Ubiquitous Computing, 7, 70-79
26. Kim, M. (2019). Determinants of Young Consumers' Attitude toward Mobile Advertising: The Role of Regulatory Focus. *Journal of Promotion Management*, 1–21.
27. Kim, J.Y.& Han, Y.I., (2014). Why smartphone advertising attracts customers: A model of web adverising, flow, and personalization, *Computer sin Human Behavior* 338 (2014), 256-269
28. Liu, C-L. `E., Sinkovics, R. R., Pezderka, N., & Haghirian, P. (2012). Determinants of consumer perceptions toward moble advertising- A comparison between Japan and Austria. *Journal of Interactive Marketing* 26(1), 21-32.
29. Loureiro S.M.C. (2017). Tell What You Want but Do Not irritate Me: A Senior Perspective Abaut Advertising, *Jurnal of Promotion Managment*, 24(2), 198-214
30. MacKenzie, S. B., & Lutz, R. J. (1989). An Empirical Examination of the Structural Antecedents of Attitude toward the Ad in an Advertising Pretesting Context. *Journal of Marketing*, 53(2), 48–65.
31. Martins, J., Costa, C., Oliveira, T., Gonçalves, R., & Branco, F. (2018). How smartphone advertising influences consumers' purchase intention. *Journal of Business Research.*
32. Mjeda, T. (2014). Mediji kao mediji ( između brenda i čovjeka). *In medias res*, 3(5), 724-731
33. Moore, J. J., & Rodgers, S. L. (2005, January). An examination of advertising credibility and skepticism in five different media using the persuasion knowledge model. *Proceedings of the American Academy of Advertising*, USA 10–18.
34. Murillo,E., Merino, M. & Nunez, A. (2016). The advertising value of Twitter Ads: a study among Mexican Millennials, *Rrvista Brasileia de Gestao Negocios* 18 (61), 436-456
35. Nakić, S. (2014a). Područja primjene stavova potrošača. *Praktični menadžment*, 5(1), 14-21.
36. Nakić, S. (2014b). Stavovi potrošača u promotivnim aktivnostima. *Praktični menadžment*, 5(2), 109-114.
37. Park, E., & Kim, K. J. (2014). *An Integrated Adoption Model of Mobile Cloud Services: Exploration of Key Determinants and Extension of Technology Acceptance Model. Telematics and Informatics*, 31(3),376-385
38. Piyanka Chowdhury. (2019). Quide to mobile advertising: Types of ads and main platforms. Available at: https://www.clickz.com/guide-to-mobile-advertising/252590/ (Retrieved : 08.07.2020 )
39. Pollay, R.w. & Mittal, B. (1993). Here`s the Beef: Factors, Determinants, and Segment sin Consumer Criticism of Advertising, *Journal of Marketing*, 57(3),99-114
40. Rittippant, N., Witthayawarakul, J., Limpiti, P., & Lertdejdecha, N. (2009). Consumers' perception of the effectiveness of Short Message Service (SMS) and Multimedia Message Service (MMS) as marketing tools. *Proceedings of World Academy of Science: Engineering & Technology*, 53, p815.

41. Sigurdsson, V., Menon, R. G. V., Hallgrímsson, A. G., Larsen, N. M., & Fagerstrøm, A. (2017). Factors Affecting Attitudes and Behavioral Intentions Toward In-app *Mobile Advertisements. Journal of Promotion Management*, 24(5), 694–714.
42. S.O´Dea. (2020). Smartphones - Statistics & Facts. . Available at: https://www.statista.com/topics/840/smartphones/ (Retrieved : 08.07.2020)
43. Standing, C., S. Benson, and H. Karjaluoto.(2005). "Consumer Perspectives On Mobile Advertising And Marketing". *In ANZMAC 2005 Conference: Electronic Marketing.* Perth, Australia: Dr Sharon Purchase.
44. Stewart, D. W. & Pavlou, P.A.(2002). From consumer response to active consumer: Measuring the effectiveness of interactivemedia. *Journal of the Academy of Marketing Science,* 30 (4), 376-396
45. Sternthal, B., & Craig, C. S. (1973). Humor in Advertising. *Journal of Marketing*, 37(4), 12–18.
46. Tahereh, N. & Zahra, G.T.,(2012). Investigating Effective Factors on the Perceived Values and Attitudes of Internet Advetisements Users. *Journal of Bascis and Applied Scientific Research,* 2(5),4392-4399
47. Tatarević, L. i Krnjić A. (2019). Utjecaj oglašavačkih poruka na ponašanje krajnjih kupaca. *Tranzicija,* 22(44), 124-135.
48. Tsang, M. M., Ho, S.-C., & Liang, T.-P. (2004). Consumer Attitudes Toward Mobile Advertising: An Empirical Study. *International Journal of Electronic Commerce,* 8(3), 65–78.
49. Zeheer, N. i Kline, M. (2018). Korištenje segmentacije životnog stila za ocjenu stavova potrošača i ponašanja prema mobilnom oglašavanju. *Market-Tržište*, 30(2), 213-229.
50. Zhang,P. & Wang, C. (2005). Am empirical study on consumer`s perceived value and attitude toward advertising. *Procedings of the 6 Global Information Technology and Management World Conference,* June5-7, 2005, Anchorage, Alaska
51. Zhang, X., & Xiong, K. (2012). A Conceptual Model of User Adoption of Mobile Advertising. *2012 International Conference on Computer Science and Electronics Engineering.*
52. Xu, D.J. (2006). "The influence of personalization in affecting consumer attitudes toward mobile advertising in China*", Journal of Computer Information Systems,* 47 (2), 9-19
53. Yang, K. C. C. (2004). A comparison of attitudes towards Internet advertising among lifestyle segments in Taiwan. *Journal of Marketing Communications*, 10(3), 195–212.
54. Wang, Y.,Genç, E. (2019). "Path to effective mobile advertising in Asian markets: Credibility, entertainment and peer influence". *Asia Pacific Journal of Marketing and Logistics*,
55. Qin, L. & Yan, H. (2017). Attitude towards MoBILE Advertising and Mobile Web Information Acquisition Behaviour: Persperctives from the Advertising Value, Credibility and Self-efficacy, *Advances in Social Science, Education and Humanities Research,* 72,368-377
56. Ünal, S., Ercis, A., & Keser, E. (2011). Attitudes towards Mobile Advertising – A Research to Determine the Differences between the Attitudes of Youth and Adults. Procedia - *Social and Behavioral Sciences*, 24, 361–377.

# PRACTICAL EXPERIENCE USING THE TOOLS OF DIGITALIZATION IN THE EDUCATIONAL ENVIRONMENT

**Daria Shalina**
*Ural Federal University (UrFU), Ekaterinburg, Russia*
*d.shalina2011@yandex.ru*

**Natalia Stepanova**
*Ural Federal University (UrFU), Ekaterinburg, Russia*
*n.r.stepanova@urfu.ru*

**Viola Larionova**
*Ural Federal University (UrFU), Ekaterinburg, Russia*
*v.a.larionova@urfu.ru*

***ABSTRACT***

*This paper investigates the assessment of the knowledge management process when using information technologies in the distance learning process. The current problem is the unfavorable epidemiological situation that forced us to switch to a new educational environment. There was a lack of training of teachers, students and administration in applying the skills of using modern information technologies, and the workload of technical equipment. These and other reasons caused a certain confusion in the field of education and had a negative impact on students and teachers. Therefore, the purpose of the study is to provide a socio-economic justification of this problem of organizing training on the real practical example of the Ural Federal University. To achieve this goal, the criteria of the modern educational environment were studied, the main difficulties of creating such an environment were identified, and the concept of an "educational platform" as a replacement for the usual audience was presented. Various methodological tools were used: analysis of theoretical material, description of emerging problems and difficulties, comparing of the spring and autumn semesters, and empirical experience of using a single educational platform. As a result of the research, we have shown how to optimally and effectively use the tools of digitalization in education on the real practical example of the Ural Federal University. The study was conducted on the basis of estimated impacts from teachers and students, as well as educational and auxiliary material. Ahead of us is the introduction of a new stage – project-based training using information technology training.*

***Keywords:*** *Consequences of coronavirus, digitalization, distance education*

## 1. INTRODUCTION

The spring appearance of the virus and the development of the pandemic contributed to the exit from the comfort zone of all economic and social systems, including education. Our usual education in schools/universities has turned into an information mess: a lot of information resources for training, system overload, technical failures, increased preparation time for classes (both teachers and students) and etc. All these factors increased the level of stress on the background of the unfavorable epidemiological situation, which led to insufficient quality of obtaining and mastering knowledge. Further – sometimes a complete lack of desire to learn due to an uncomfortable educational environment. And as a result, the concept of "innovation" was associated with "chaos". This arrangement will not bring the desired results to anyone – neither to students, nor to teachers, nor to employers, nor to the state. A solution to this problem was found by the administration of the Ural Federal University (UrFU).

The new approach to education allowed us to improve the educational process, create a favorable educational climate for students and teachers, and use the principles of modern management and planning.

### 1.1. Relevance and practical significance

At the time of writing (September 2020), the coronavirus is spreading. Most educational institutions use distance learning methods. But not everyone has enough information resources to create a favorable educational climate.
In our research, we will share unsuccessful and successful experiences of distance learning, which will be useful for other educational institutions.

### 1.2. Goal and objectives

The purpose of our research is the socio-economic justification of the practical use of information technologies in University education. To achieve this goal, the following tasks were set:

- Consideration of sustainable concepts and training methods before the pandemic;
- Drawing up cause-and-effect relationships for introducing innovations in the learning process in the shortest possible time;
- Description of a new approach to training;
- Forecasting changes in the educational process everywhere.

The research is based not only on observation, but also on concrete facts and reports of distance learning at the University.

## 2. MAIN BODY OF THE PAPER

### 2.1. Theoretical aspects and known results

Digitalization tools are gradually replacing live interaction between people. But despite the high efficiency of new technologies, live communication is necessary for a person, especially in an educational environment (Kalimullina, Trotsenko, 2018). The educational environment is a space that provides the educational process with the necessary information, technical and social resources for the effective interaction of its participants (Nadtochiy, Lunkov, 2020). The introduction of digital tools in education affects participants in the educational process in different ways:

1) Students' involvement in learning increases, as the modern generation is attracted to multimedia materials, distance learning, and various gamifications. The educational environment should have a number of characteristics that correspond to the interests of students:
   - Creating a creative atmosphere
   - Developing interpersonal skills through increased study of humanities subjects;
   - Creating a new individual approach to learning;
   - Emergence of new teachers – coaches;
   - Ensuring the growth of internal mobility.

2) For teachers this change is commensurate with the challenges and new opportunities. Traditional teacher training does not involve the using of primarily digital tools in teaching. In this regard, there are difficulties in integrating digitalization into the educational process. Instead of facilitating learning, teachers spend time learning new information platforms and modernizing the entire learning material. Therefore, there is a need for digital literacy. Digital literacy is a combination of knowledge, skills and experience in the field of digitalization (Kalimullina, Trotsenko, 2018).

3) Digital resources improve the learning process. But we do not forget about personal development. The modern educational environment should also contain personality-oriented principles, combine digitalization and socialization (Nadtochiy, Lunkov, 2020). Thus, we can distinguish the following criterions for evaluating the modern educational environment:
   - Availability of opportunities for personal self-development;
   - Promoting the development of students' abilities;
   - A variety of information;
   - Focused on the learning process itself, its importance and value;
   - Equality of the participants of the education regardless of status;
   - Creative atmosphere;
   - High internal mobility;
   - Balanced and structured learning process (Nadtochiy, Lunkov, 2020).

To satisfy the requirements of the modern economy and the interests of the younger generation, the educational environment should use an innovative approach instead of the traditional one (Kalimullina, Trotsenko, 2018). Digital skills have already become a prerequisite for effective interpersonal interaction. This leads to the need to develop digital literacy of people of different professions and ages in the context of the digital economy (Peskov, 2018).

### 2.2. Transition from traditional to innovative education

Before the outbreak of the coronavirus pandemic, educational institutions followed traditional teaching principles: real attendance of classes, live communication with the teacher. This system of education was sufficiently effective for obtaining theoretical knowledge and practical skills, which should be the focus of the learning process (Vertakova, Plotnikov, 2020). In higher education, traditional training is presented in the form of streaming lectures. This type of training contributes to improving the scientific level of students' training and ensures uniform and systematic work during the semester (Osmina, 2019). Traditional training has not been subject to global changes for many years. It was gradually improved by technical means that complemented the educational process. These include presentations and electronic reference books. These information elements are effective in teaching and socializing students (Vertakova, Plotnikov, 2020). Now the traditional audience has an analog in the form of an online educational platform. An educational platform is an online system that contains a set of educational materials for all participants of the educational process. This system satisfies the modern criterions of the educational environment, as it uses new ways of organizing learning, educational applications, it is possible to track the dynamics of students and the development of their creative abilities (Panyukova, 2020).

### 2.3. Unorganized distance learning in extreme conditions

The educational environment was shaken by the abrupt transition to distance learning in the spring of 2020. From this, a chain is built: traditions – an outbreak of coronavirus – "antitraditions". Live communication has been replaced with virtual communication, university/school classes with online broadcasts, etc. Effective online learning requires a number of conditions:

1) Availability of high-quality access to digital technologies: necessary technical equipment and Internet in educational institutions.
2) Support of the educational process with high-quality and informative information.
3) The possession of the necessary knowledge and skills to use new tools of digitalization (Ratheeswari, 2018).

Lack of preparation led to classes being held on different platforms, which led to "chaos" in the educational environment. This phenomenon has caused stress among participants in the educational process, which contradicts the favorable educational climate. Effective teaching depends largely on the teacher's training. Now information technologies and systems are used for this purpose. New technical support provides great opportunities for all participants of the educational process (Ratheeswari, 2018). Therefore, the work of both teachers and students has increased. It took more time to create the task, publish it, inform students, upload the task, complete it, answer questions via an online chat with a delay, upload the task to a specific platform, check the tasks by the teacher and assign a grade. In the situation with a single educational platform, everything would be different. The unified educational platform provides online access to educational materials at any time, convenient monitoring of attendance and completion of tasks by students, reducing the time for organizing a lesson, quickly sending tasks for verification, a wide range of information resources and online communication via chat with instant notifications of new messages. The administration can quickly make management decisions based on data on attendance, student performance, and the learning process (Panyukova, 2020).

### 2.4. A new approach to the implementation of the educational process in UrFU

Students and teachers of the Ural Federal University also experienced "remote chaos". The problem solution of plenty of platforms and their congestion was to collect all disciplines in a single Microsoft Teams system. Technical issues were finalized at the beginning of the year. Students reacted negatively to the news about the new platform, as something new is already associated with problems and numerous problems. However, this information platform did not require long-term adaptation. In a recent interview the rector of UrFU said that the University is moving forward, gradually introducing new technologies. It is important for the University that graduates have a high degree of adaptation and a certain set of competencies. Regardless of the conditions, students are given the necessary knowledge (Grishankov, Zherdev, 2020). Microsoft Teams is adapted to the educational process and has all the necessary tools to create a comfortable educational environment. First, online classes are meetings where you can see all the participants and track their attendance. Using video and audio communication, the online lesson will be as close as possible to the traditional one. In an online class you can raise your hand to answer a question or voice a question to the teacher. For the same purpose, you can use the chat directly during the lesson. Secondly, it is possible to display a screen that allows you to show the training material, and draw on a digital board to explain the material. Third, you can record a lesson and give it to students to repeat. The recording can be downloaded and viewed within the specified time frame (about 20 days). Fourth, the teacher can publish the task, and students can submit it for review on the same platform. Fifth, each discipline has its own team, which is identical to the audience at the University. Students and teachers can easily find and join this team for a class (Microsoft, 2020). So, Microsoft Teams is not just a corporate platform, but and a complete online educational environment. Let's compare the quality of the educational environment in the spring and autumn of 2020 according to the criteria of the modern educational environment (see Table 1).

*Table following on the next page*

| Criterion | Semester | |
|---|---|---|
| | Spring semester | Autumn semester |
| Availability of opportunities for personal self-development | Opportunities are present: development in non-standard conditions, the ability to respond flexibly to changes contributes to the development of the individual | |
| Promoting the development of students' abilities | It is difficult to implement without live communication. It is difficult to determine who is capable of what through online tasks | It is difficult to identify capable students, but thanks to audio and video communication, the teacher can mark active students |
| A variety of information | Online resources, individual lecture recordings, online library, individual lecture presentations | Online resources, lecture recordings, online library, online books, lecture presentations |
| Focused on the learning process itself, its importance and value | Result-oriented, because the process is too complex, which is why it loses its value | Process orientation, attracting students to view and participate in lectures |
| Equality of the participants of the education regardless of status | All are equal, points are awarded according to certain criterions | |
| Creative atmosphere | There is little creativity due to tight deadlines and the lack of a single platform | A variety of activities, you can draw on a digital board, a stylish educational platform |
| High internal mobility | It is possible only in social networks or by mail | It is possible in social networks, and on the platform itself |
| Balanced and structured learning process | Lack of preparation for distance education "broke" the structure of the educational process | Clear structure of training on the online platform, balance of time for classes and rest |

*Table 1: Comparison of the educational environment in spring and autumn 2020*

Based on this comparative analysis, we can conclude that the educational environment in the autumn semester is better. It satisfies to many criterions of the modern educational environment, which contributes to an effective educational process. In the spring, the reason for non-compliance with many criteria was lack of preparation. The transition to online educational platforms was too fast. Distance learning is supposed to be temporary, but information resources are of great importance in education and can be used after the incidence of coronavirus has decreased. They help to increase the level of participation and interaction, the quality of education, facilitate learning to quickly search for information and develop critical thinking (Ratheeswari, 2018).

## 3. METHOD

### 3.1. Method of research

The research methods used were analysis, description, comparing, and empirical experience.
The study provided basic concepts and theoretical aspects for research (educational environment, digital literacy, educational platform). By analyzing the theoretical material, the main criterions of the modern educational environment were identified for further comparing of the spring and autumn semesters. The article describes the traditional approach to teaching, the cause-and-effect relationships of the emergence of "chaos" in education in the spring of 2020, and a new way of conducting classes. The study provides real practical experience of using Internet resources in training.

An example of an information system is Microsoft Teams, where participants in the learning process can conduct online lectures, upload files, tasks, and communicate.

### 3.2. Application aspects

Preparation for the beginning of the 2020/21 academic year included (according to the rector's order No. 655/03 from 18.08.2020):

- For full-time and part-time education, a combined mode of the educational process is established: practical classes are held in the traditional format, lectures - using distance learning technologies;
- For correspondence courses, classes should only be held remotely;
- To conduct classes in a remote format, you must use the Microsoft Teams cloud service;
- Broadcast lectures (webinars) from specialized classrooms of the University;
- Specify the platform and audience in the schedule/ only the platform if the class is held from home;
- All students and teachers must activate Office 365 and install Microsoft Teams before starting their training.

To use the Microsoft Teams service in the educational process, methodological seminars were organized for teachers before the start of the school year. The following issues were considered for discussion:

- Justification of the need and preparatory measures for the implementation of MS Teams in the educational process;
- Organization of training and group work in MS Teams;
- Experience in MS Teams;
- Answers to participants' questions.

The next stage will be the introduction of project-based training at the University. Its goal is to increase the attractiveness of UrFU General education programs and ensure high competitiveness of Graduates in the global labor market.

## 4. CONCLUSION

The educational environment, using traditional approaches in teaching, slows down not only its own development, but also the development of participants in the educational process. Continuous modernization and socialization are becoming the main criterions of the modern educational environment. The introduction of innovations in the educational process should be accompanied by digital literacy of educational participants. Otherwise, digital tools will complicate all the usual organizational processes. A single educational platform is a convenient option for the effective operation of the educational system. All participants in the process are present in one place, as in one educational institution. In UrFU, such a platform is Microsoft Teams. The full use of information resources can turn from uncertainty into a rapid process of reaching heights. The knowledge and skills acquired during innovative training will become a key parameter in career growth.

## LITERATURE:

1. Grishankov, D., Zherdev, F. (2020). An University that employers love. *Motivation: magazine about innovations in Russia.* Retrieved 24.09.2020 from https://stimul.online/articles/sreda/universitet-kotoryy-lyubyat-rabotodateli/.
2. Kalimullina, O.V., Trotsenko, I.V. (2018). Modern digital educational tools and digital competence: analysis of existing problems and trends. *Open education*, 22 (3), pp. 61–73.

3. Microsoft (2020). *Microsoft Teams for education.* Retrieved 25.09.2020 from https://www.microsoft.com/ru-ru/microsoft-365/microsoft-teams/education.
4. Nadtochiy, A.P., Lunkov, V.Y. (2020). Formation of the educational environment. *Modern pedagogical education*, 3, pp. 8–12.
5. Osmina, K.S. (2019). The introduction of online lectures in the traditional education. *World of science, culture, and education*, 4 (77), pp. 177–179.
6. Panyukova, S.V. (2020). *Digital tools and services in the work of a teacher.* Moscow: Publishing house "Pro-Press".
7. Peskov, D. (20.09.2018). We will learn programming before we learn to read. *Komsomolskaya Pravda*. Retrieved 20.09.2020 from https://www.ural.kp.ru/daily/26884/3928381/?fbclid=IwAR30qJIDih70BZS45uQfILioTIK4cwK-BSy5pqOEXumkuJBNWuZUOPr4xKc.
8. Ratheeswari, K. (2018). Information Communication Technology in Education. *Journal of Applied and Advanced Research*, 3 (1), pp. 45–47.
9. Order on the beginning of the new 2020-2021 academic year (2020). *The order of the rector of Federal University named after the first President of Russia B.N. Yeltsin*, No. 655/03. Ekaterinburg: UrFU.
10. Vertakova, Y.V., Plotnikov, V.A. (2020). Traditional training technologies and quality assurance of economic education in the digital transformation era. *Management consulting*, 3 (135), pp. 54–60.

# FINANCIAL STRUCTURES IN RETAIL TRADE, EXCEPT OF MOTOR VEHICLES AND MOTORYCLES IN THE REPUBLIC OF CROATIA

**Dina Korent**
*Faculty of Organization and Informatics, University of Zagreb*
*Pavlinska 2, 42000 Varaždin, Croatia*
*dina.korent@foi.unizg.hr*

***ABSTRACT***

*The aim of this paper is to identify the financial structures of companies in the retail trade, except of motor vehicles and motorcycles in the Republic of Croatia. The time frame of interest is the period from 2008 to 2015, the subject of the analysis are all companies in the specified activity division, and the data source are the databases of the Financial Agency. Methodological requirements imply the application of general scientific methods, and in the empirical part of the paper also the methods of descriptive statistical analysis. In a broader sense, through the prism of the overall vertical financial structure of passive, a high level of total company indebtedness is determined with a decreasing trend from the middle of the period. In a narrower sense, from the aspect of the vertical financial structure of part of the passive, the existence of a relatively conservative capital structure is stated, with domination of equity over long-term debts. In other words, a relatively low intensity of the use of financial leverage is identified, accentuated by the fact of reducing its cost-effectiveness in the analyzed period. This conservatism is more pronounced for small companies compared to medium-sized and large companies. In addition, the persistence of the identified capital structures is evident throughout the observed period, which is why it can potentially be considered an inherent characteristic of the subject activity division. This also indicates that the variability in the indicators of the overall vertical financial structures of passive is obviously predominantly potentiated by relative variability in short-term debt financing. Horizontal financial structures, ie working capital management strategies, are assessed as relatively aggressive, with the stated aggressiveness being most pronounced for large companies, followed by small companies, and finally medium-sized companies. Finally, although generally unfavorable, indicators of risk of financial difficulties record a positive trend from the middle of the period, which, without further analysis, can be roughly provoked by the adequacy of financial structures of companies in retail trade, except of motor vehicles and motorcycles.*

***Keywords:*** *financial structures, retail trade, except of motor vehicles and motorcycle, activity division G 47, Republic of Croatia, analysis*

## 1. INTRODUCTION

The financing process is formalized in the company's bookkeeping. In this sense, the financing process can be observed by the duality of the accounting method through the structure of assets, ie active on the one hand and the structure of liabilities and equity, ie passive on the other, and ultimately by observing the logical connections between these structures. The latter is easiest to determine on the basis of financial statements, primarily on the basis of the balance sheet. Therefore, we can talk about the following financial structures: vertical financial structures that include the structure of active (assets) and the structure of passive (liabilities and capital), and the horizontal financial structure that shows the relationship between parts of active and parts of passive (Burtchett & Hicks, 1948; Orsag, 2018). Under the financial structure, however, is often understood only the vertical structure of the passive of the balance sheet of the company, and usually the structure of its long-term part, or the so-called capital structure. (Martin et al., 1974; Brigham & Ehrhardt, 2011) The passive of a company's balance sheet formalizes its relationships with sources of funds.

Globally, the structure of a company's passive is shown by the debt-to-equity ratio or the degree of indebtedness that shows the share of total debts in total passive. Comprehensively, therefore, the structure of the company's passive is represented by the relations of own and borrowed capital (Orsag, 2018). Furthermore, as mentioned, related to the vertical structure of passive of the balance sheet, the term capital structure also appears, which means the vertical structure of a part of passive, as a rule, its long-term part, ie the structure of long-term liabilities and equity. Consequently, although there are cases when the capital structure may provoke the possibility of including short-term capital, ie short-term and current liabilities, the capital structure can be characterized as a long-term financial structure of passive of the company's balance sheet. Simplified, the capital structure is shown through the ratio of debts, as a rule, long-term, and equity (Orsag, 2015; Orsag, 2018). The horizontal financial structure implies the maturity connection of parts of active and parts of passive, ie it demonstrates the compliance of parts of assets with the way of financing them. According to the so-called golden rules of financing the company's operations, and conditioned by the principle of security, ie the principles of liquidity and solvency, long-term investments (in fixed and permanent current assets) should be financed using long-term financing. In contrast, the financing of occasional needs should be viewed through the principle of profitability. This principle requires that fluctuating funding needs be financed in the short term. Since the size of permanent current assets is objectively difficult to determine, these requirements are modified in practice in such a way that inventories are considered long-term, ie permanent, and other forms of current assets, as short-term, ie fluctuating current assets (Orsag, 2015; Orsag, 2018).

## 2. STRUCTURAL-BUSINESS CHARACTERISTICS OF THE RETAIL TRADE, EXCEPT OF MOTOR VEHICLES AND MOTORYCLES

The retail trade, except of motor vehicles and motorcycles (G47 according to the National Classification of Activities 2007) was chosen because of its importance in the economy of the Republic of Croatia. Figure 1 shows the share of this activity division in the total business results (number of companies, number of employees, total revenues, total expenses, gross profit, gross investment in fixed assets) of the Republic of Croatia for the period 2008-2015. As the figure shows, the G47 activity division participates with 7.91-9.66% in the total number of companies, with 10.35-11.20% in the total number of employees, with 12.31-13.89% in the total revenues, with 12.50-14.16 in total expenses, with -9.52-16.94% in gross profit and between 2.96-13.86% in gross investment in fixed assets.

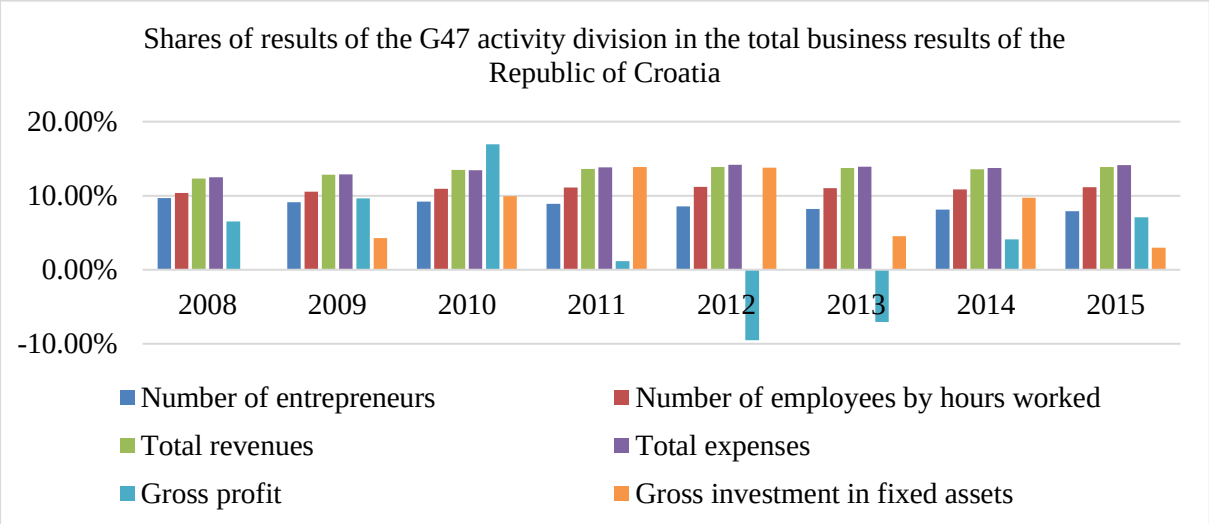



*Figure 1: Shares of results of the G47 activity division in the total business results of the Republic of Croatia (Author's work according to (FINA, 2017) data)*

The degree of concentration of the subject activity division, measured by the Herfindahl-Hirschman index (HHI), is continuously gradually increasing in the period from 2008-2015, specifically from 284.73 in 2008 to 384.99 in 2015. These values indicate that retail trade is extremely unconcentrated, ie highly fragmented or atomistic activitiy division with a larger number of relatively small companies with approximately the same, smaller share of activity revenue. Consequently, no company has a significant market share, ie it is not in a situation of dominance of the activity nor does it have the power to shape events in it (Tipurić et al., 2002). However, the time trend shows a slow but continuous increase in market concentration. The capital intensity coefficient[1] of activity division G47 ranges from 0.427 to 0.481, and the reciprocal to the stated labor intensity ratio is in the range from 2.080 to 2.339. A value of capital intensity coefficient less than one indicates capital equipment below the economy average. In other words, congruent to the labor intensity coefficient, activity divsion G47 can be attributed as an above-average labor-intensive, more precisely more than twice labor-intensive than the economy average. Finally, in the observed period from 2008 to 2015, the median of labor productivity and the median of capital productivity of the activity division G47 range from 319,828.06 to 408,542.03 kunas of total income per employee and in the range from 1.40 to 6.26 kunas of total income per kuna of fixed assets, respectively, and generally have a negative trend.

## 3. METHODOLOGICAL FRAMEWORK OF EMPIRICAL ANALYSIS

The chapter provides an insight into the sample design and a description of the data, variables and methods used in the analysis.

### 3.1. Sample design

Empirical analysis in this paper is based on a statistical set consisting of annual observations for companies registered in the Republic of Croatia, whose predominant activity, ie division of activity, is retail trade, except trade in motor vehicles and motorcycles (G 47 according to the National Classification of Activities 2007). The sample of empirical analysis is an unbalanced sample consisting of 74,092 company-year observations, ie annual observations for companies registered in the Republic of Croatia and whose predominant activity, ie division of activity, is retail trade, except trade in motor vehicles and motorcycles (G 47 according to National classification of activities 2007) in the period from 2008-2015, and are registered in the database of the Financial Agency (FINA). Figure 2 shows the number and structure of companies by size in activity division G47 in the period 2008-2015, ie the structure of the sample by years and by company size. It is evident from the graph that, regardless of the year, the structure of the sample is dominated by small companies, with a share ranging from 98.48% in 2009 to 98.74% in 2015. The share of medium-sized companies in the observed period ranges from 0.82% in 2015 to 1.10% in 2009, while the share of large companies is the lowest in 2010 (0.37%) and the highest in 2014 (0.46%). If we look at the first and last year of the observed period, it can be seen that the total number of companies decreased by 1.80% (168 companies), primarily due to a decrease in the number of small and medium companies and a slight increase in the number of large companies. As a result of the latter, in 2015, compared to 2008, the shares of small and large companies increased, while the share of medium-sized companies decreased.

[1] The capital intensity coefficient shows the share of fixed assets of a particular activity in the fixed assets of the economy according to the share of employees in a particular activity in the total employment of the economy (Kovačević & Vuković, 2006).

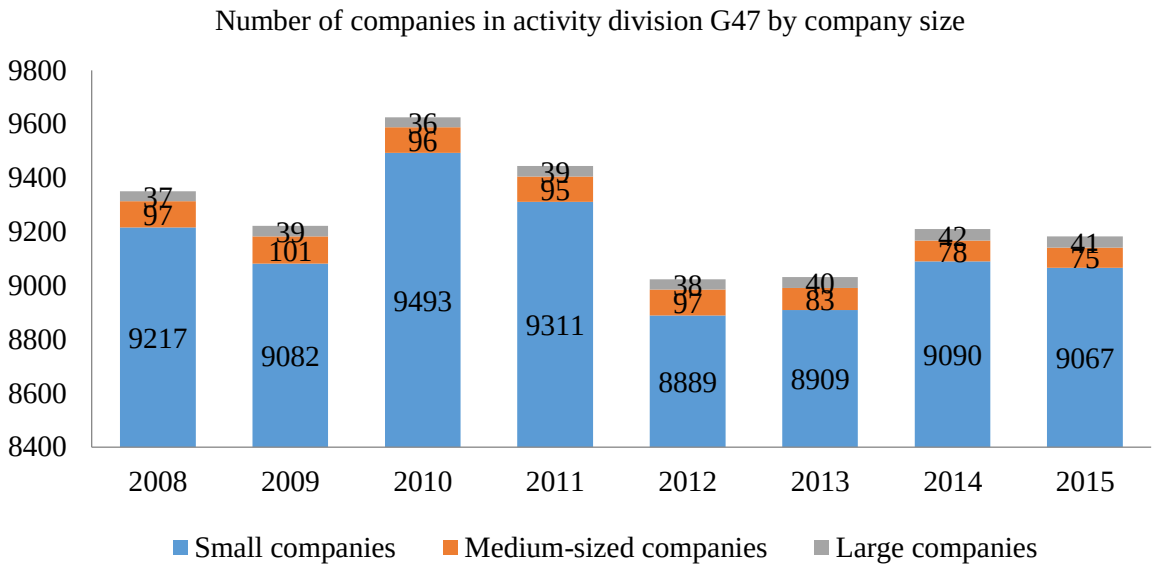



*Figure 2: Sample structure by year and company size*
*(Source: Author's work according to (FINA, 2017) data)*

### 3.2. Data, variables and methods

For the purposes of empirical analysis, data on the companies that make up the sample were used. The data were obtained from the „living" database of the Financial Agency on 12 July 2017 and accordingly represent secondary data. Data include basic data and quantitative data needed to calculate the indicators of the selected variables. In order to perform the empirical analysis, the indicators of the corresponding variables were first calculated on the basis of the above data, using the MS Excel software package. Variables and indicators of variables used in other similar research are used, and their selection is determined by the theoretical basis and the availability of data needed for their calculation. In general, the variables used in the analysis are the vertical financial structure of passive, the horizontal financial structure, probability of financial distress and company size. Variables, ie indicators of these variables are defined for each company-year, and their names, labels and calculation methods are given in Table 1.

*Table following on the next page*

| Name of variable | Indicator name and label | Calculation method of (indicator) variable |
|---|---|---|
| Vertical financial structure of passive | Debt ratio (DR) | total liabilities / total assets |
| | Equity ratio (ER) | equity / total assets |
| | Debt to equity ratio (DER) | total liabilities / equity |
| | Long-term debt ratio (LDR) | long-term debt / (long-term debt + equity) |
| | Long-term debt to equity ratio (LDER) | long-term debt / equity |
| | Financial leverage indeks (FL) | ROE/ROA |
| Horizontal financial structure | Coverage ratio I (CRI) | equity / fixed assest |
| | Coverage ratio II (CRII) | (equity + long-term debt) / fixed assets |
| | Current ratio (CR) | current assets /short-term liabilities |
| | Quick ratio (QR) | (current assets - inventories) / current liabilities |
| Probability of financial distress | Altman Z-Score (ZSCORE) | It is quantified by adjusting the estimate of Altman's Z-Score (1968) for private business entities that may be located outside the manufacturing sector (Žager et al., 2008; Bogdan et al., 2019), and is therefore among the developed models most suitable for the analysis of trade, according to the following expression: $Z\text{-}Score_{it} = 6{,}56*X_1 + 3{,}26*X_2 + 6{,}72*X_3 + 1{,}05*X_4$ where $X_1$ = net working capital / total assets; $X_2$ = retained earnings / total assets; $X_3$ = profit (earnings) before interest and taxes / total assets; $X_4$ = book value of equity / book value of total liabilities |
| Company size | The analysis follows a classification into company size categories applied by the Financial Agency. In its databases, the Financial Agency classifies small, medium-sized and large companies on the basis of the Accounting Act (NN 78/15, 134/15, 120/16, 116/18, 42/20, 47/20) (Vlada Republike Hrvatske, 2020) indicators (amount of total assets, amount of income and the average number of employees during the business year) determined on the last day of the business year preceding the business year for which the financial statements are prepared. | It is determined in the context of the following three modalities of company size: small companies (S), medium-sized companies (M) and large companies (L). |

*Table 1: Names, labels and calculation methods of (indicators of) variables (Source: Authors's work)*

The analysis of the capital structure of companies in the selected activity division in the Republic of Croatia was performed by applying descriptive statistics of the mentioned variables, ie indicators of variables. An analysis was performed for the entire sample of enterprises, in the selected activity division, as well as for subsamples of comapnies by size, specifically for the subsample of small comapnies, for the subsample of medium-sized companies and for the subsample of large comapnies.

## 4. RESULTS OF EMPIRICAL ANALYSIS

The results of descriptive statistics of variable indicators for all companies in the sample, ie for all companies in activity division G47 covered by the same, as well as for individual subsamples of the companies according to their size, generally demonstrate the existence of noticeable variation ranges, standard deviations and coefficients of variation of observed indicators. The latter indicates large variations between values and their large dispersion around the average values. Given that the coefficients of variation of all indicators exceed the limit of 30, and often 100 and more %, mentioned, as indicators of representativeness of the average, suggest more or less unrepresentativenessof the same. Consequently, the average, ie the arithmetic mean is not a relevant measure of the value of the relevant indicators for the respective companies, and the median is used as a more appropriate measure of descriptive statistics in the analysis and drawing conclusions.

### 4.1. Results of vertical financial structure of passive analysis

Starting from the analysis of the vertical financial structure of the entire passive, observed for the sample of all companies, but also individual subsamples of companies by size, in the activity division G47 in the period 2008-2015 the movement of the medial value of the debt ratio (Figure 3) in the interval from 0.83 to 0.88 was identified. The debt ratio in all years achieves high median values, indicating that the companies in the activity divison G47 finances more than 80% of its assets with debts. In addition, since the stated median values exceed the limit value of 0.67, it can be concluded that, viewed from a conservative point of view, the companies in the relevant activity division are medially over-indebted. In general, with a minor exception for the subsample of medium-sized companies in 2010, there is an evident trend in the shape of the inverted letter U, ie an increase in the level of indebtedness until 2012, followed by a gradual decline.

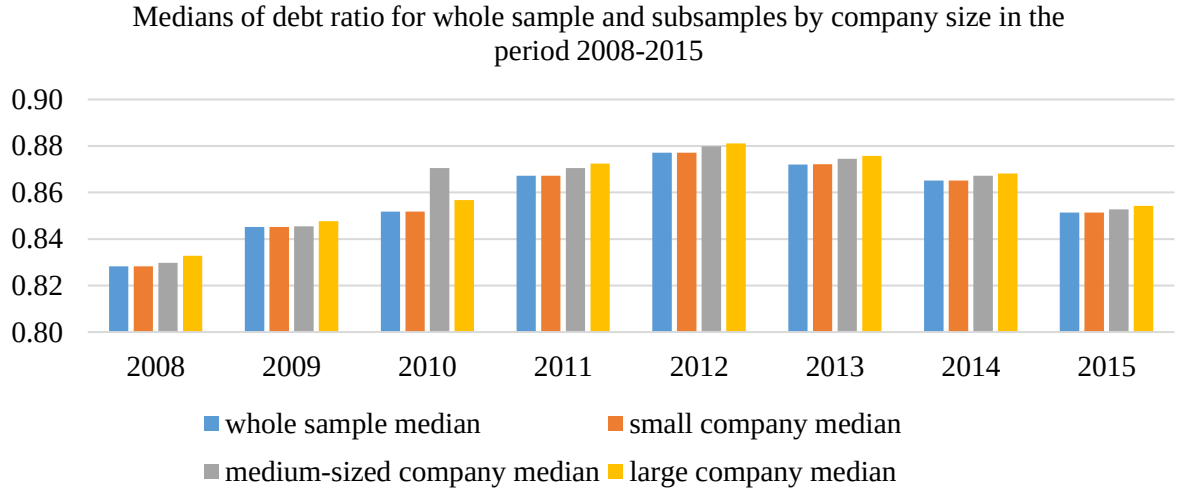



*Figure 3: Medians of debt ratio for whole sample and subsamples by company size in the period 2008-2015*
*(Source: Author's work according to (FINA, 2017) data)*

The inversely proportional to the movement of the median debt ratio, the trend of the median values of the equity ratio in the observed period from 2008 to 2015 (Figure 4) is U-shaped, both for the whole sample of companies and for subsamples of companies by size. This suggests the existence of a trend of decreasing the share of self-financing until 2012 and the trend of increasing the share of self-financing after 2012. In terms of value, and complementary to the degree of indebtedness, the medians of the equity ratio in the period from 2008-2015 for the whole sample of companies and the subsample of small companies range from 0.12 to 0.17,

and those of the subsample of medium-sized companies and the subsample of large companies in the range from 0.11 to 0.16. Thus, the companies in question in the entire observed eight-year period medially less than 17% of the total assets finance by owned capital. Given that this it is almost twice less than the conservatively established minimum of 33%, in this context the median share of self-financing of enterprises in the G47 division in the observed eight-year period can be characterized as extremely low.

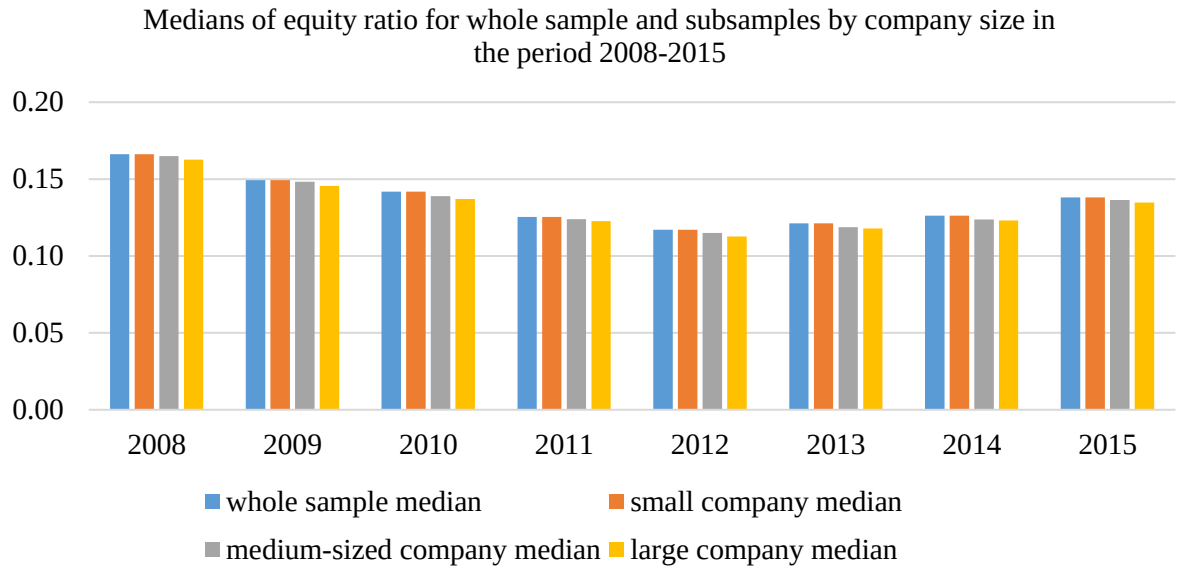



*Figure 4: Medians of equity ratio for whole sample and subsamples by company size in the period 2008-2015*
*(Source: Author's work according to (FINA, 2017) data)*

Further to the consideration of the state and trends of the debt ratio and the equity ratio, their quotient and complement, the debt to equity ratio of companies in activity division G 47 in the his median values in the analyzed period (Figure 5) continuously decreases for all observed (sub)samples. Specifically, for the whole sample of companies and the subsample of small companies, as for the for subsample of medium-size companies the median values of the debt to equity ratio decrease from 2.41 and 2.40 respectively in 2008 to 0.42 in 2015, and for the subsample of large companies from 2.42 in the initial year to 0.40 in the final year of the referent period. Furthermore, the results demonstrate that the median values of the debt to equity ratio in the first two years (2008 and 2009), although declining, exceed the conservative maximum of the ratio in question (2:1), while in the remaining six years the latter are significantly below it (around 0.70 in 2010 to around 0.40 in 2015 independently of the (sub) sample). Thus, while in the first two years the total debts, medially observed, exceeded the amount of equity more than twice (from 2.28 to 2.42), after 2009 the situation changed significantly so the in the remaining six years the priority in financing was taken by own capital. In the last three years (2013-2015), with a time tendency of growth, the equity medially double or more exceeds the amount of total debts of the observed companies.

*Figure following on the next page*

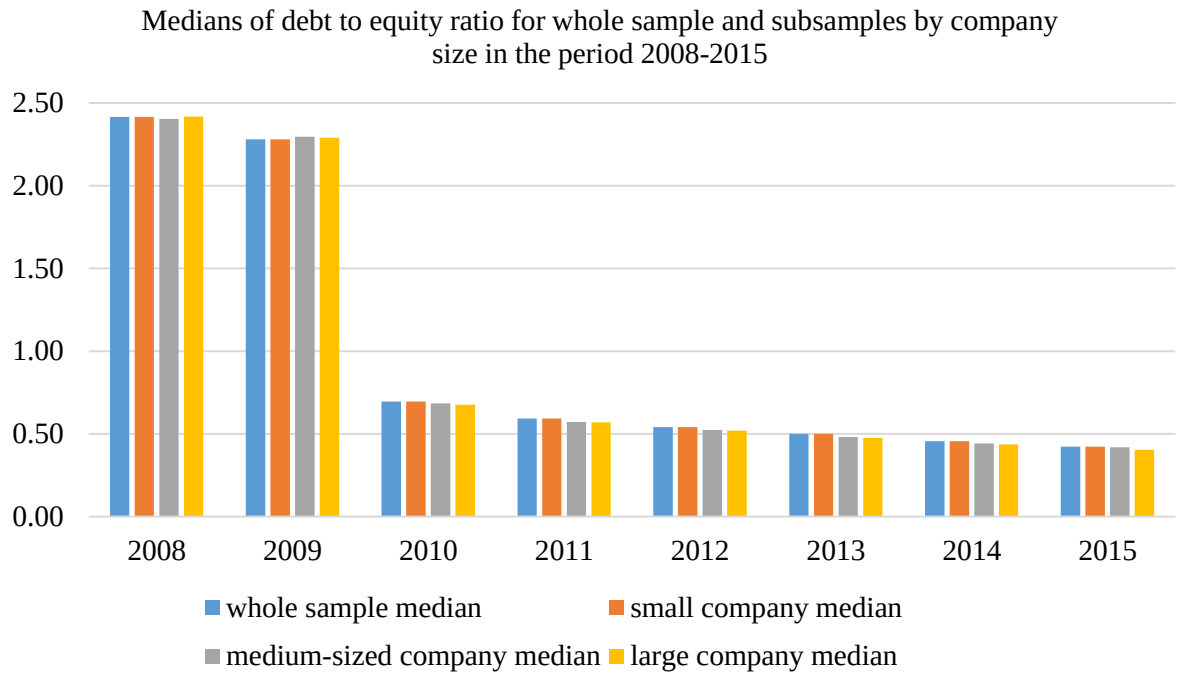



*Figure 5: Medians of debt to equity ratio for whole sample and subsamples by company size in the period 2008-2015*
*(Source: Author's work according to (FINA, 2017) data)*

Looking at the capital structure in the context of the long-term debt ratio (Figure 6) and the long-term debt to equity ratio (Figure 7) it is clear that the median values of the latter for the entire sample and subsample of small companies in activity division G47 are zero throughout the whole observed period. This points out that the companies, medially observed, do not finance themselves by long-term debt in relation to the total long-term forms of financing and in relation to the equity respectively. The median values of the subject indicators for the subsamples of medium-sized companies range from 0.07 to 0.39 and from 0.00 to 0.51 respectively, and for the large companies from 0.20 to 0.35 and from 0.07 to 0, 50 respectively, with a general decreasing trend over time, which is more pronounced for the long-term debt to equity ratio than for long-term debt ratio. Respecting the standard values, ie conservative maximums of the long-term debt ratio (0.5) and the long-term debt to equity ratio (1:1), the state and movement of said medial values indicate that the analyzed companies are financed to a much lesser extent by long-term debts compared to equity financing. Accordingly, the existence of conservative capital structures, ie the conservative use of financial leverage, of companies in the activity division G47 can be stated. Given the more pronounced conservatism of small companies compared to medium-sized and large companies in this activity division, the capital structure, ie the use of financial leverage of small companies can be assessed as extremely conservative, and that of medium-sized and large companies as an extremely conservative to conservative. In addition, given the constant median values of long-term debt ratio and long-term debt to equity ratio in the observed period for the entire sample and for subsample of small companies, as well as quite stable values of latter for subsamples of medium-sized and large companies, it can be concluded that the capital structure in this activity division generally persists and as such it can be considered its potentially inherent characteristics. The latter also point out that the variability in the indicators of the overall vertical financial structure of passive, ie the debt ratio, the equity ratio and the debt to equity ratio, is likely predominantly determined by relative variability in the use of short-term debt.

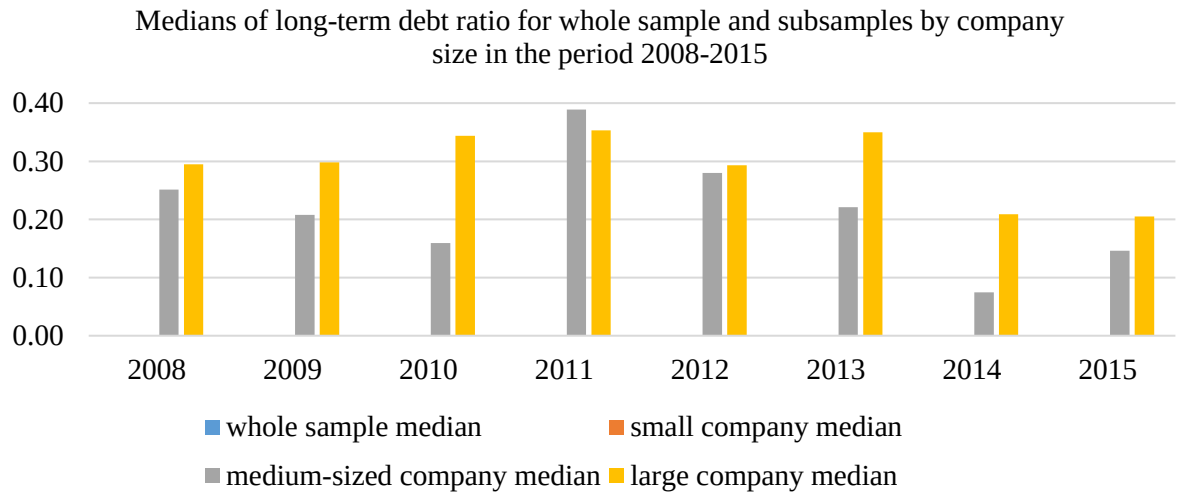



*Figure 6: Medians of long-term debt ratio for whole sample and subsamples by company size in the period 2008-2015*
*(Source: Author's work according to (FINA, 2017) data)*

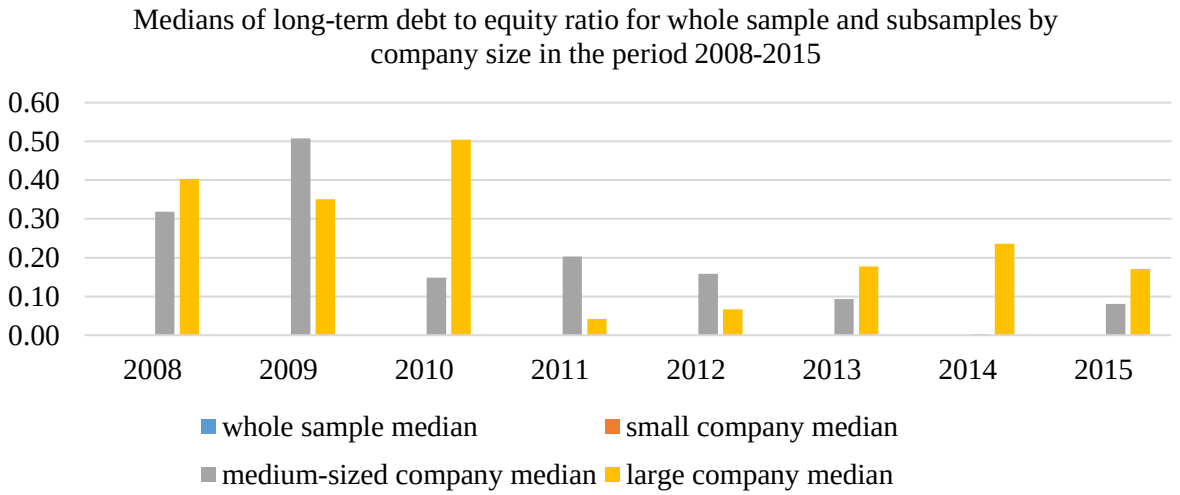



*Figure 7: Medians of long-term debt to equity ratio for whole sample and subsamples by company size in the period 2008-2015*
*(Source: Author's work according to (FINA, 2017) data)*

Taking into account the indications of company financing, based on the median values of the financial leverage index greater than 1 in the entire analyzed period and for all (sub)samples of companies, it can be concluded that for companies in activity division G47 is more profitable to finance with borrowed capital. However, given the identified continuity of decline of the median of the mentioned index in the observed period, the stated profitability is constantly weakening, ie for analyzed companies it pays less and less to finance by borrowing. In particular, the median value of the financial leverage index in the period from 2008 to 2015 falls for the whole sample, the subsample of small companies and the subsample of medium-sized companies from 2.63 to 1.19, and for the subsample of large companies from 2.64 to 1. 15 (in 2014) and 1.17 (in 2015), respectively. The negative trend of the median financial leverage index, which suggests a decreasing profitability of debt financing, potentially explains the trend of the debt to equity ratio in the direction of relatively increasing equity financing versus debt financing, ie financing by short-term and long-term liabilities.

The negative trend of the median leverage index, which suggests the decreasing profitability of using other people's sources of financing, potentially explains the trend of the ratio of (total) debt and equity in the direction of relatively increasing equity financing versus other people's financing, ie financing short-term and long-term liabilities.

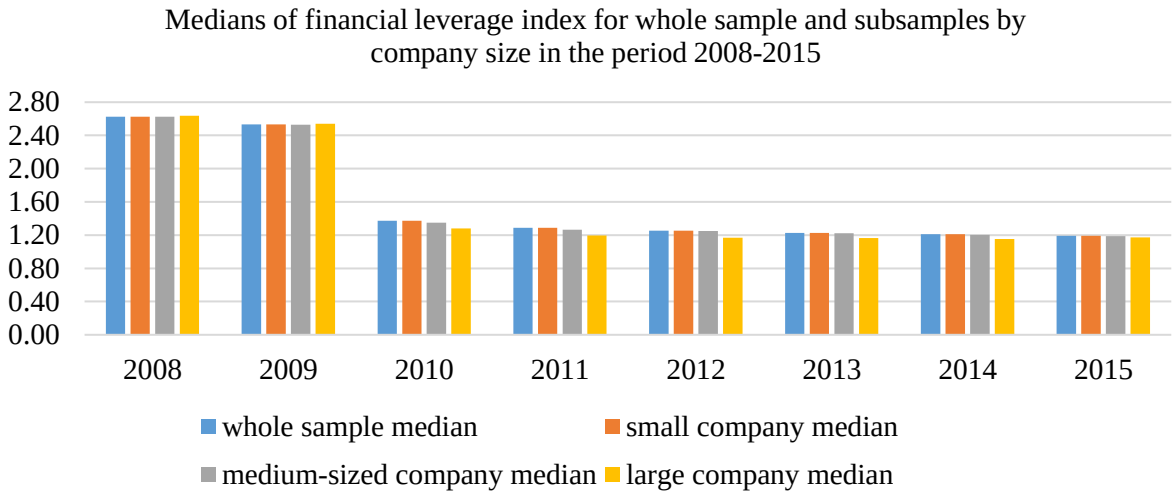



*Figure 8: Medians of financial leverage index for whole sample and subsamples by company size in the period 2008-2015*
*(Source: Author's work according to (FINA, 2017) data)*

**4.2. Results of horizontal financial structures analysis**

In the context of the horizontal financial structure, Figure 9 and Figure 10 show the movements of median of the coverage ratio l I and coverage ratio II, and Figure 11 and Figure 12 show movements of the median values of the current ratio and quick ratio of all companies in activity division G47, as well as of subsamples of companies by size, for period from 2008-2015. From the above figures it can be seen that the annual median values and trends of the coverage ratios I and II, and that of current ratio and quick ratio are independent of the (sub)samples of the companies throughout the observed period. Coverage ratios I and II demonstrate the movement of medial values in the range from 0.61 to 0.83 and from 1.04 to 1.26 respectively, for the whole sample and the subsample of small companies, with only slight differences for subsamples of medium-sized companies (from 0.60 to 0.83 and from 1.03 to 1.26, respectively) and large companies (from 0.59 to 0.82 and from 1.02 to 1.25, respectively). The medians of the current ratio and the quick ratio in the observed period for the whole sample and subsample of small companies range between 1.01 and 1.07 and between 0.44 and 0.50, respectively, for the subsample of medium-sized companies between 1.11 and 1.28 and between 0.51 and 0.60, respectively, and for the subsample of large companies between 0.75 and 1.02 and between 0.33 and 0.50, respectively. The trends of all four indicators have an U-shape, which is more pronounced for the coverage ratios than for the current ratio and the quick ratio. In more detail, the trends of coverage levels are characterized by degressions to and reaching the minimum of annual medians in 2012 and progression and reaching the maximum of the same in 2015 and 2008, respectively. Median values of coverage ratio I show that 50% of companies in activity division G47 in the whole reference period finance their fixed assets mainly by equity. In addition to the previous, the median values of the coverage ratio II throughout the entire period indicate that 50% of the companies in the activity division G47 realize a surplus of net working capital, ie short-term assets financed long-term. The medians of the current ratio and the quick ratio, as a kind of norms of the horizontal financial structure, confirm the results of the coverage ratios, further shedding light on the connection between the parts of active and passive.

These suggest that medially observed relatively small part of current assets are financed from quality long-term sources of finance, ie that inventories as opportunely determined permanent part of current assets are mostly financed from short-term sources, and only to a lesser extent from quality long-term sources. Given the preference for the coverage ratio I to be as close as possible to the value of 1, and the coverage ratio II to be more than 1 (Žager et al., 2008), it can be stated that the medial coverage of fixed assets with equity (coverage ratio I) and with equity increased by long-term liabilities (coverage ratio II) is satisfactory in the entire observed period. However, respecting the reference frame that current ratio is at least 2 and quick ratio is at least 1, medians of current ratio and quick ratio achieved achieved at levels below the reference, reveal that the horizontal financial structures of companies in the activity division G47 do not follow golden rules of financing. In other words, medially observed, the horizontal financial structures, ie working capital management strategies, of the companies in question can be characterized as relatively aggressive. The stated aggressiveness is most pronounced for a large companies, followed by small companies, and finally medium-sized companies.

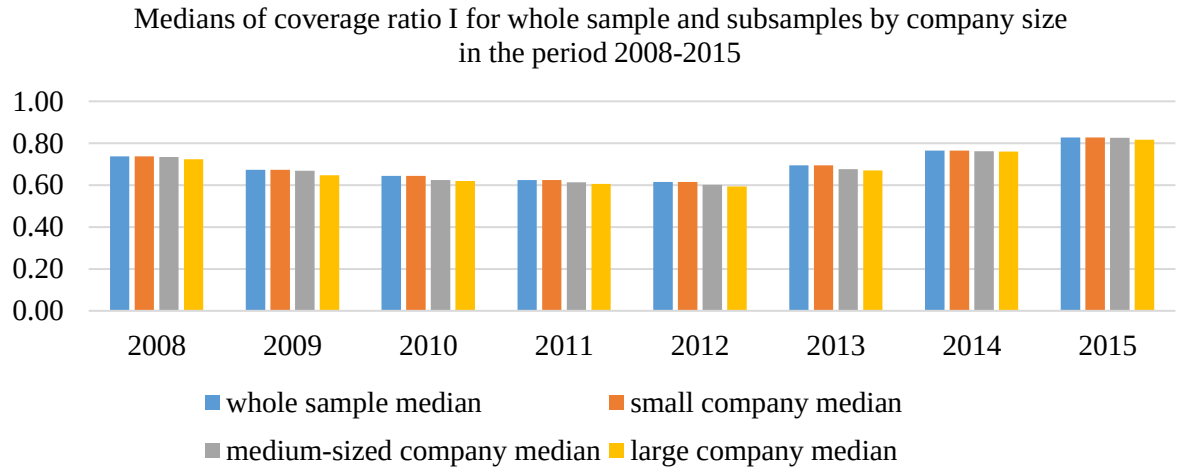



*Figure 9: Medians of coverage ratio I for whole sample and subsamples by company size in the period 2008-2015*
*(Source: Author's work according to (FINA, 2017) data)*

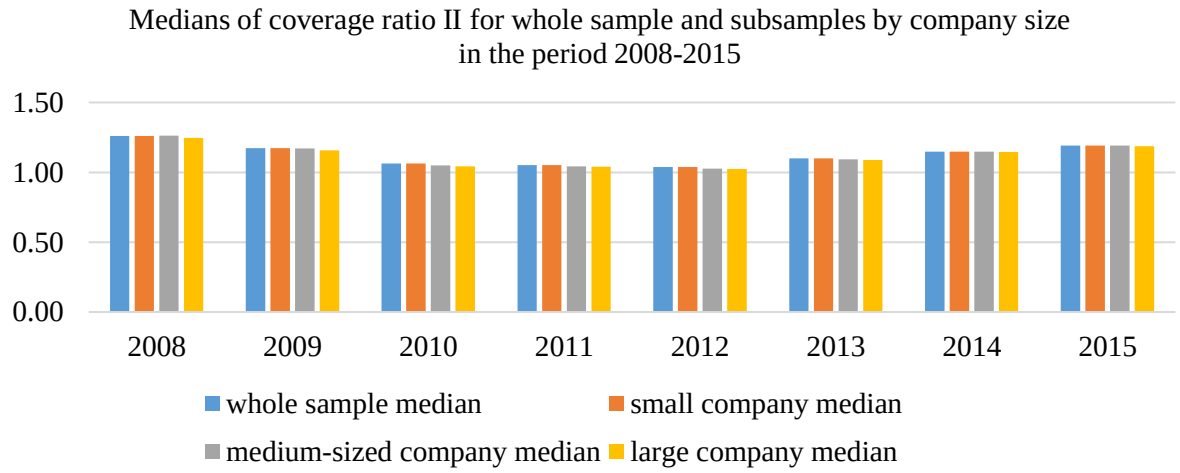



*Figure 10: Medians of coverage ratio II for whole sample and subsamples by company size in the period 2008-2015*
*(Source: Author's work according to (FINA, 2017) data)*

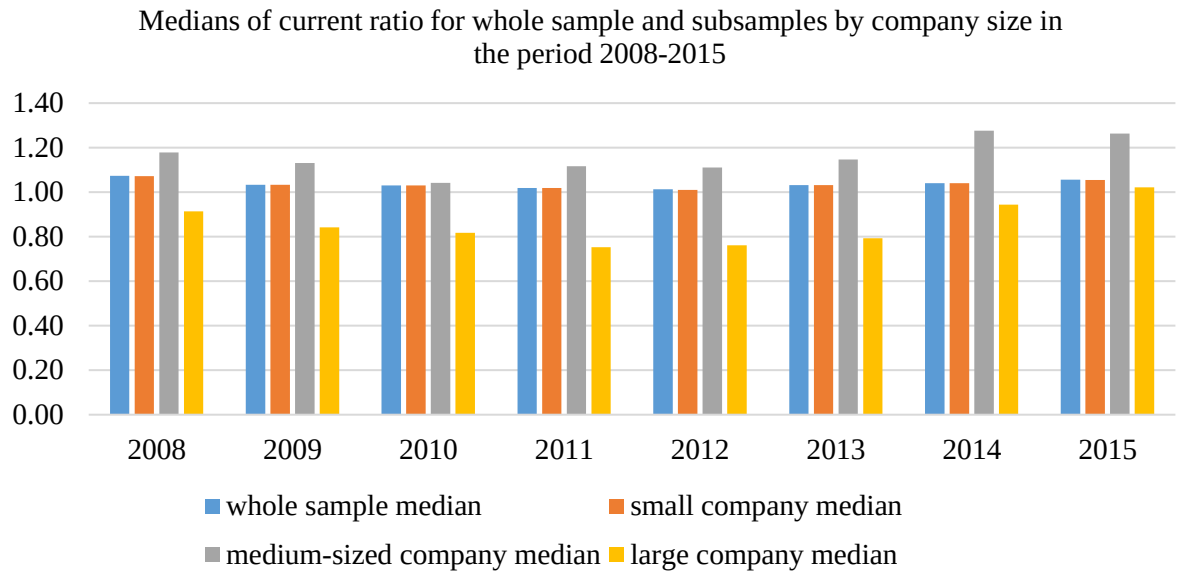



*Figure 11: Medians of current ratio for whole sample and subsamples by company size in the period 2008-2015*
*(Source: Author's work according to (FINA, 2017) data)*

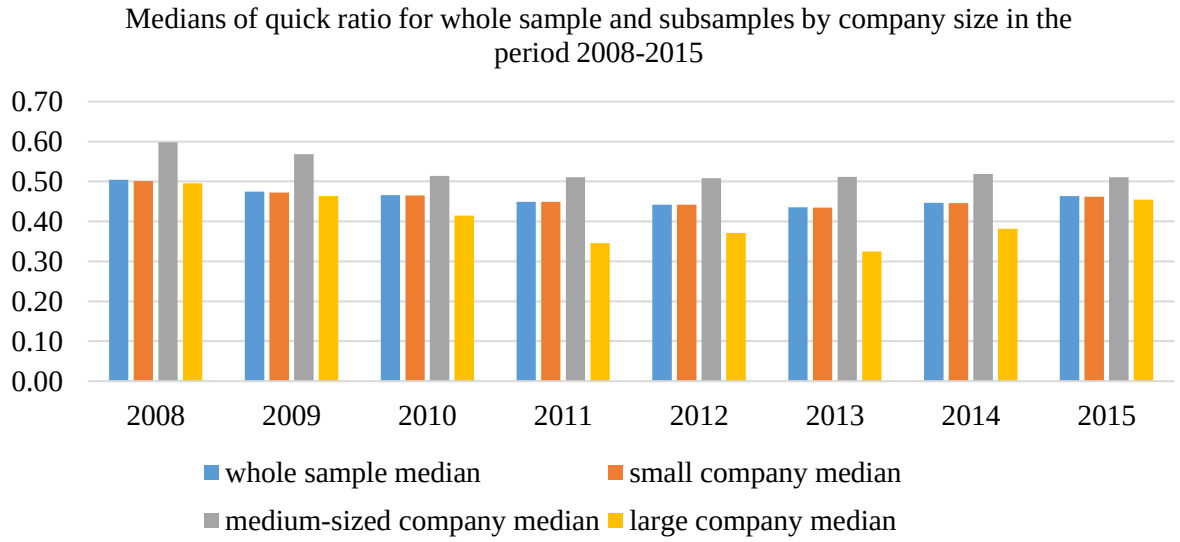



*Figure 12: Medians of quick ratio for whole sample and subsamples by company size in the period 2008-2015*
*(Source: Author's work according to (FINA, 2017) data)*

### 4.3. Results of probability of financial distress analysis

As shown in Figure 13, the median values of the Altman z-score (whole sample and subsample of small companies: 0.35–1.15; subsample of medium-sized companies: 0.32–0.15; subsample of large companies: 0, 01-1,12) ) in all observed years and for all companies in general as well as for individual subsamples of companies according to ther size warn of the danger of bankruptcy or classify companies in the gray zone, which is characterized by the attribute that the companies in the same are neither stable nor on the verge of bankruptcy. Despite the identified dangers of financial difficulties, ie bankruptcy, median values of Altman's z-score point to a positive trend at the end of the observed period.

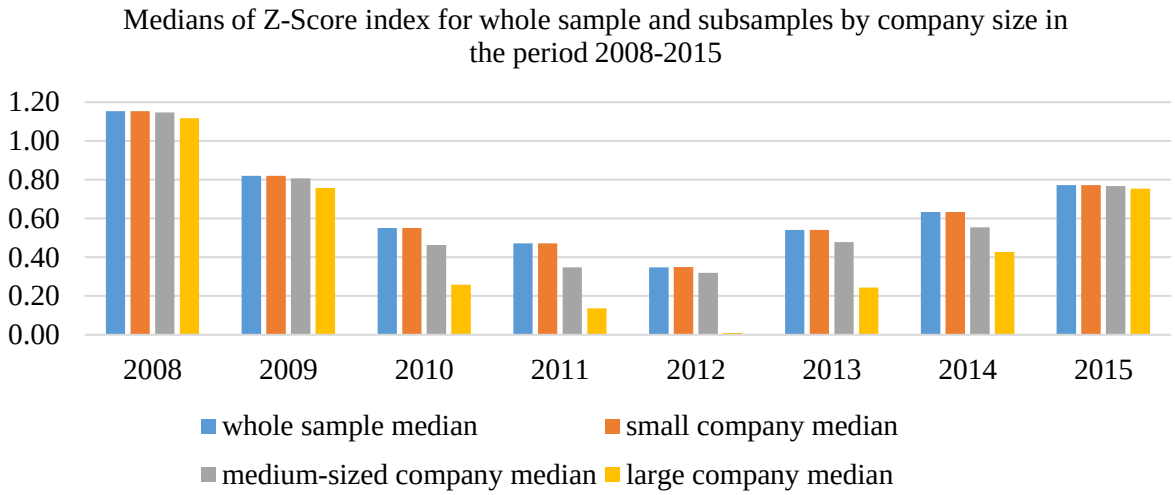



*Figure 13: Medians of Z-Score for whole sample and subsamples by company size in the period 2008-2015*
*(Source: Author's work according to (FINA, 2017) data)*

## 5. DISCUSSION AND CONCLUSION

Conclusion of the analysis of financial structures of companies in the retail trade, except trade in motor vehicles and motorcycles in the Republic of Croatia in the period 2008-2015 it can be synthesized from the aspect of the overall vertical financial structure of passive, from the aspect of the vertical financial structure of the part of the passive, specifically its long-term part, ie the capital structure, and in the context of the horizontal financial structure. Additionally, based on the determined probability of financial distress, their adequacy is potentially assessed. Through the prism of the overall vertical financial structure of passive, and based on the debt ratio, equity ratio and the debt to equity ratio, a high level of total company indebtedness is determined with a decreasing trend from the middle of the period, and in the context of debt to equity ration, in continuity from the beginning of the period The increase in the conservatism of overall vertical financial structures of passcive can potentially be provoked by a decrease in productivity and an increase in market power in the relevant activity division in the observed period. In a narrower sense, based on the long-term debt ratio and the long-term debt to equity ratio, it can be stated the existence of a, medially observed, relatively conservative capital structure in which the share of equity dominates over the share of long-term debt. In other words, a relatively low intensity of the use of financial leverage is identified, accentuated, according to the financial leverage index, by the fact of reducing its profitability in the analyzed period. Given the more pronounced conservatism of small companies compared to medium-sized and large companies in this activity division, the capital structure, ie the use of financial leverage of small companies can be assessed as extremely conservative, and those of medium-sized companies and large companies as extremely conservative to conservative. Also, the persistence of the identified capital structure throughout the observed period is evident, which is why it can potentially be considered an inherent characteristic of the relevant division of activity. This also indicates that the variability in the indicators of the overall vertical financial structure of the passive is obviously dominantly potentiated by the relative variability in short-term debt financing. In the context of horizontal financial structure, despite the identified marginally satisfactory coverage ratios, based on the current ratio and the quick ratio, it is determined that the horizontal financial structures of companies in the activity division G47 do not follow the golden rules of financing. In other words, medially observed, the horizontal financial structures, ie working capital management strategies, of the companies in question can be characterized as relatively aggressive.

The stated aggressiveness is most pronounced for a large companies, followed by small companies, and finally medium-sized companies. Finally, although generally unfavorable, the indicator of probability of financial distress show a positive trend from the middle of the period, which, without further analysis, can be roughly provoked by the adequacy of financial structures of companies in retail trade, except of motor vehicles and motorcycles.

**LITERATURE:**

1. Bogdan, S., Bareša, S. & Hađina, V., (2019). Testiranje primjenjivosti Altmanovog Z-score modela za predviđanje stečaja u Republici Hrvatskoj. *Notitia - časopis za ekonomske, poslovne i društvene teme*, 5.
2. Brigham, E.F. & Ehrhardt, M.C., (2011). *Financial Management: Theory and Practice* 13th ed., Mason, OH: South-Western Cengage Learning.
3. Burtchett, F.F. & Hicks, C.M., (1948). *Corporation Finance* H. and B. Publishers, ed., New York.
4. FINA, (2017). Baza podataka FINA-e.
5. Kovačević, Z. & Vuković, K., (2006). Performanse poduzeća u hrvatskom sektoru informacijsko-komunikacijske tehnologije (ICT). *Ekonomska misao i praksa*, 15(2), pp.217–240.
6. Martin, J.D., Keown, A.J., Petty, W.D. & Scott, D.F., (1974). *Basic Financial Management*, New Jersey: Prentice Hall, Inc, Englewood Cliffs.
7. Orsag, S., (2015). *Poslovne financije* S. Andrašić, ed., Zagreb: Avantis: Hrvatska udruga financijskih analitičara.
8. Orsag, S., (2018). *Vrijednosni papiri*, Sarajevo: Revicon d.o.o.
9. Tipurić, D., Kolaković, M. & Dumičić, K., (2002). Istraživanje promjena u koncentraciji hrvatske bankarske industrije 1993.-2000. *Ekonomski pregled*, 53(5–6), pp.470–494.
10. Vlada Republike Hrvatske, (2020). *Zakon o računovodstvu*, Republika Hrvatska: https://www.zakon.hr/z/118/Zakon-o-ra%C4%8Dunovodstvu.
11. Žager, K., Mamić Sačer, I., Sever, S. & Žager, L., (2008). *Analiza financijskih izvještaja* 2nd ed., Zagreb: MASMEDIA.

# DO CAUSAL AND EFFECTUAL APPROACHES TO ENTREPRENEURSHIP EQUALLY DRIVE THE CREATION OF SOCIAL CAPITAL? A THEORETICAL EXAMINATION

**Mihaela Mikic**
*The Faculty of Economics & Business, University of Zagreb*
*Trg J.F. Kennedy 6, Zagreb, Croatia*
*mmikic@efzg.hr*

**Tin Horvatinovic**
*The Faculty of Economics & Business, University of Zagreb*
*Trg J.F. Kennedy 6, Zagreb, Croatia*
*thorvatinovic@net.efzg.hr*

**Martina Dronjak**
*IN2 d.o.o.*
*Josipa Marohnića 1/1, Zagreb, Croatia*
*dronjakmartina81@gmail.com*

***ABSTRACT***

*Social capital has been extensively studied in the past decades using various approaches applied to different conceptual levels. The importance of this concept in the scientific literature has grown because scholars recognized that it is, alongside physical and human capital, a vital resource for various economic actors. Despite it being highly studied in different social sciences, in example within economics, social capital has yet to be fully explored in entrepreneurship studies. In parallel to the development of the theory of social capital, a new view of the entrepreneurial process emerged in the last two decades and its recognition is still growing. This view is called effectuation and it proposes affordable loss, strategic alliances, exploitation of contingencies and controlling the future as principles that entrepreneurs comply. In contrast to this view stands causation, what can be called a textbook approach, which highlights the principles of expected returns, competitive analyses, exploitation of preexisting knowledge and prediction of the future. This study aims to answer the question which of these above-mentioned approaches is more contributive in the creation of social capital by utilizing a model of social capital developed in the management literature. In this model, social capital consists of three dimensions; structural, relational and cognitive. By examining an entrepreneur at an individual level, this study puts forward a proposition that entrepreneurs that adopt an effectual approach should have a more developed base of social capital than entrepreneurs that are using a causal approach. The proposition is empirically testable and future research is called for in order to validate or discredit it.*

***Keywords:*** *causation, effectuation, social capital*

## 1. INTRODUCTION

The concept of social capital has a long history dating back to the beginning of classical science texts and has become a popular research theme in recent decades (Akçomak, 2011) used in both developed and developing countries (Gannon and Roberts, 2020) as a solution of a diversified set of problems. According to classical economists, land, labor and physical capital were the only three assets that generate income and foster economic growth (Aghajanian, 2012). Becker (1962) pointed to the importance of human capital, that was also added to the previous mix. After physical and human capital, social capital has been introduced into economic analysis as a third and equally important type of capital that provides tools and training to enhance

productivity (Aghajanian, 2012). There are multiple benefits it can provide, among which are "influencing professional success, helping workers in the job search, facilitating the exchange of resources between units, stimulating innovation, intellectual capital creation and the efficiency of multidisciplinary teams, reducing the rotation of employees and support the creation of start-ups, and strengthening relations with suppliers, regional network production and inter-organizational learning" (Bueno et al., 2004). Putnam (2000) stated that the core idea of social capital theory is that social networks have value and that social contacts affect the productivity of individuals and groups just as physical and human capital do. What distinguishes social capital from the other two sorts is that it is a fragile, hardly transferable, less tangible resource embedded in the connections between actors (Akçomak, 2011). There have been a plethora of empirical studies on the formation of social capital in the context of societies and communities (Poder, 2011), but in the domain of entrepreneurship, there is more room for improvement. Meaning that although there have been studies that focus on social capital in the entrepreneurial context (e. g. Barr, 2000) and how it affects the formation of firms (Svendsen and Svendsen, 2004; Walker et al., 1997), this still not a completely understood. This study aims to move this area of entrepreneurial research forward by proposing a model of a new antecedent of social capital creation, namely effectuation. It can be said that effectuation and causation are two dominant entrepreneurial logics found in the literature today (Sarasvathy, 2001; Sarasvathy and Dew, 2005). By using and analyzing their postulates and processes a new proposition for further empirical examinations is put forward. Specifically, that entrepreneurs that predominantly use an effectual approach should have a more developed base of social capital. The remainder of the paper is structured as follows. The next section (2) displays various ways of defining social capital, section 3 builds up a theoretical basis for integrating an effectuation approach to social capital formation. The last section (4) provides the concluding remarks.

## 2. DEFINING SOCIAL CAPITAL

Social scientists have offered numerous definitions of social capital and categorized them by whether the focus was on the relationship between external stakeholders or the relationships characterized by the internal structure of an organization (Adler and Kwon, 2000). Table 1 displays definitions, listed chronologically, of social capital by a couple of influential authors in the field.

*Table following on the next page*

*Table 1: Definitions of social capital*

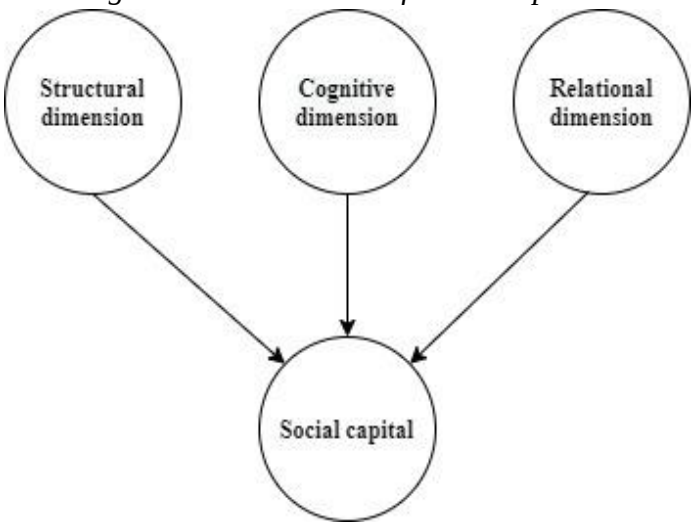
| **Authors** | **Definition** |
|---|---|
| Bourdieu (1986) | "The aggregate of the actual or potential resources which are linked to possession of a durable network of more or less institutionalized relationships of mutual acquaintance or recognition". |
| Baker (1990) | "Resource that stakeholders derive from specific social structure and then use to pursue their interests". |
| Coleman (1990) | "Social capital is defined by its function. It is not a single entity, but a variety of different entities consisting of some aspect of social structure or they enable certain actions of individuals who are within the structure". |
| Fukuyama (1995) | "The ability of people working together for common purpose in groups and organizations". |
| Putnam (1995) | "Features of social organization such as networks, norms and social trust that facilitate coordination and cooperation for mutual benefit". |
| Inglehart (1997) | "A culture of trust and tolerance". |
| Nahapiet and Ghoshal (1998) | "The sum of the actual and potential resources embedded within, available through, and derived from the network of relationships possessed by an individual or social unit. Social capital thus comprises both the network and the assets that may be mobilized through that network". |
| Portes (1998) | "The ability of stakeholders to secure benefits by virtue of membership in social networks or other social structures". |
| Ostrom (2000) | "The shared knowledge, understandings, norms, rules and expectations about patterns of interactions that groups of individuals bring to a recurrent activity". |
| Lin (2001) | "Resources embedded in social networks and accessed and used by stakeholders for actions. Thus, the concept has two important components: (1) it represents resources embedded in social relations rather than individuals, and (2) access and use of such resources reside with the actors". |

*Source: compilation from authors*

One can see, from the above-displayed definitions, that social capital is a multifaceted concept and that various points of view can be taken when examining it. One point of view, e. g. Baker (1990), focuses on external links between actors, while another view, e. g. Fukuyama (1995), emphasizes internal links between actors. The third approach, the one taken in this article, is more flexible than the previous two with regards to linkages between actors because it can be applied on examining internal of external links between actors (Adler and Kwon, 2002). Furthermore, since this article is concerned with the creation of firms, a definition of social capital is adopted that was devised to fit the context of firms. So, the definition by Nahapiet and Ghoshal (1998), as well as their overall approach, is utilized in this study. It is useful to mention that it is the most used approach in management research on the topic of social capital (Akçomak, 2011).

Their approach is compatible with a knowledge-based view of the firm and was built for the purpose of explaining how intellectual capital is created. They identify three dimensions of social capital: structural, cognitive and relational. This model is displayed in picture 1. Before examining these three dimensions, Nahapiet and Ghoshal (1998) approach needs to be clarified on one additional point. Even though their model can accompany both internal and external views of social capital, this does not mean that it is trying to integrate all definitions presented in table 1 into one all-encompassing definition. An explicit statement about this has been made by the authors in which they say that in their view social capital consists of the networks themselves and the resources that can be used from those networks. On this point they do not agree with some authors and their definitions given in table 1, for instance with Coleman (1990) because he only asserts the structure of networks as comprising social capital. By using a more elaborate view of social capital, their model is more in line with Putnam (1995) and Bourdieu (1986) (Nahapiet and Ghoshal, 1998).

*Figure 14: Dimensions of social capital*




*Source: Nahapiet and Ghoshal (1998)*

## 2.1. Structural dimension

The structural dimension of social capital is concerned with the structure of non-personal links (networks) between various actors on different levels (e. g. individual, group or organization). It looks at a network in its entirety and examines how actors can explore networks for successful actions (Nahapiet and Ghoshal, 1998). One can easily see that this dimension corresponds to the network dimension of other authors (e. g. Putnam, 1995), which is considered a crucial dimension of social capital (Adler and Kwon, 2000). This makes this dimension almost non-controversial in the formation of social capital. However, what facets of the structural dimension are conducive to creating value can be debated. Nahapiet and Ghoshal (1998) in their model include network ties (channels inside networks that are used for information distribution), network configurations (easiness of the flow of information impacted by density, connectivity, and hierarchy of the network) and appropriable organizations (degree of social capital transferability).

## 2.2. Relational dimension

While the structural dimension was primarily focused on positions of actors in networks and ways of the flow of information, the relation dimension seeks to investigate what conditions are conducive for the participation of economic actors. The relationships between actors are important in the sense that they enable them to create and leverage resources (Nahapiet and

Ghoshal, 1998). This dimension is another well-established aspect of social capital, however, multiple constituents fall under this category that are sometimes analyzed separately (Adler and Kwon, 2000). According to Nahapiet and Ghoshal (1998), the relational dimension consists of trust (willingness of actor participation), norms (reached consensus between actors), obligations (levels of commitment between actors) and identification (the degree to which an actor is to identify with other actors).

### 2.3. Cognitive dimension

The above two mentioned dimensions can be found, in some form, in most studies where defining social capital was one of the goals of the study. This is not the case with the cognitive dimension and it was a contribution to the literature that had its roots in management theory (Nahapiet and Ghoshal, 1998). The cognitive dimension can fall under the concept of beliefs (Adler and Kwon, 2000) where mutual understanding and shared meaning plays a vital role in enhancing communication between economic actors. Shared codes and language (gain access to information by mutual understanding) and shared narratives (gain access to information through stories and metaphors) constitute the cognitive dimension (Nahapiet and Ghoshal, 1998). Having described them, the question becomes what are the antecedents of these dimensions of social capital? In other, what sets the conditions for social capital creation using the model proposed by Nahapiet and Ghoshal (1998)? One possible answer the authors themselves give in a possible feedback effect of intellectual capital. In other words, social capital creates intellectual capital which then creates social capital. This study develops a new model where effectuation affects social capital creation more than the causation approach. In the next chapter, the rationale for this model is displayed.

## 3. INTEGRATING ENTREPRENEURIAL LOGIGS WITH SOCIAL CAPITAL

Causation and effectuation are two dominant underlying logics that govern the actions of entrepreneurs. However, they are opposite from one another in their overall approach and underlying principles (Sarasvathy, 2001). In using a causation approach, the entrepreneur starts with an effect that is desired and gathers resources to achieve that predetermined effect. Four principles are in the background guiding this process, namely expected returns, competitive analysis, exploitation of preexisting knowledge and controlling an unpredictable future (Sarasvathy, 2001). This means that entrepreneurs use profit maximization methods to evaluate future predictions in a venture where current knowledge is the base of competitive advantage that is mostly maintained by analyzing and outperforming the competition in the already existing market. Expressed as a process, an entrepreneur first identifies a business opportunity then develops a (business) plan to exploit the opportunity by working out and creating a solution for the found market needs which is possible through resource acquisition procedures (Fisher, 2012). In contrast, with an effectual approach, an entrepreneur starts with resources that are at his disposal (his personal characteristics) to narrow down and determine the desired effect. As was with causation, four principles are key in effectuation. These four are affordable loss, strategic alliances, exploitation of contingencies and controlling an unpredictable future (Sarasvathy, 2001). Therefore, by concentrating on features of the future that are under the control of the entrepreneur, he/she is able to create a business opportunity by using other firms as allies in developing products and/or services through experimentation where affordable loss is the guiding method and where unexpected events are not trying to be avoided. In the process view, an entrepreneur makes a list of things he/she can do which is a result of personal examination. Then he/she interacts with people in their surroundings to create stakeholder commitments, out of which new means and goals flow ultimately leading to the creation of a new market (Sarasvathy and Dew, 2005). These approaches can be applied at the individual level and the level of the firm, the same as was the case in the model developed by Nahapiet

and Ghoshal (1998). In this study, the individual level is chosen, or more specifically the focus is what has occurred once the pre-venture phase is completed. In other words, when the firm is founded do levels of social capital vary between entrepreneurs that predominantly utilized a more causal approach and entrepreneurs that predominantly utilized a more effectual approach? From the examination of the theoretical postulates of both causation and effectuation approaches to entrepreneurship reasons can be given for the expectation that if an entrepreneur uses a more effectual approach he/she will have higher levels of social capital at the moment that the firm is founded. Firstly, adopting an effectual approach is more in line with the first dimension of social capital (Nahapiet and Ghoshal, 1998), that is the structural dimension. This dimension looks at the network in its entirety. An effectual entrepreneur should have a more developed network of individuals and/or firms since he/she is actively trying to collaborate with them to narrow down the characteristics of the product and/or service. Sarasvathy (2001) stated that the firm, when established, is just a residual of network creation. This is not to say that the causal entrepreneur does not create a network of stakeholders because he/she does. But relative to the effectual entrepreneur, the causal entrepreneur does not emphasize network creation as much. Secondly, improving the relational dimension of social capital is more compatible with an effectual view. Although there are multiple facets of the relational dimension, here the focus is on trust. Commitments between entrepreneurs with a more effectual approach and the partners are more likely to be based on trust (Reymen et al., 2015). Furthermore, it seems that effectual entrepreneurs even tend to over-trust (Goel and Karri, 2006). Therefore, an effectual approach is more congruent with the relation dimension. Finally, the cognitive dimension of social capital needs to be addressed. Again, this dimension is more in line with effectuation. However, the theoretical principles of this dimension have not been explored or empirically tested within the causation-effectuation framework. Nevertheless, it is possible to infer from the mentioned process of effectuation that the entrepreneur is trying to establish a community where members are aligned to achieve similar purposes. Communities are built upon, among other things, a common language and understanding (Prusak and Lesser, 2004). So, when a community in the business context is observed, it is likely that it is established on effectuation principles. In order to maintain that community, shared language and meaning are vital. As a result, an entrepreneur that used a more effectual approach is more likely to have shared language and meaning with others in the community, concepts that are facets of the cognitive dimension. In accordance with all of the above mentioned, a detailed proposition is put forward.

*Proposition: entrepreneurs that dominantly employ an effectual approach in the process of creating a firm will have higher levels of social capital at the time the firm is founded in comparison to entrepreneurs that dominantly adopt a more causal approach in the process of creating a firm.*

## 4. CONCLUSION

Social capital is a rich and broad concept that has been studied for decades in many different contexts. However, in its entirety, it is yet to be fully explored in an entrepreneurship setting. This study aims to push the research forward by postulating a theoretical model by means of synthesizing social capital with two dominant entrepreneurial logics, causation and effectuation. By comparing the three dimensions of social capital in the model developed by Nahapiet and Ghoshal (1998) with the principles and processes of causation and effectuation, a proposition was made that entrepreneurs that are more effectually oriented should have higher levels of social capital at the point that the firm is established. This a theoretical proposition and a call for future studies to empirically investigate. In addition to empirical testing, future studies could further strengthen the proposed model of this study by associating the principles and processes of causation and effectuation with all the facets listed in Nahapiet and Ghoshal

(1998). The reason is that currently there does not exist a strong enough basis for connecting all the facets of the three dimensions of social capital with both causal and effectual approaches to entrepreneurship. When new findings regarding this topic emerge in the literature, future studies could incorporate them into the theoretical basis of this study. These theoretical considerations, with addition to empirical testing, could improve our understanding of social capital creation in an entrepreneurial framework and open the doors for other interesting avenues of research.

**LITERATURE:**

1. Adler, P. and Kwon, S.-W. (2000). Social capital: The good, the bad, and the ugly. In: Lesser, E. (Ed.), *Knowledge and Social Capital: Foundations and Applications*. Boston: Butterworth-Heinemann, pp. 89-115.
2. Adler, P. and Kwon, S.-W. (2002). Social Capital: Prospects for a New Concept. *The Academy of Management Review*, 27(1), pp. 17-40.
3. Aghajanian, A. (2012). *Social Capital and Conflict*. HiCN Working Paper 134. Available at: https://www.researchgate.net/publication/235443868_Social_Capital_and_Conflict
4. Akçomak, S. (2011). Social Capital of Social Capital Researchers. *Review of Economics and Institutions*, 2(2), pp. 1-28.
5. Baker, W. (1990). Market Networks and Corporate Behavior. *American Journal of Sociology*, 96(3), pp. 589-625.
6. Barr, A. (2000). Social capital and technical information flows in the Ghanaian manufacturing sector. *Oxford Economic Papers*, 52(3), pp. 539-559.
7. Becker, G. (1962). Investment in Human Capital: A Theoretical Analysis. *Journal of Political Economy*, 70(5), pp. 9-49.
8. Bourdieu, P. (1986). The forms of capital. In: Richardson, J.G. (Ed.), *Handbook of Theory and Research for the Sociology of Education*. New York: Greenwood Press, pp. 241-258.
9. Bueno, E., Salmador, M. and Rodríguez, Ó. (2004). The role of social capital in today's economy: Empirical evidence and proposal of a new model of intellectual capital. *Journal of Intellectual Capital*, 5(4), pp. 556-574.
10. Coleman, J. (1990). *Foundations of social theory*. Cambridge: Harvard University Press.
11. Fisher, G. (2012). Effectuation, Causation, and Bricolage: A Behavioral Comparison of Emerging Theories in Entrepreneurship Research. *Entrepreneurship Theory and Practice*, 36(5), pp. 1019-1051.
12. Fukuyama, F. (1995). Social Capital and the Global Economy. *Foreign Affairs*, 74(5), pp. 89-103.
13. Gannon, B. and Roberts, J. (2020). Social capital: exploring the theory and empirical divide. *Empirical Economics*, 58(3), pp. 899-919.
14. Goel, S. and Karri, R. (2006). Entrepreneurs, Effectual Logic, and Over-Trust. *Entrepreneurship Theory and Practice*, 30(4), pp. 477-493.
15. Inglehart, R. (1997). *Modernization and postmodernization: cultural, economic, and political change in 43 societies*. Princeton: Princeton University Press.
16. Prusak, L. and Lesser, E. (2004). How to invest in social capital. *Harvard business review*, 79(6), pp. 86-93.
17. Lin, N. (2001). *Social capital: a theory of social structure and action*. New York: Cambridge University Press.
18. Nahapiet, J. and Ghoshal, S. (1998). Social Capital, Intellectual Capital, and the Organizational Advantage. *Academy of Management Review* 23(2), pp. 242-266.
19. Ostrom, E. (2000). Social Capital: A Fad or a Fundamental Concept. In: Dasgupta, P., Serageldin, I. and Weltbank (Eds.), *Social Capital: A Multifaceted Perspective*. Washington: World Bank, pp. 172-214.

20. Poder, T. (2011). What is Really Social Capital? A Critical Review. *The American Sociologist*, 42(2), pp. 341-367.
21. Portes, A. (1998). Social Capital: Its Origins and Applications in Modern Sociology. *Annual Review of Sociology*, 24(1), pp. 1-24.
22. Putnam, R. (2000). *Bowling alone: the collapse and revival of American community*. New York: Simon & Schuster.
23. Putnam, R. (1995). Bowling Alone: America's Declining Social Capital. *Journal of Democracy*, 6(1), pp. 65-78.
24. Reymen, I., Andries, P., Berends, H., Mauer, R., Stephan, U. and van Burg, E. (2015). Understanding Dynamics of Strategic Decision Making in Venture Creation: A Process Study of Effectuation and Causation. *Strategic Entrepreneurship Journal*, 9(4), pp. 351-379.
25. Sarasvathy, S. (2001). Causation and Effectuation: Toward a Theoretical Shift from Economic Inevitability to Entrepreneurial Contingency. *Academy of Management Review* 26(2), pp. 243-263.
26. Sarasvathy, S. and Dew, N. (2005). New market creation through transformation. *Journal of Evolutionary Economics*, 15(5), pp. 533-565.
27. Svendsen, G. and Svendsen, G. (2004). *The creation and destruction of social capital: entrepreneurship, co-operative movements, and institutions*. Cheltenham: Edward Elgar.
28. Walker, G., Kogut, B. and Shan, W. (1997). Social Capital, Structural Holes and the Formation of an Industry Network. *Organization Science*, 8(2), pp. 109-125.

# JOB SEARCH - INFORMATION ON POSSIBILITIES OF JOB APPLICATION IN THE ENVIRONMENT OF MARGINALIZED ROMA COMMUNITIES IN SLOVAKIA

**Erik Satara**
*Constantine the Philosopher University in Nitra, Faculty of Social Sciences and Health Care, Institute of Romological Studies, Kraskova 1, 981 01 Nitra, Slovakia*
*erik.satara@ukf.sk*

**Jurina Rusnakova**
*Constantine the Philosopher University in Nitra, Faculty of Social Sciences and Health Care, Institute of Romological Studies, Kraskova 1, 981 01 Nitra, Slovakia*
*jrusnakova@ukf.sk*

**Lydia Gabcova**
*Constantine the Philosopher University in Nitra, Faculty of Social Sciences and Health Care, Institute of Romological Studies, Kraskova 1, 981 01 Nitra, Slovakia*
*lydia.gabcova@ukf.sk*

***ABSTRACT***
*The high unemployment rate of Roma in Slovakia, which according to the European Union Agency for Fundamental Rights (2016) is three times higher than the unemployment rate of the majority population, is also related to the possibilities of Roma to search for information about free job vacancies. Several studies show that people living in social exclusion have limited access to social networks outside their immediate circle. This can have serious consequences, as networks connecting different "social worlds" are important means by which people find a good job. We will look at the issue from the point of view of theories of social exclusion and social networks. The aim of our contribution is to show from what sources marginalized Roma draw information about job opportunities. We will look at the issue from the point of view of theories of social exclusion and social networks. We obtained research data from the project APVV-17-0141 (questionnaire research) focused on barriers affecting the employment of residents from marginalized Roma communities. A total of n = 677 respondents participated in the research, number n = 222 (32,70%) out of the total of respondents were currently employed. As the important sources of information and opportunities about the employment possibilities in case of men and women from marginalised communities were identified social sources and municipality offices or directly employers. The category "known" was relatively low in the results of the mentioned research. In the context of the above mentioned theories, these findings are interesting because they can also be interpreted as that people in a marginalized (or spatially segregated) environment turn mainly to resources in their immediate vicinity, which may be unemployed without information about job opportunities. This fact is also a confirmation of the importance of the so-called formal resources.*
***Keywords:*** *Employment, Marginalized Roma communities, Social exclusion, Social networks*

## 1. INTRODUCTION

Citizens living in marginalized and segregated environments have limited access to social resources (Laurence, 2017) and live in isolation from wider society (Cantle, 2005). In such an environment, they have little opportunity to interact regularly outside their neighbourhood and community (Uslaner, 2012; Lichter, 2013), which reduces their ability to form social bonds beyond their close social environment (Semyonov, Glikman, 2009).In Slovakia, this phenomenon affects Roma, who are one of the largest national minorities.

A significant proportion of them live in so-called marginalised Roma communities, which are spatially separated from municipalities and towns (Mušinka et all., 2014; Rusnáková, Čerešníková, 2015).Roma living in a segregated environment have long been among the groups of slovak citizens most at risk of social exclusion, poverty and discrimination. Various forms of social exclusion of Roma are explained and empirical evidenced by a number of studies (e.g. Veselovská, Pirová, 2014; Marcinčinová, 2014; Rusnáková, Rochovská, 2016; Lajčáková et all., 2017), an important place in them is the exclusion from the labour market.For example, in EU research MIDIS II. only 20% of Slovak Roma declared any employment, the results of this survey show, among other things, a significant gender gap in male employment (26%) women (14%) (FRA, 2018). The nature of the segregated environment is created by labor market application strategies (Radičová, 2001), what jobs are available to residents of such communities, both in terms of qualifications but also in terms of stability and financial valuation (Hyde, 2006). Inequalities in the labor market between Roma and the rest of the population are also 'recognized' by the European Union and set strategic objectives for Roma inclusion – one of the four priority areas is employment. These objectives are contained in specific strategy papers – at EU level it is the newly published new strategic framework for equality, inclusion and Roma participation in the EU for 2020-2030.

## 2. JOB SEARCH THEORY

Finding suitable jobs takes time and effort for the individual, who must make a decision on how he or she will behave when looking for a job. The job search process can be explained by the job search theory (Berg, Uhlendorf, 2018), which says that finding work and the behavior of people looking for work is not a unidimensional construct (Hoye, 2017) but a dynamic gradual process in which individuals decide when to stop the process and under what conditions (Faggian, 2014). They use two types of resources to find work:

- exogenous working information networks, that is, the place where the individuals obtained employment information through the social structure in which they are located, and
- endogenous working information networks resulting from uncoordinated actions by the individual (Ioanmides, Loury, 2004).

The simpler distribution of sources of job information is formal, (employment agencies, advertising, television) and informal sources (recommendations, internet) (Sameen, 2016). Formal sources of information on jobs affect the use of public intermediaries (Hoye, 2017). Social networks, which are informal resources, are part of the environment in which households and individuals operate. The most basic element of social networks is, of course, the family, but in the context of work application there are essential contacts that connect the unemployed (or job seekers) with the working environment, work.). Socially excluded residents have very limited access to such social networks (Rochovská, 2011) and are reliant on formal resources. The use of informal sources of information is associated with better results, such as a high level of job security, while formal sources are linked to less advantageous offers. For example, research findings conducted in the banking space show that employees hired through informal sources indicated higher levels of job satisfaction, lower turnover and better work performance (Sameen, 2016).

### 2.1. Finding work through informal channels

A special section of literature is devoted to the process of finding work through networks of relationships and using so-called weak links (Mussida, Zanin, 2020; Brass, Borgatti, 2020). The power of weak social ties came to the fore mainly because of the work of Granovettera (1973), which explains it on the dissemination of information about vacancies. Ties in social networks are divided into strong and weak, with strong relationships especially with family and loved

ones, the important thing is that similar information flows in strong networks. Weak links (acquaintances, colleagues...) have the potential to bring a person information that is not within the circle of his loved ones, thus linking him to more distant social structures. Labor market studies say that the ability to activate weak links is only expediting for people with higher social status (Cappellari, Tatsiramos, 2015). The impact of the position and the environment in which the individual lives is reported, for example, by the socio-disintegratory theory. It argues that some of the features and characteristics that surround us in the neighbourhood (poverty, social exclusion, ethnic homogeneity, low levels of housing ownership, concentration of migrants) hinder the formation of social links, links from outside the neighbourhood appear particularly important (poor neighbourhood affected by segregation have weak social networks undersized) (Jambazovič, 2007; Rusnáková, Čerešníková 2015). Relying on family contacts can lead to a negative impact on employability in a segregated environment (Cappellari, Tatsiramos, 2015).

## 3. METHODS

Barriers to access to the labor market of marginalized Roma in Slovakia, with particular emphasis on exploring the sources of information used on job vacancies, map the currently ongoing research project (APVV - 17-0141), which also involves the author and author of this paper. In its subsequent sections, the first (as yet unpublished) results of the quantitative part of the research are presented. It was implemented in 2019 through a questionnaire that has reached 676 respondents so far (field research was interrupted b measures to prevent the coronavirus pandemic, it will continue once they will be released). The selection of the research file was subject to several criteria, firstly localization: field harvesting took place in marginalised communities, other criteria were demographic in nature (gender, age, labor status) and important was also ethic affiliation to the Roma national minority.

## 4. RESULTS

The unemployment rate of Roma in Europe is three times higher than the unemployment rate of the non-Roma population living in their vicinity (FRA, 2016), research also points to gender differences in employment (FRA, 2018). Of the total number of research respondents (n = 676), employment represent 32,70%, ie 222 people. Here, too, there is a significant difference in the employment rate of men and women (p <0,00001).

| | Men | | Women | | Total | |
|---|---|---|---|---|---|---|
| | n | % | n | % | n | % |
| Employed | 140 | *20,60* | 82 | *12,10* | 222 | *32,70* |
| Unemployed | 152 | *22,49* | 303 | *44,81* | 455 | *67,30* |
| Total | 292 | *43,09%* | 385 | *62,91* | 677 | *100,00%* |

*Table 1: The Roma employment level in the segregate environment (Source: Self creation)*

*The currently employed inhabitants of marginalized Roma communities were presented a list of possible resources used in their job search and they had to identifiy, which they used. Interestingly, even in this question, there is a significant difference between the answers of men and women, x2 = 63,064 (men), x2 = 37,16 (women), at p <0,01. We consider informal contacts - family, relatives (18,018%), friends, neighbors (16,667%) and the use of municipal services in the place of residence (17,116%) as statistically significant sources.*

*Table following on the next page*

| Employed – sources of information through which they were employed | Men | | Women | | Total | |
|---|---|---|---|---|---|---|
| | n | % | n | % | n | % |
| Through the Labour Office | 10 | *4,505* | 9 | *4,054* | 19 | *8,559* |
| Through the municipal office | 27 | *12,162* | 11 | *4,954* | 38 | *17,116* |
| Through field social workers | 2 | *0,900* | 4 | *1,802* | 6 | *2,702* |
| Through an employment agency | 1 | *0,451* | 7 | *3,153* | 8 | *3,604* |
| Through an NGO | 0 | *0* | 0 | *0* | 0 | *0* |
| Directly with the employer | 18 | *8,108* | 10 | *4,505* | 28 | *12,613* |
| Through advertising | 6 | *2,703* | 5 | *2,251* | 11 | *4,954* |
| Own advertisment | 1 | *0,451* | 0 | *0* | 1 | *0,451* |
| Through family, relatives | 22 | *9,910* | 15 | *6,756* | 37 | *16,666* |
| Through acquaintaces | 7 | *3,153* | 6 | *2,702* | 13 | *5,855* |
| Through friends, neighbors | 31 | *13,964* | 8 | *3,604* | 40 | *18,018* |
| Start the busines | 8 | *3,604* | 1 | *0,451* | 9 | *4,055* |
| Via Internete | 7 | *3,153* | 4 | *1,802* | 10 | *4,505* |
| Through school | 0 | *0* | 1 | *0,451* | 1 | *0,451* |
| I do not remember | 0 | *0* | 1 | *0,451* | 1 | *0,451* |
| **Total** | 140 | ***63,064*** | 82 | ***36,936*** | 222 | ***100*** |

*Table 2: Employees – sources of information which they were employed (Source: Self creation)*

From the point of view of the above theories, it is important to know what are the differences in information sources for residents living in a segregated environment compared to respondents living in ethnically mixed and spatially integrated neighborhoods. To put it simply, the Roma in Slovakia live in three types of housing in terms of the spatial relationship to the majority population. The first type is segregation, where the settlement of Roma is located at some distance from the village or town, the second type is a settlement located on the outskirts of the village or town and the third type is spatial integration (ie when Roma families live in ethnically mixed neighborhoods). According to the respondents, information from friends, neighbors (10,714%) and information obtained at the municipal office (5,714%) predominate among employed Roma men living in segregation. Roma men living on the outskirts of the municipality draw information from the municipal office (7,143%) and from employers (6,428%). Romani men living in spatial integration are dominated by informal sources - friends, neighbors (7,857%), family and relatives (7,143%).

*Figure following on the next page*

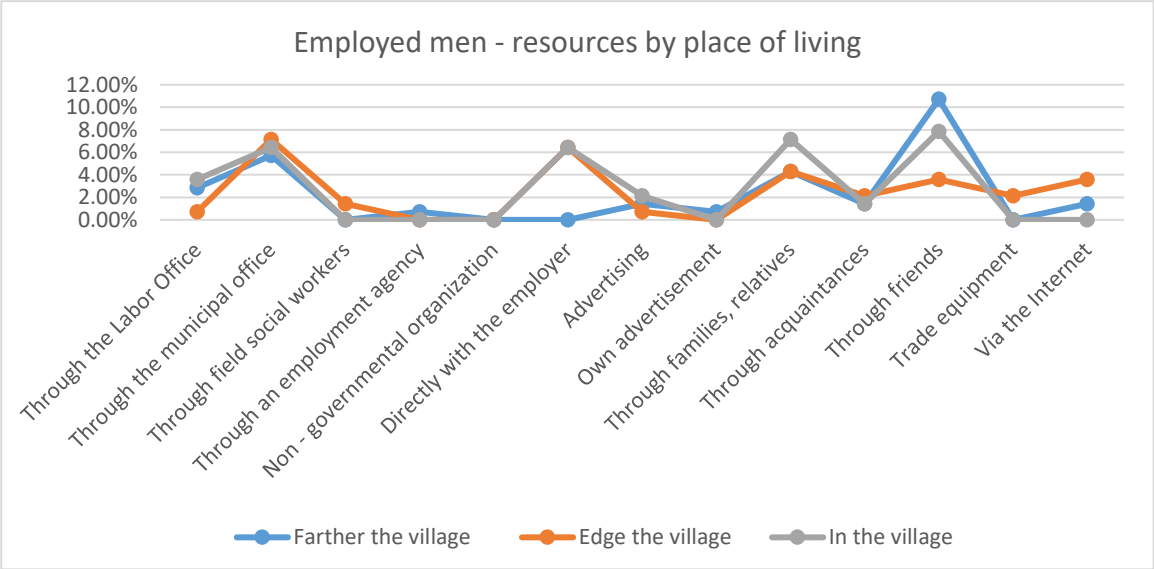



*Figure 1: Working men – resources by place of living*
*(Source: Self cration)*

Employed women from segregated Roma communities obtained information from the municipal office (9,756%), while women living on the outskirts of the municipality are dominated by informal sources - family, relatives (9,756%) and services of the state employment agency - Office of Labor, Social Affairs and Family - ÚPSVaR (7,317%). Roma women living directly in the village drew information from family, relatives (8,536%) and employers (8,536%).

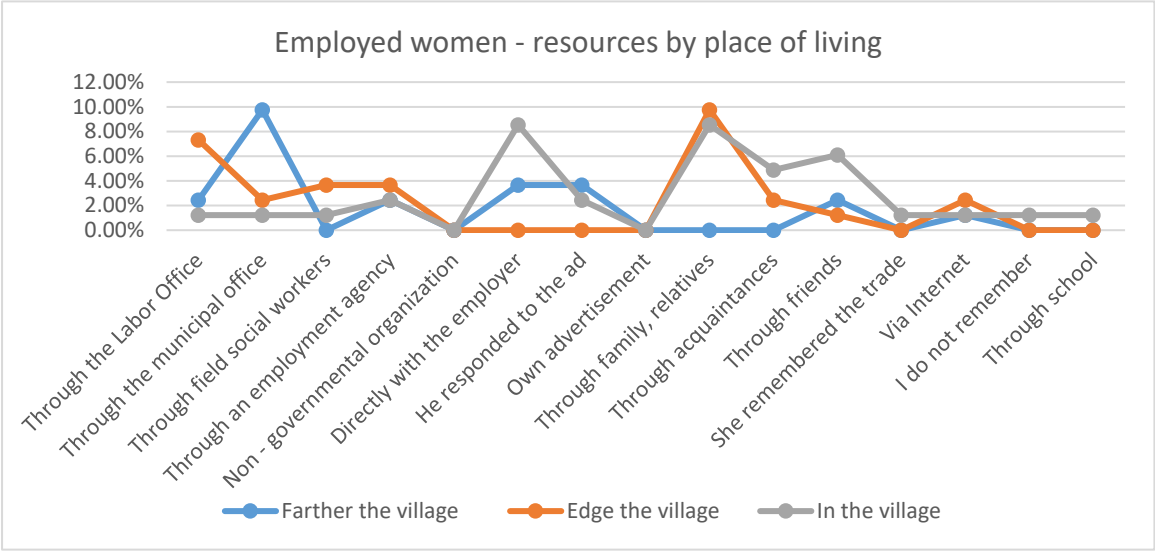



*Figure 2: Employed women – resources by place of living*
*(Source: Self creation)*

A similar question was presented to unemployed respondents in the research sample (n = 454), they could choose the sources of information according to their experience when looking for a job (they could use several options). Here, too, there was a significant difference between the choices of men and women, x2 = 63,064 (men), x2 = 37,16 (women) (p <0,01). Roma men and women from marginalized Roma communities use the services of the Labor Office of Social Affairs and the Family (21,214%), the municipal office in the place of residence (9,888%) and information obtained directly from employers (10,211%).

| Unemployed – sources of information through which they were lokin for work | Men | | Women | | Total | |
|---|---|---|---|---|---|---|
| | n | % | n | % | n | % |
| Throug the Labour Office | 53 | *8,453* | 80 | *12,761* | 133 | *21,214* |
| Through the municipal office | 25 | *3,987* | 37 | *5,901* | 62 | *9,888* |
| Through field social workers | 5 | *0,797* | 9 | *1,435* | 14 | *2,232* |
| Through an employment agency | 5 | *0,797* | 6 | *0,957* | 11 | *1,754* |
| Through an NGO | 0 | *0* | 0 | *0* | 0 | *0* |
| Directly with the employer | 26 | *4,147* | 38 | *6,061* | 64 | *10,208* |
| Through advertisting | 24 | *3,828* | 16 | *2,551* | 40 | *6,379* |
| Own advertisment | 4 | *0,638* | 0 | *0* | 4 | *0,638* |
| Through family, relatives | 9 | *1,435* | 10 | *1,595* | 19 | *3,030* |
| Through acquaitances | 22 | *3,509* | 10 | *1,595* | 32 | *5,104* |
| Through friends, neighbors | 20 | *3,190* | 13 | *2,073* | 33 | *5,263* |
| Started the busine | 0 | *0* | 0 | *0* | 0 | *0* |
| Via Internete | 4 | *0,638* | 4 | *0,638* | 8 | *1,276* |
| Personal information | 0 | *0* | 1 | *0,159* | 1 | *0,159* |
| The work was arranged by the mayor | 0 | *0* | 1 | *0,159* | 1 | *0,159* |
| Not applicable (not looking for a job) | 12 | *1,914* | 31 | *4,944* | 43 | *6,858* |
| No choice | 32 | *5,104* | 130 | *20,734* | 162 | *25,838* |
| **Total** | 241 | | 386 | | 627 | |

*Table 3: Unemployed – sources of information through which the sought work (Source: Self creation)*

In terms of the spatial relationship in housing, the state ÚPSVaR appears in all three men groups, for men living in segregation it was selected by 2,871% , for men living on the outskirts of municipalities it was 3,190% of selections and for unemployed men living in spatial integration 2,392% of selections.

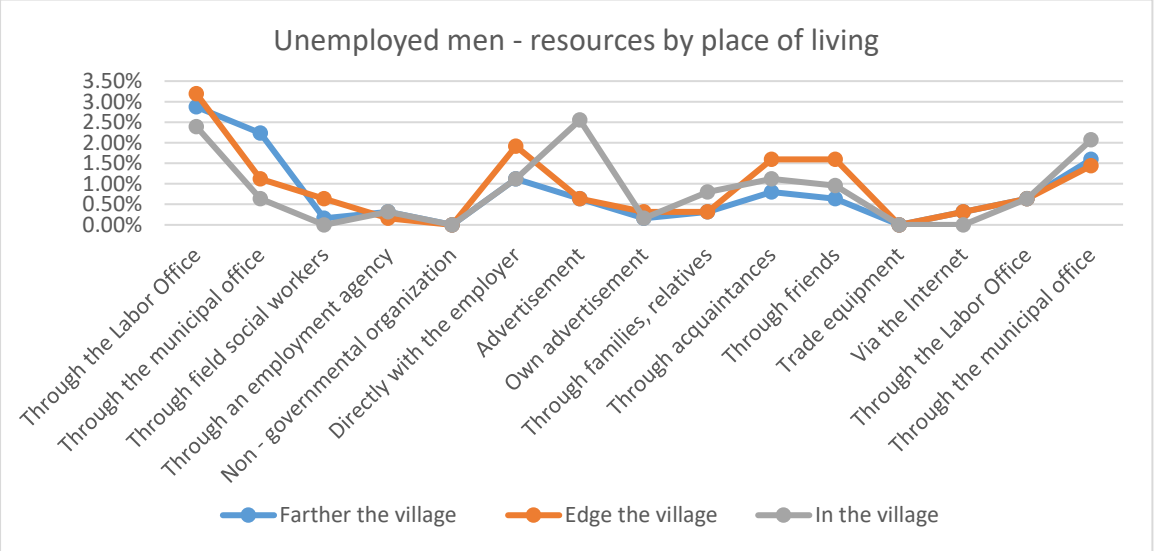



*Figure 3:Unemployed men – resources by place of living (Source: Self creation)*

For women, a relatively high percentage chose the "none" option, which probably means that they have not yet tried to find a job. The option “none” was selected by the most elections for women living in segregation (8,931%), then for women living in spatial integration (7,177%)

and living on the outskirts of municipalities (4,147%). Regardless of the location of residence, information from the Labor Office dominated among unemployed women. Women living in the village, city, still directly addressed employers (2,392%) and 2,073% responded to the advertisement.

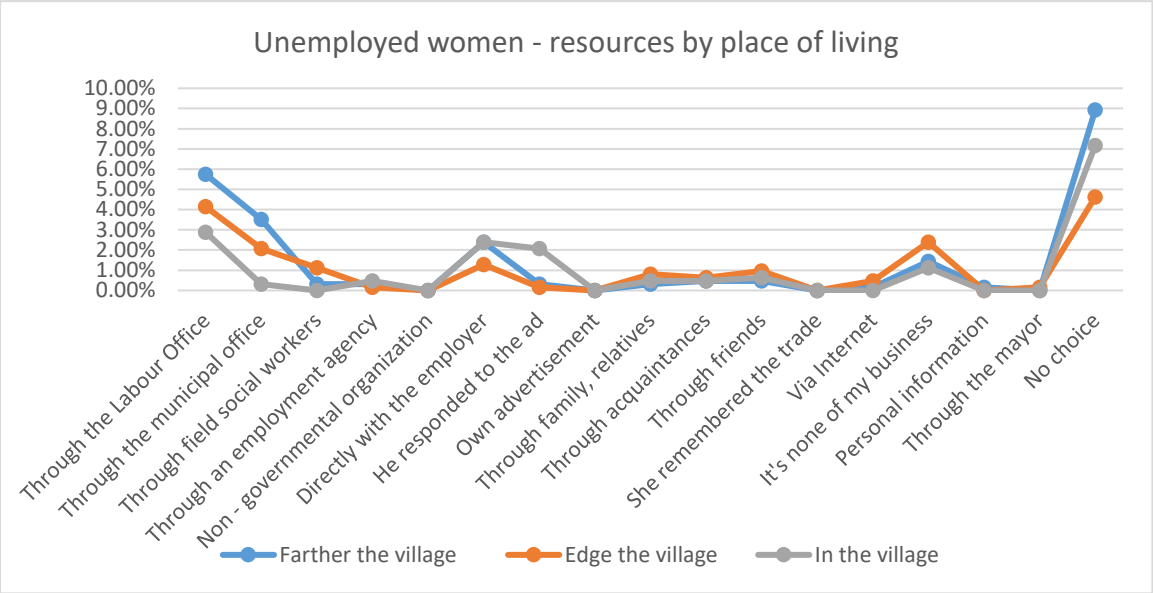



*Figure 4: Unemployed women – resources by place of living*
*(Source: Self creation)*

When comparing the most used resources in the groups of employed and unemployed respondents, we find interesting differences. Employed Roma used contacts of friends (18,018% to 5,263% for the unemployed) and families (16,667% for the employed to 3,030% for the unemployed) to a greater extent when looking for work. The unemployed turn more to the Labor, Social Affairs and Family Offices (21,214% for the unemployed and 8,558% for the employed). The data also point to gender differences, with employed men making more use of local government assistance (12,162%) than employed women (4,954%).

## 5. CONCLUSION

A characteristic feature of marginalized Roma communities is the high unemployment rate (Marčičinová, 2014; Veselovská, Pirová, 2014), in our case, 67,30% of respondents were unemployed during the survey.Poverty and social exclusion are associated with high levels of unemployment, which causes and multiplies barriers to the employment of Roma from the marginalized environment in the labor market and is the cause of the feeling of inferiority, which can also manifest itself in the job search process (Lajčáková et all., 2017). Research suggests that the worst situation is in that part of the population of marginalized communities living in spatial segregation. For example in the 2010 UNDP survey (UNDP 2012), the lowest employment rate was in segregated localities, but the survey also showed that the employment rate of Roma (regardless of where they live) is significantly lower than that of the majority population. The theory of segregation speaks of spatial concentration and social isolation, which are related to race, place and poverty (Garrido, 2020) and shows signs of multiple disadvantage. Living in communities and groups characterized by poverty and social exclusion is one of the key mechanisms for transmitting inequalities. Poor households and individuals living in poor localities with major social problems can find it very difficult to get out and escape poverty (Džambazovič, 2007). Among other disadvantages, they also have limited contact with the "world" outside their immediate neighborhood and their social networks are

highly homogeneous. Job search is a self-regulatory process (Motta Veiga et al., 2018), which summarizes the collection of data on job vacancies (Hoye, et al., 2009), so that sources of information on job opportunities, resp. availability of these resources. When looking for a suitable job, we use various formal and informal sources of information (Hoye et al., 2009) and ties with other social groups (outside the immediate circle of people) are particularly important. They are especially important in disadvantaged neighborhoods where extralocated ties can help in finding work; on the other hand, we know that poor neighborhoods affected by segregation and social exclusion have undersized social networks beyond the neighborhood (Džambazovič, 2007). In our article, we looked at where respondents (residents of marginalized Roma communities) get information about job vacancies. We divided the research group into three groups in terms of spatial location of housing in relation to the majority population: segregation (Roma neighborhood is located at a distance from the majority), on the outskirts (Roma neighborhood is located on the outskirts of the majority part of the municipality or city), spatial integration (Roma the neighborhood is located in the immediate vicinity of the majority or Roma families live in ethnically mixed neighborhoods). To some extent, we can state that the spatial relationship with the majority proved to be significant in terms of the type of source. Roma living in segregated localities to a greater extent turn to formal sources, specifically the state Office of Labor, Social Affairs and Family. It is also important to note that these respondents are probably less successful in finding work - at the time of the research they were more often unemployed. More rarely (compared to the group of Roma living in spatial integration with the majority) they turn to informal sources. Another interesting finding is that employed respondents (regardless of the location of housing) - ie successful residents in the labor market, turned to informal sources to a greater extent when looking for employment and, conversely, the unemployed used more the Office of Labor, Social Affairs and Family. From this point of view, this state office is proving to be less efficient in comparison with other used resources (informal sources, employers - advertisements, local governments). Gender has also proved to be an important indicator, women are less successful than men in the labor market and the unemployment rate is higher for women. Our findings will be further supported by further analysis, but they already seem to provide feedback on state support for job placement for marginalized groups (in which considerable funds are invested) and indicate to us which job search support strategies can be effective.

***ACKNOWLEDGEMENT:*** *This paper was created as part of the project UGA IX / 4/2020 Analysis of the conditions of labor mobility of the inhabitants of marginalized Roma communities and the project APVV - 17-0141 Analysis of access to employment opportunities for marginalized groups: Selected regions of Slovakia in socio-economic, geographical and socio-anthropological perspective.*

**LITERATURE:**

1. Berg, J. G., Uhlendorff, A. (2018). Economic Job Search and Decision-Making Models. In. Klehe, Ch-U. – Hoof, E. (2018). *The Oxford Handbook of Job Loss and Job Search.* Oxford: Oxford University Press, 2018. 615 p. Retrieved 28.10.2020 from https://books.google .sk/books?id=FHtVDwAAQBAJ&pg=PR3&hl=sk&source=gbs_selected_pagese.
2. Brass, J. D., Borgatti, S. (2020). *Social Networks at Work.* 1st edition. New York : Taylor&Francis, 2020. 392 p.
3. Cantle, T. (2005). *Community Cohesion: A New Framework for Race and Diversity.* 2nd edition. London : Palgrave Macmillen, 2005. 265 p.

4. Cappellari, L.,Tatsiramos, K. (2015). With a Little Help from my Friends? Quaity of Social Networks, Job Finding and Job Match Quality. *European Economic Review*, 2015, vol. 78, p. 55-75. Retrieved 29.10.2020 from https://www.researchgate.net/publication/275897877_With_a_Little_Help_from_My_Friends_Quality_of_Social_Networks_Job_Finding_and_Job_Match_Quality.
5. Džambazovič, R. (2007). Priestorové aspekty chudoby a sociálneho vylúčenia. *Sociológia.* 2007, vol. 39, no. 5, p. 432-458.
6. European Union Agency for Fundamental Rights. (2016). *Chudoba a zamestnanosť Rómov v 11 členských štátoch EÚ: Prieskum zameraný na Rómov – kľúcové údaje.* Luxemburg : Úrad pre vydávanie publikácii Európskej únie, 2016. 56 p.
7. European Union Agency for Fundamental Rights. (2018). *Druhý prieskum Európskej únie týkajúci sa menšín a diskriminácie Rómov – vybraté výsledky.* Luxemburg : FRA, 2016. 50 p. Retrieved 2.11.2020 from. https://op.europa.eu/sk/publication-detail/-/publication/d1e36336-3168-11e8-b5fe-01aa75ed71a1.
8. *EU Roma strategic framework for equality, inclusion and participation for 2020-2030* (2020). Retrieved 10.11.2020 from https://ec.europa.eu/info/sites/info/files/union_of_equality_eu_roma_strategic_framework_for_equality_inclusion_and_participation_en.pdf.
9. Faggian, A. (2014). Job Search Theory. Fisher, M. M. – Nijkamp, P. (2014). *Handbook of regional science.* Heidelberg : Springer, 2014. 1732 p. Retrieved 30.10.2020 from https://www.researc hgate.net/publication/278661248_Job_Search_Theory.
10. Garrido, M. (2020). Reconceptualizing Segregation from the Global South. *City & Community.* 2020. Retrieved 29.10.2020 from https://onlinelibrary.wiley.com/doi/abs/10.1111/cico. 12504
11. Granovetter, S. M. (1973). The Strength of Weak Ties. *American Jorurnal of Sociology.* 1973, vol. 78, no. 6, p. 1360-1380. Retrieved 28.10.2020 from https://edisciplinas.usp.br/pluginfile.php/4865899/The%20Strength%20of%20Weak%20Ties.pdf.
12. Hoye, G. et all. (2009). Networking as a job search behaviour: A social network perspective. *Journal of Occupational and Organizational Psychology.* 2009, vol. 82, no. 3, p. 661-682 from https://www.researchgate.net/publication/233990472Networking_as_a_job_search_behaviour_A_social_network_perspective.
13. Hoye, G. (2017). Job Search Behavior as a Multidimensional Construct: A Review of Different Job Search Behaviors and Sources. In. Klehe, Ch-U. – Hoof, E. (2018). *The Oxford Handbook of Job Loss and Job Search.* Oxford : Oxford University Press, 2018. 615 p. Retrieved 29.10.2020 from https://books.google.sk/books?id=FHtVDwAAQBAJ&pg=PR3&hl=sk&source=gbs_selected_pages&cad=2#v=onepage&q&f=false.
14. Hyde, A. (2006). Systematic Exclusion of Roma from Employment. *Political Sciences*. 2004, vol. 6, no. 1, p 3-8. Retrieved 1.11.2020 from https://www.ceeol.com/search/article-detail?id=149926
15. Ioannides, M. Y., Loury, D. L. (2004). Job Information Networks, Neighborhood Effects, and Inequlity. *Journal of Economic Literature.* 2004, vol. 42, no. 4, p 1056-1093. Retrieved 2.11.2020 from https://www.aeaweb.org/articles?id=10.1257/0022051043004595.
16. Lajčáková, J. et all.(2017). *Riešenie nezamestnanoti Rómov*. Bratislava : CVEK, 2017. 94 p.
17. Laurence, J. (2017) Wider-community Segregation and the Effect of Neighbourhood Ethnic Diversity on Social Capital: An Investigation into Intra-Neigbourhood Trust in Great Britain and London. *Sociology.* 2017, vol. 51, no. 5, p. 1011-1033. Retrieved 1.11.2020 from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5603975/.
18. Lichter, T. D. (2013). Integration or Fragmentation? Racial Diversity and the American Future. *Demography.* vol. 50, p. 359-391. Retrieved from https://link.springer. com/article/10.1007%252Fs13524-013-0197-1.

19. Marcinčinová, Ľ. (2014). *Rómovia a trh práce*. Bratislava : CEIT, 2014. 29 p.
20. Mussida, CH., Zanin, L. (2020). Determinants of the Choice of Job Search Channels by the Unemployed Using a Multivariate Probit Model. *Social Indicators Research.* 2020, vol. 1, no. 52, p. 369-420. Retrieved 31.10.2020 from https://www.ncbi.nlm.nih.gov/ pmc/articles /PMC73666 07.
21. Mušinka. A. et all. (2014). *Atlas rómskych komunít na Slovensku 2013.* Bratislava : UNDP, 2014. 120 p.
22. Radičová, I. (2001). *Hit Sunt Romales.* Bratislava : INTERLINGUA, 2001. 96 p.
23. Rochovská, A. (2011). Životné stratégie – teoretické východiská. In. Rusnáková, J. et all. (2011). *Životné stratégia obyvateľov rómskych osídlení: Zborník vedeckých štúdií.* Nitra : UKF FSVaZ, 2011. 232 p.
24. Rusnáková, J., Rochovská, A. (2014). Segregácia obyvateľov marginalizovaných rómskych komunít, chudoba a znevýhodnenie súvisiace s priestorovým vylúčením. *Geographia Cassoviensis VIII.* 2014, vol. 2, p. 162 – 172. Retrieved 2.11.2020 from http://www.humann ageografia.sk/clanky/Rusnakova_Rochovska_tlac1.pdf.
25. Rusnáková, J., Čerešníková, M. (2015). *Sociálna opora a sociálno siete marginalizovaných Rómov: Analýza druhov sociálnej opory v sociálnych sieťach*. Nitra : UKF, 2015. 133 p.
26. Sameen, S. (2016). Employ Hiring through Informal and Formal Sources of Recruitment and Implication for Job Satisfaction and Intension to Leave. *International Journal of Innovation, Management and Technology.* 2016, vol. 7, no. 6, p. 286 – 291. Retrieved 1.11.2020 from http://www.ijimt.org/vol7/688-MB00026.pdf.
27. Semyonov, M., Glikman, A. (2009). Ethnic Residential Segregation, Social Contacts, and Anti-Minority Attitudes in European Societies. *European Sociological Review.* 2009, vol. 25, no. 6, p. 693-708. Retrieved 29.10.2020 from https://www.researchgate.net/publicatio _Ethnic_Residential_Segregation_Social_Contacts_and_AntiMinority_Attitudes_in_Euro pean_Societies.
28. Veselovská, Z., Pirová, B. (2014). Rómske okresy – nositelia sociálnych problémov. *Geographia Cassoviensis.* 2014. vol. 1, p. 96-106. Retrieved 1.11.2020 from. https://uge .science.upjssk/images/geographia_cassoviensis/articles/GC201481/07Veselovska_Pirova
29. Uslaner, M. E. (2012). *Segregation and Mistrust: Diverstiy, Isolation and Social Cohesion.* Maryland : University of Maryland, 2012. p. 273. Retrieved 29.10.2020 from https://books.google.sk/books?hl=sk&lr=&id=ZE9D890ZXgMC&oi=fnd&pg=PR7&ots= QaDO3yaG1H&sig=hFmigzMmKKTG9JFNmARSe84YLy4&redir_esc.

# EVALUATION OF FINANCIAL HEALTH OF CZECH CONSTRUCTION COMPANIES USING PREDICTION MODELS

**Simona Cincalova**
*College of Polytechnics Jihlava*
*Tolstého 16, 586 01 Jihlava, Czech Republic*
*simona.cincalova@vspj.cz*

**Jaroslav Jansky**
*College of Polytechnics Jihlava*
*Tolstého 16, 586 01 Jihlava, Czech Republic*
*jaroslav.jansky@vspj.cz*

***ABSTRACT***

*The paper focuses on the construction industry and its evaluation using selected prediction models, bancruptcy models. The purpose of bankruptcy models is to predict a company's default based on an analysis of financial statements. The aim of the paper is to evaluate Czech companies in this sector in 2010 and 2014 based on Altman's Z-score, IN95 and IN05. Based on the calculations, it will be concluded if the compilation of Z´´ score, IN95 and IN05 models differs from each other and if the models are influenced by whether selected indicators of accounting units are assessed on the basis of average or median. Furthermore, the research questions will be answered, of the results of the bancruptcy models will be more favorable in the analyzed year 2014 for all construction companies according to the size of the accounting entity than in 2010.*

***Keywords:*** *Bancruptcy models, Construction, Czech economy*

## 1. INTRODUCTION

Construction is one of the most dynamic sectors of the Czech economy, contributing significantly to both employment and GDP. During the transformation, the construction industry demonstrated the ability to adapt to market conditions, coped with changes in demand, restructuring of the production base, increasing demands on the quality and architectural level of construction works. The construction industry successfully follows European trends in all construction fields. In recent years, we have seen a trend in the construction industry, with construction output still declining to almost stagnation, as well as sales, which are declining at a slower pace (see Figure 1). In the coming years, we can expect that this situation will not change and this trend will continue. According to CZSO data, in 2019 construction output increased by 2.3%. Building construction increased by 2.0% and civil engineering even by 3.4%. According to our surveys, the directors of construction companies were slightly more optimistic and expected growth of 2.7%.

*Figure following on the next page*


*Figure 1: Development of the Czech construction industry in the years 2007 – 2021 (Source: CEEC Research)*

The aim of the paper is to evaluate companies in the construction industry according to various size entities, ie. according to the size of the entity in 2010 and 2014 on the basis of selected bankruptcy models, Altman's Z-score, IN95 and IN05. The analysis builds on previous studies by the authors (Jánský et al., 2019; Činčalová et al., 2019), in which they examine the crisis years 2010 and 2014. Crisis years are deliberately chosen at a delay, as the construction industry responds to the Great Recession delay compared to other sectors.

## 2. THEORETICAL BACKGROUND

Knowledge of the financial situation and financial health of the company is very important for any financial management or decision-making in the company. The information based on financial analysis can serve many users, both external and internal. There are a number of financial models that diagnose and predict a company's financial health. In general, they can be divided into two basic categories - creditworthiness and bankruptcy models. Kuběnka and Slavíček (2014) claim that their construction is usually similar and the individual models differ mainly in their focus. Bankruptcy models – the Altman Z-score, indexes IN95 and IN05 will be used to meet the goal of the paper.

### 2.1. Z´´score

The Z-score is one of the world's best-known bankruptcy forecasting indices (Qiu et al., 2020; Akbar et al., 2020). Altman (1968) developed this model for assessing the quality of ratio analysis. The equation includes several financial variables and predicts bankruptcy using a multiple discriminatory statistical method. Altman's first Z-score (Altman, 1968) contained five ratios. Subsequently, seven ratios were modified and examined (Altman et al., 1977). Furthermore (Altman, 1993) a Z´ Score was created for companies not traded on capital markets again with five indicators, in 1995 (Altman et al., 1995) the so-called EM score was tested on specific Mexican companies issuing Eurobonds denominated in USD. Another revision (Altman, 2006) compiled the Z´´score, which is applicable to non-US non-manufacturing enterprises and for this reason the absence of the indicator used so far (sales / total assets). The Kuběnka and Králové (2006) study uses the Z´´score model created by Altman (2006) for the analysis of the construction industry, which according to the authors is the most accurate bankruptcy model for companies in this industry.

### 2.2. Index IN95

The IN95 index is a bankruptcy model and its indicators do not include any that would work with the market value of the company, as is the case with Altman's model (Vlašicová and Náglová, 2015; Kopta, 2009). This adjustment is an advantage for conditions of a less liquid capital market. According to Neumaier and Neumaierová (2002), "specifics for the Czech economy, where there is a high insolvency, is the inclusion of the indicator Payables after maturity / revenues". This indicator characterizes the inability of the company and the value of the index decreases by it. The index was tested on the data of thousands of Czech companies and proved to be an excellent indicator for estimating the financial distress of these companies. The success rate of the index is more than 70%.

### 2.3. Index IN05

The IN05 index is so far the latest version of the IN indexes. This index was compiled to update the IN01 index, which began to lose its prediction success in 2004. After testing the IN01 index, Mr. and Mrs. Neumaier decided to slightly adjust the weights for the IN05 index. The value limits for the classification of companies as value-creating companies and for companies heading for bankruptcy recorded a more significant change. The authors of the index examined the success in the classification of companies in more detail. One of the more detailed evaluations, namely the evaluation for medium-sized enterprises, was the following (Neumaierová and Neumaier, 2013):

- The IN05 index correctly ranked 83% of value-creating companies and 78% of companies going bankrupt, with an average success rate of 81%.
- The index included only 2% of value-creating enterprises and 9% of bankrupt enterprises in the opposite (incorrect) group of companies.
- If the index classified the company in the gray zone, it was not counted as successful or unsuccessful classification.
- Shortly after its inception, the IN05 index reached a relatively wide use among companies and ranked as an equal partner alongside foreign creditworthiness and bankruptcy indices used in the Czech Republic (e. g. Fiala et al., 2020; Cerny et al., 2019).

## 3. DATA AND METHODS

The paper focuses on all companies in the construction sector in the Czech Republic in 2010 and 2014, it is not a sample. The statistical data of all these enterprises were analyzed for the mentioned years using the Albertina database, Statistica and Excel programs. In 2010, there were 9584 construction companies operating in the sector, and in the crisis year of 2014 there was a large decrease to 6846 (see Table 1).

| ***Size of enterprises / Year*** | ***2010*** | | ***2014*** | | ***2014/2010*** |
|---|---|---|---|---|---|
| *Micro* | 6027 | 62.89 % | 4752 | 69.41 % | - 21 % |
| *Small* | 3070 | 32.03 % | 1806 | 26.38 % | - 41 % |
| *Medium* | 422 | 4.40 % | 240 | 3.51 % | - 43 % |
| *Large* | 65 | 0.68 % | 48 | 0.70 % | - 26 % |
| *Total* | 9584 | 100 % | 6846 | 100 % | - 29 % |

*Table 1: Industry structure by size of enterprises in selected years (Source: own processing)*

For both monitored years, the whole set of enterprises was divided according to the size of accounting units (AU) on the basis of an amendment to the Accounting Act, into so-called micro, small, medium and large enterprises. Companies can be classified into different categories according to their size.

The most common is the number of employees, where small and medium-sized enterprises employ less than 250 people and large companies 250 or more people. Small and medium-sized enterprises are further divided into micro-enterprises (1-9 persons), small (10-49 persons) and medium-sized enterprises (50-249 persons). The authors identified the following research questions in the analysis of construction companies in the mentioned years:

1) Will the results of Z´´ score, IN95 and IN05 in the analyzed year 2014 be more favorable for all construction enterprises according to the size of the accounting entity than in 2010?
2) How will the results of selected bankruptcy models differ?
3) Could the newer index IN05 be considered more credible (compared to IN95)?

The Z´´score model has the following form (Altman, 2006):

$$Z'' = 6.56x_1 + 3.26x_2 + 6.72x_3 + 1.05x_4, \quad (1)$$

where: $x_1$ = net working capital / total assets,
$x_2$ = retained earnings / total assets
$x_3$ = earnings before interest and tax ($EBIT$) / total assets,
$x_4$ = total book equity / total liabilities

The evaluation is calculated by including the Z´´ score in the relevant sector:

- $Z > 2.60$ sector for financially sound companies,
- $1.10 \leq Z \leq 2.60$ zone of ignorance or so-called gray zone,
- $Z < 1.10$ sector for companies in bankruptcy.

The IN indices can also be included among the bankruptcy models and the IN 05 has also been adjusted to correct the situation on the Czech market as much as possible. It evaluates in summary, on the basis of one number, the economic and financial situation of the analyzed company. Because it does not serve information about the reasons for the situation of the company, it can be assumed that this model is more suitable for the evaluation of the company by investors and creditors than for the management of the company (Neumaier and Neumaierová, 2005). The IN95 index has the following form for construction sector (Neumaierová and Neumaier, 2002):

$$IN95 = 0.34x_1 + 0.11x_2 + 5.74x_3 + 0.35x_4 + 0.1x_5 + 16.54x_6, \quad (2)$$

where: $x_1$ = assets / debt,
$x_2$ = EBIT / interest expense,
$x_3$ = EBIT / total assets,
$x_4$ = sales / total assets,
$x_5$ = current assets / current liabilities,
$x_6$ = overdue / sales liabilities.

The weights are calculated as the ratio of the significance of the indicator to the criterion value of the indicator. The values of weights are calculated for individual branches of economic activities. The final qualification of the company will be performed according to the following:

- $IN > 2$ satisfactory financial situation,
- $1 < IN \leq 2$ gray zone of undefeated results,
- $IN \leq 1$ the company is threatened by serious financial problems.

The IN05 index has the following form (Neumaierová and Neumaier, 2013):

$$IN05 = 0.13x_1 + 0.04x_2 + 3.97x_3 + 0.21x_4 + 0.09x_5, \quad (3)$$

where: $x_1$ = assets / debt,
$x_2$ = EBIT / interest expense,
$x_3$ = EBIT / total assets,
$x_4$ = sales / total assets,
$x_5$ = current assets / current liabilities.

The final qualification of the company will be performed according to the following:
- IN05 > 1.6 the company creates value
- 0.9 < IN05 < 1.6 gray zone of undefeated results
- IN05 < 0.9 enterprise does not create value (destroys)

## 4. RESULTS AND DISCUSSION

The Z´´ score model, indexes IN95 and IN05 were used for the calculation according to the size of the accounting unit (AU) of construction companies, while the first calculations are based on the averages of indicators for individual AU and the second calculations on the median of the indicators. For comparison, the Z´´ score is further calculated for the whole set of enterprises, which does not consider classification into AU (see Table 2).

| Size of accounting unit /Year | 2010 | | 2014 | |
|---|---|---|---|---|
| | *average* | *median* | *average* | *mediam* |
| ***Micro*** | 1.06 | 1.11 | 1.07 | 1.34 |
| ***Small*** | 2.79 | 2.38 | 3.88 | 3.61 |
| ***Medium*** | 2.62 | 2.96 | 3.01 | 2.89 |
| ***Large*** | 2.34 | 2.27 | 2.66 | 2.61 |
| ***Total*** | 2.288 | 1.31 | 2.68 | 1.59 |

*Table 2: Results of Z´´ score*
*(Source: own processing)*

Based on the calculated values, we can conclude (see Table 3) that the compilation of Z´´ score models is influenced by whether we assess selected indicators of accounting units on the basis of average or median. According to the above-mentioned characteristics of the average and the median, it can be considered in this situation as a better telling value of the median indicator.
The main advantage of the median as a statistical indicator is the fact that it is not affected by extreme values. Therefore, it is often used in the case of oblique distributions, where the arithmetic mean usually gives inappropriate results. The disadvantage is usually the use of the median for files in which the monitored character has only two possible values. There, the median behaves the same as the mode: it is a rough measure of the properties of the distribution, and if both categories are represented roughly equally, it is very unstable (Minařík, 2008).

*Table following on the next page*

| Size of accounting unit / Year | 2010 | | 2014 | |
|---|---|---|---|---|
| | *average* | *median* | *average* | *mediam* |
| ***Micro*** | AU in bankruptcy | gray zone | AU in bankruptcy | gray zone |
| ***Small*** | healthy AU | gray zone | healthy AU | healthy AU |
| ***Medium*** | healthy AU | healthy AU | healthy AU | healthy AU |
| ***Large*** | gray zone | gray zone | healthy AU | healthy AU |
| ***Total*** | gray zone | gray zone | healthy AU | gray zone |

*Table 3: Evaluation of Z´´ score*
*(Source: own processing)*

The first research question, which was determined "the results of the Z´´ score will be more favorable in the analyzed year 2014 for all construction companies according to the size of the accounting entity than in 2010" can be confirmed on the basis of processed calculations except micro-enterprises. The results of large units moved from the gray zone in 2010 to the section of financially sound companies in 2014. Similarly, small units moved from the gray zone in 2010 to the category of healthy companies in 2014 when assessing financial health on the basis of medians. for medium-sized enterprises, which are healthy in both monitored years and, conversely, micro-enterprises are in the gray zone in both years. As stated by Kuběnka and Králová (2013), the value of the Z 'Score from 2009 (3.36) indicates globally that the construction sector is financially strong (Z "> 2.6 financially strong company), in 2010 there was stagnation, resp. slightly worsened and in 2011, on the contrary, to a strong improvement of this indicator to almost 3.43. Based on the predominantly growing trend of the Z Score Score, we can say that globally, the situation in the construction sector is improving and the likelihood of financial distress is decreasing. A comparison of the two surveys shows similar conclusions that the funding situation is improving after 2010. However, in our research, we can clarify that the probability of financial distress still exists for micro-enterprise entities. The performed analyzes show that the number of UJ decreased in 2014 compared to 2010 by a total of 29% and then micro UJ decreased by 21%, small by 41%, medium by 43% and large by 26%. This decline also proves the crisis situation in the analyzed years in construction.

| Size of accounting unit /Year | 2010 | | 2014 | |
|---|---|---|---|---|
| | *average* | *median* | *average* | *mediam* |
| ***Micro*** | 5.02 | 3.27 | 4.61 | 3.38 |
| ***Small*** | 4.25 | 3.45 | 4.34 | 3.78 |
| ***Medium*** | 3.92 | 4.04 | 3.99 | 3.89 |
| ***Large*** | 4.59 | 5.07 | 6.56 | 5.85 |
| ***Total*** | 4.45 | 3.96 | 4.88 | 4.23 |

*Table 4: Results of index IN95*
*(Source: own processing)*

| Size of accounting unit / Year | 2010 | | 2014 | |
|---|---|---|---|---|
| | *average* | *median* | *average* | *mediam* |
| ***Micro*** | healthy AU | healthy AU | healthy AU | healthy AU |
| ***Small*** | healthy AU | healthy AU | healthy AU | healthy AU |
| ***Medium*** | healthy AU | healthy AU | healthy AU | healthy AU |
| ***Large*** | healthy AU | healthy AU | healthy AU | healthy AU |
| ***Total*** | healthy AU | healthy AU | healthy AU | healthy AU |

*Table 5: Evaluation of index IN95*
*(Source: own processing)*

| Size of accounting unit /Year | 2010 | | 2014 | |
|---|---|---|---|---|
| | *average* | *median* | *average* | *mediam* |
| ***Micro*** | 0.49 | 0.77 | 0.62 | 0.94 |
| ***Small*** | 1.09 | 1.03 | 1.22 | 1.24 |
| ***Medium*** | 1.14 | 1.49 | 1.12 | 1.45 |
| ***Large*** | 1.19 | 1.55 | 1.58 | 1.89 |
| ***Total*** | 0.98 | 1.21 | 1.14 | 1.38 |

*Table 6: Results of index IN05*
*(Source: own processing)*

| Size of accounting unit / Year | 2010 | | 2014 | |
|---|---|---|---|---|
| | *average* | *median* | *average* | *mediam* |
| ***Micro*** | AU in bankruptcy | AU in bankruptcy | AU in bankruptcy | gray zone |
| ***Small*** | gray zone | gray zone | gray zone | gray zone |
| ***Medium*** | gray zone | gray zone | gray zone | gray zone |
| ***Large*** | gray zone | gray zone | gray zone | healthy AU |
| ***Total*** | gray zone | gray zone | gray zone | gray zone |

*Table 7: Evaluation of index IN05*
*(Source: own processing)*

To continue the first research question for the results according to the index IN95 and IN05 (see Tables 4-7), it can be stated that the results are completely different for both indices. The results according to the IN95 index show that all enterprises according to the size of UJ are healthy and the opposite situation is with the results according to the IN05 index, where in both monitored years 2010 and 2014 there was no improvement in the financial situation of enterprises according to financial distress and all construction enterprises in the gray zone. The same situation is with small and medium-sized enterprises according to the size of UJ and large enterprises are moving from the gray zone in 2010 to healthy enterprises in 2014. The situation is similar for micro-enterprises, where there is also a more favorable development, from micro-enterprises in bankruptcy in 2010. to the gray zone in 2014. Overall, it can be stated that no significant change in financial distress was recorded for the IN95 index and, conversely, for the IN05 index there was a positive change in the observed years 2010 and 2014 only for UJ micro and large enterprises. When comparing the results of all three models with the Z score bank, the IN95 index and the IN05 index according to the second research question, it can be stated that the results of the models are different. The Z score model in the analyzed year 2014 in all construction enterprises according to the size of the accounting unit achieves more favorable results than in 2010, except for micro-enterprises. The model of the IN95 index did not show any significant change in these years, and on the contrary, the model of the IN05 index shows a positive change in the analyzed years of only two groups of enterprises, namely micro and large enterprises. Regarding this research question, it can be stated that two models of financial distress, namely the Z score and the IN05 index, affect changes in some UJ groups for the observed period of 2010 and 2014. The third research question confronts the achieved results of the IN 95 and IN05 indices and it can be stated that the results of the IN 05 index are more credible in comparison with the IN95 index model, which could be caused in this model mainly by the overdue liabilities / income indicator.

## 5. CONCLUSION

Construction is one of the key sectors of the national economy in the Czech Republic. In general, the construction industry also proves the overall state of our country's economy and in times of crisis is able, as evidenced by the results of research to significantly stabilize the

financial situation of small, medium and large enterprises. According to the above results of research on the financial situation of construction companies according to two models of financial distress Z score, index IN05, it is necessary to focus a more detailed analysis on a group of micro-enterprises that logically have greater problems in liquidity indicators (Činčalová, Jánský, Palát 2019) and subsequently in indicators indebtedness. In general, it can also be stated during the crisis that there is a significant decline in the performance of companies and thus also increased competitiveness, which was proved especially by the interest of large companies in obtaining public contracts in that period. Following this paper, future research should analyze in more detail the financial distress of individual companies within these UJ groups, so as to show in times of crisis the structure of companies in financial distress that do not solve the difficult situation or can not solve it.

***ACKNOWLEDGEMENT:*** *This paper was supported by the College of Polytechnics, Jihlava, under Grant no. 1170/4/195 "Implementation of Corporate Social Responsibility in Czech Conditions".*

**LITERATURE:**

1. Akbar, M., Akbar, A., Maresova, P., Yang, M., Arshad, H. M. (2020). Unraveling the Bankruptcy Risk–Return Paradox across the Corporate Life Cycle. *Sustainability*, *12*(9), 1-19.
2. Altman, E. I. (1968). Financial Ratios, Discriminant Analysis and the Prediction of Corporate Bankruptcy. Journal of Finance, 23(4), 589–609.
3. Altman, E. I. (1993). Corporate Financial Distress and Bankruptcy: A Complete Guide to Predicting and Avoiding Distress and Profiting from Bankruptcy, New York: John Wiley and Sons Inc.
4. Altman, E. I., Haldeman, R. G., Narayanan, P. (1977). ZETA'" Analysis: a New Model to Identify Bankruptcy Risk of Corporations. Journal of Banking & Finance [online]. 1(1), 29–54. Dostupné z: doi:10.1016/03784266(77)90017-6
5. Altman, E. I., Hartzell, J., Peck, M. (1995). Emerging Markets Corporate Bonds: A Scoring System, Salomon Brothers Working Paper.
6. CEEC Research: Analysis of Construction Sector [online]. Prague: CEEC Research, 2020 [cit. 2020-10-06]. Dostupné z: https://www.ceec.eu/research/
7. Cerny, I., Vanek, M., Pitrik, J., & Bora, P. (2019). An analysis of selected benchmarks and evaluation methods to test the replacebility of mathematical-statistical methods in benchmarking by solvency and bankruptcy models: A case study in assessing gravel-sand mining companies in the Czech Republic. Inżynieria Mineralna, 21.
8. Činčalová, S., Jánský, J., Palát, M. (2019). Assessment of the Construction Sector in the Czech Republic Based on Selected Indicators of Corporate Social Responsibility. In 6th SWS International Scientific Conference on Social Sciences 2019, 389–396. Sofia, Bulgaria: STEF92 Technology Ltd.
9. Fiala, R., Hedija, V., Dvořák, J., & Jánský, J. (2020). Are profitable firms also financially healthy? Empirical evidence for pig-breeding sector. CUSTOS E AGRONEGOCIO ON LINE, 16(1), 173-201.
10. Jánský, J., Činčalová, S., Dočekalová, M., Palát, M. (2019). Ekonomicko-statistická analýza odvětví stavebnictví. In Proceedings of the international scientific conference Competition, 154-163. Jihlava: VŠP Jihlava.
11. Kopta, D. (2009). Possibilities of financial health indicators used for prediction of future development of agricultural enterprises. Agricultural Economics (Zemědělská ekonomika), 55(3), 111-125.

12. Kuběnka, M., Slavíček, O. (2014). Detection of Cognation between Creditworthy Models and Bankruptcy Models. In Proceedings of Managing and Modelling of Financial Risks, Ostrava: Technical University of Ostrava, 426–433.
13. Kuběnka, M., Králová, V. (2013). Využití Z'' score při hodnocení finančního zdraví odvětví stavebnictví, E&M Economics and Management, 16(1), 101–112.
14. Neumaier, I., Neumaierová, I. (2005). Index IN05. In Evropské finanční systémy. Brno: Masaryk University, 143-148.
15. Neumaierová, I., Neumaier, I. (2002). Výkonnost a tržní hodnota firmy, GRADA Publishing, a.s.
16. Neumaierová, I., Neumaier, I. (2013). Vypovídací schopnost Indexu IN05. In International Conference organized on the occasion of the 60th anniversary of University of Economics, July (Vol. 3).
17. Qiu, W., Rudkin, S., Dłotko, P. (2020). Refining understanding of corporate failure through a topological data analysis mapping of Altman's Z-score model. Expert Systems with Applications, 156.
18. Vlašicová, E., Náglová, Z. (2015). Differences in the economic situation of organic and conventional winemaking enterprises. AGRIS on-line Papers in Economics and Informatics, 7(665-2016-45089), 89-97.

# THE POWER OF ELITE ON BUSINESS: A CASE FROM THE EARLY MERCATILISM PERIOD

**Eduardo Manuel de Almeida Leite**
*CiTUR, ESTG, University of Madeira, Funchal, Portugal*
*eduardo.leite@staff.uma.pt*

**Humberto Nuno Rito Ribeiro**
*GOVCOPP, ESTGA, University of Aveiro, Portugal*
*hnr@ua.pt*

**Sandra Raquel Alves**
*CEOS.PP, ESTG, Polytechnic Institute of Leiria, Portugal*
*raquel.alves@ipleiria.pt*

**Amelia Ferreira da Silva**
*CEOS.PP, Porto Accounting and Business School, Porto Polytechnic, Portugal*
*acfs@iscap.ipp.pt*

**Ana Leite**
*IACHR, CLEPUL, EHESS and Open University, Portugal*
*anamigueleite@gmail.com*

***ABSTRACT***

*This paper examines the life and work of a Jewish businesswoman, from the early mercantilism period, in the scope of a theoretical background composed of the following trilogy: i) Elite Theory (Mosca, Gaetano, 1858-1941); ii) Critical Structuralism (Bourdieu, Pierre, 1930-2002,); and, iii) Dynamic Capitalism (Sombart, Werner,1863-1941). The research departs from the main question of knowing whether Doña Gracia Nasi is appropriately inserted in the ideal-type of elite bourgeois of her time, considering the different instrumental, moral and intellectual factors of her behaviour. Based on written documentation and data, the authors of this research built an ethnographical/historical set that attributes to Doña Gracia an explanatory value that reflects the spirit and action of her time, space and social class. As we could convene enough evidence to support and accept the hypothesis that Doña Gracia Nasi fitted to the elite status of her time, it was therefore possible to focus on her as a case study. This study suggests that Doña Gracia Nasi was a particularly important element of the economic and financial elite of her time. This allowed her to become a privileged player in her relationship with the political, ideological and cultural elites, enabling diverse achievements, through her network of influence amidst other elites, placing herself at the centre of the classic dominant-dominated dichotomy, being, nevertheless, a victim of several setbacks, resulting from under the stage conspirations and plots, among other threats. Regardless gender and religion, which were by then critical handicaps to be successful on business, this Jewish businesswoman's case proved that having an elite status may dwarf such a priori constrains.*

***Keywords:*** *Businesswoman, Entrepreneurship, Elite Theory, Dynamic Capitalism, Critical Structuralism*

## 1. INTRODUCTION

Taking into account, broadly, the two main traditional sociological theories, functionalism and Marxism, we may observe the common postulation of an ontology of societies which is characterized by the predominance action of the structure above, or, as some authors appoint,

the explanatory prevalence of the macro dimension above the micro, without prejudice of many other reconciliation attempts between these dimensions (vid., Ritzer 1996, 358: Ritzer, 1979, 1981a; Alexander,1982; Norbert Wiley, 1988, James Coleman, 1986, 1987; Rendal Collins, 1981 a) and 1981 b). The life history of Doña Gracia Nasi, which is to be analysed on this paper, seems sparsely explainable under the postulates of these paradigms, becoming, in alternative, evidently relevant when read under the scope of other sociological theories that we will adopt. On the other hand, the concept of Elites developed in the scope of what has been called sociology of the elite as initiated by (Pareto (1848-1923), Mosca (1858-1941) and Michels (1876-1936) evolved as a collection of theoretical constructions alternative to the referred paradigms. This theoretical tradition explained the social change in a different way both from functionalism and from Marxism. With effect, it did not resort to teleology's or social mechanisms that transcend individuals, which would minimize the role of some actors or particular groups in the explanation of social change. The concept of Elites, developed in the scope of the elite's sociology, or classic realism, under the ontological point of view, postulated the existence of elites as minority groups of influence over the set of societies, both over its structural dimensions as over its conjunctural dimensions, existent in all societies, times and spaces, as groups of influence, power and decision. These authors, underlined the dichotomy elite/masses as a social ontology trait and elaborate its epistemological models according to this characteristic belief. The elite was described as a circle of people that direct the destinies of social masses, governing them by the appropriation they manage to make of power systems established in each society (Bessa, 1993, 2002; Mosca, 1939; Higley, 2008; Busino, (s/data), Dahl, 1961; Bottomore, 1974; Bourdieu, 1984; Daloz, 2010, Hartmann, 2007; Wright Mills, 1956). In the investigation domain of the roles of singular actors, the elite's theory reveals an interesting theoretical picture. It consists of analysing individual's aggregates that direct and conduct, or condition, societies and structures, due to the fact that they dispose of sometime superiority or power and for the fact that their decisions affect the collective life. The study of individual social action in the scope of the theory of elites enables the profound understanding of social interdependence between individual and society or interaction between actor and structure, highlighting the capacity of individual action in history, both from minorities, as from singular actors, through a sociological point of view instead of a psychological one. This paper, through the financial story of Doña Gracia Nasi, tries to point out, how an important business woman, that is to say, how a singular actor, through her social action, managed not only to maintain herself and her family as permanent members of the economic and financial elite but also, to influence the conjunctural and structural frameworks of the countries she lived in, namely, in the present case, with a bigger emphasis on Portugal in the 16th century. The analysis also shows that the interdependence of the nature of the social phenomena, addressing individual economical social action as manifestations of complete social phenomena, consequently, showing that businesses are more than mere numbers and that social phenomena transcend individuals. The concept of the elites remits us to the existence of real groups in situations of objective superiority in a society or group that are also sources of symbolic representation over the mind frame, ways of life, tastes, consumerism styles, etc. (Bourdieu, 1979) and that condition the evolution and the economic, political, ideological, cultural and mental transformation. A history of Doña Gracia Nasi also shows that as a social fact, companies are not only subject to the principles and corporate standards, but above all to social collective actors' subject to social coercive, structural dynamic and conjunctural forces that are exteriorly imposed on her (Bourdieu, 2005; Coleman, 1987; Collins, 1981 a, and b; Michels, 2001; Mosca, 1884; Ritzer, 1996; Sombart, 1928; Weber, 1958.) It shows, how the elites, independently of its types, are connected by relationships (Barabási, 2002). We can, therefore, state that as it can be seen from the text, that the social phenomena and social rules are determinant in the success or failure of business and entrepreneurs.

It means that, the power of the collective supersedes the individual, even if individual interests have the reason or the truth by their side. The case study of Doña Gracia reveals an impressive history of leadership and commitment with business, the family and the Jewish cause. Doña Gracia Nasi due to her psychological features never accepted to follow the easiest path, even if it meant more personal and financial sacrifices. But her history also shows that the sociological perspective about the own logic of the social phenomena, namely of the elites, their network connection and their reproduction capacity, constitute valid models, pertinent and useful to the life histories explanation. A sociological interpretation of the Doña Gracia Nasi story, through major classical thinkers, such as Mosca (1858-1941 elite theory), Bourdieu (1930-2002 – critical structuralism) and Sombart (1863-1941, dynamics of capitalism) helps us to understand the decisions of Doña Gracia Nasi, contextualized in the sixteenth-century Europe, characterized by economic dynamics caused by the discoveries and ideologically controlled by the Inquisition.

## 2. DOÑA GRACIA'S BUSINESS TRAJECTORY

Doña Gracia Nasi, also known by her Portuguese name of Beatrice de Luna, was born into a crypto-Jewish family sometime in 1510 in Lisbon, Portugal. After becoming a widow, she entered the world of business and finance, and she became a major businesswoman at the time, continuing a history of success and social integration at the elite level of the time. Even considering numerous singular factors and conjunctures of notable order that could suppose her marginalization as a foreigner, refugee and member of a cultural and religious minority that was persecuted. Table 1, shown below, offers a view on Doña Gracia's life in the context of Europe on the period of early Mercantilism.

*Table following on the next page*

| Year | Event |
|---|---|
| 1497 | Forced Conversions of Portuguese Jews and the birth of the "Cristãos-Novos" (New Christians) |
| 1506 | Lisbon Massacres |
| 1510 | Gracia is born in Portugal. Her Portuguese name was Beatrice de Luna. In the family she is called Gracia (Hannah) Nasi. Her brother — Dr. Miguez — was the royal physician. |
| 1512 | Diogo Mendes, Francisco Mendes's brother, opens Antwerp branch of House of Mendes. By 1525 the brothers control the largest share of the pepper and spice trade. The capital at his disposal was 300,000 — 400,000 florins He made loans to the Kings of Portugal and England. |
| 1528 | Gracia marries Francisco Mendes |
| 1531 | Diogo is arrested for Judaizing. Uses safe conduct letters from the Holy Roman Emperor and is released the same day. |
| 1532 | Diogo is arrested on the word of a child who, with his mother and 3 siblings, Diogo has previously helped escape to Salonika. Diogo is moved to Brussels. Antwerp places obstacles, demands the right to stop him. The King of Portugal, who will lose 200,000 ducats if Diogo cannot complete business deals, instructs his representatives to intervene. Mary of Hungary and Henry VIII also support Diogo. |
| 1532 | September. Diogo is released under bail of 50,000 ducats and a large cash payment. Charges are dropped |
| 1532 | The Emperor prohibits New Christians from travelling through Antwerp on their way to Turkey. The House of Mendes is able to help most travellers anyway |
| 1536 | Francisco dies, Gracia is left with an infant daughter Reyna (publicly known as Brianda). The administration of Francisco's fortune is divided between Gracia, who is to act in the name of her daughter, and Diogo |
| 1536 | Formal establishment of the Inquisition in Portugal, on the Spanish model. New Christians cannot easily immigrate to non-Christian countries, but can go to Northern Europe. Gracia moves to Antwerp with her daughter Brianda, her unmarried sister Brianda (namesake of Gracia's daughter) and her nephews Joao Miguez (a.k.a. Joseph Nasi, later Duke of Naxos) and his younger brother. |
| 1536 | Brianda marries Diogo |
| 1539 | Inquisition formally starts in Lisbon causing mass exodus of Portuguese entrepreneurs to Antwerp |
| 1542--43 | Death of Diogo. Gracia is named administrator of Diogo's half of the business on behalf of his widow and infant daughter. Gracia must fight charges of heresy against Diogo (or else his property will be confiscated)> the charges are withdrawn when she lends the emperor 100,000 ducats interest free. |
| 1544 | Doña Gracia flees to Venice |
| 1546-1549 | Brianda accuses Doña Gracia of heresy and attempts to take control of House of Mendes. |
| 1550 | Doña Gracia moves to Ferrara. Jews expelled from Venice. |
| 1552 | Publication in Portuguese of "Consolação às Tribulações de Israel" by Samuel Usque |
| 1554 | Joseph Nasi arrives in Istanbul, converts to Judaism and marries Doña Gracia's daughter. |
| 1555 | Pope institutes formalized ghettos for Jews |
| 1556 | Mass burnings of Jews in Italy |
| 1558 | Doña Gracia moves to Turkey |
| 1562--69 | Rise of Power of Joseph Nasi |
| 1569 | Death of Doña Gracia |

*Table 1: Doña Gracia's life in the context of Europe on early Mercantilism times (Source: Leite, 2013)*

It is important to recall that the early sixteenth century was a time of great economic expansion in Portugal as well as a period of political, economic, and ideological turmoil. From all indications, Beatrice de Luna (Doña Gracia) came from an upper class crypto-Jewish entrepreneurial Lisbon family. She married in 1528 but her marriage was a short one. It ended with the death of her husband Francisco, in 1538. At the time of her husband's death, she had one daughter, Brianda (known by her family as Reyna). After becoming a widow, she chooses not to hand her business interests over to her husband's brothers, but rather in a period in which few women entered the world of business and finance, she became a major businesswoman at the time. Her husband's death (along with multiple political factors in Portugal) may have been one of the reasons that she moved (or fled) to Antwerp where her brother-in-law, Diogo, had already established a branch office of their bank, the House of Mendes. In 1542, Doña Gracia's brother-in-law died, and she assumed control of the Mendes commercial empire. Doña Gracia was not only a highly successful businesswoman. Her enormous wealth had put her into a position to influence kings and popes. She also used her wealth to confront major powers in the protection of her people. For example, under Doña Gracia, the House of Mendes dealt with Henry II of France, Henry VIII of England, Charles V of Spain and the Holy Roman Empire, Maria of Austria, Regent of the Low Countries, Popes Paul III and Paul IV, and Suleiman the Magnificent, Sultan of the Ottoman Empire. These dealings involved commercial activities, loans and bribes. Payments to the Pope delayed the establishment of the Inquisition in Portugal. The historical record appears to indicate that she was an excellent negotiator. Under her leadership the House of Mendes had very important business dealings. The following Figure 1 maps the historical path taken by Doña Gracia from her birth until her death.


*Figure 15: Path taken by Doña Gracia from her country birth Portugal until her death in Constantinople*
*(Source: Cecil Roth, 1977. Doña Gracia of the House of the Nasi. The Jewish Publication Society, Philadelphia-Jerusalem)*

The map shows that Doña Gracia consistently sought both new business opportunities and places in which the government would interfere in both her business and private life to the least extent. What makes Doña Gracia so important to the world of business is that she was able to develop international companies in a time of poor communications and did it in the context of an intolerance society. Thus, Andrée Aelion Brooks notes: "She would constantly mix profitable business dealings with her community work on behalf of the refugees she had taken under her wing, trading bribes and favours with the elite of the day. Even a journey alone through the Adriatic port of Ragusa (modern day Dubrovnik) on her way to the Ottoman capital of Constantinople became a moment to pause and extract a preferential trading agreement from the local authorities." (http://www.sefarad.org/publication/lm/049/html/page46.html, November 12, 2015).

Despite or because of these challenges, the modern reader learns from her life how she dealt with ideological issues (the basis for marketing theory) and how she survived internal takeover attacks. Her story is both tragic and inspirational and serves the student of modern finance and business with insights into the history of their academic field and the realization the world of finance is composed of more than mere figures, but also very much reflects the real world in which we live.

## 3. THEORETICAL FRAMEWORK

In the research shown here, the authors opted to analyse the life history of Doña Gracia on the basis of three fundamental theoretical contributions: Mosca, Gaetano (1858-1941 elites' theory), Bourdieu, Pierre (1930-2002 – critical structuralism) and Sombart, Werner (1863-1941, capitalism dynamic). Werner Sombart was one of the greatest German classical sociologists that developed a wide work about the capitalist system and, simultaneously, the connection of this system with the Jewish people. This last study was published in 1911 under the title "Die Juden und das Wirtschaftsleben". Leipzig: Duncker und Humblot and translated, originating the first English edition in 1911, Sombart, W. (2001 (orig. 1911)), entitled "The Jews and modern capitalism", published in Ontario, by Batoche books Ltd. Although the author is not consensual because he was considered by some as an Anti-Semite, and by others, including many Jews, a Philo-Semite, this work constituted an important sociological reference and a fundamental source of data for whom studies the role of Jews in the emergency of capitalism. It is a study that concerns precisely over our data set, in such a war that Sombart, in this book refers to the Mendes family, i.e. the family of Doña Gracia Nasi, seven times, on pages, 42, 65, 119, 120, 130, and 260. Werner Sombart used, in this study, the genetic and statistical methods, trying to know "to what extent a group of people (the Jews) influence or have influenced the form and development of modern economic life — to discover, that is, their qualitative or, as I have already called it, their dynamic importance" (ibidem, 8). The author was convinced that the "principles, now accepted on all hands as fundamental, are specific expressions of the Jewish spirit" (ibidem, 8), even stating that "Without the discovery of America and its silver treasures, without the mechanical inventions of technical science, without the ethnical peculiarities of modern European nations and their vicissitudes, capitalism would have been as impossible as without the Jews." (Sombart, 2001. 9)." Over the work, the author shoes, through numerous data sets, that the determining influence exerted by Jews in the origin and development of capitalism was hidden due to their systematic persecutions and forced conversions. With effect, many Jewish realizations were historically registered as Christian, because the Jews that were forced to convert, were considered Christians (New Christians) although, in the fact, they were crypto-Jewish because they never abandoned their beliefs. Such historical sub-representation of the crypto-Jewish economy "In… cases …they adopted Christian names, the uncertainty is even greater." (ibidem 11). When we analyse the life of Doña Gracia Nasi we understand how this theoretical Sombartian framework perfectly helps us to explain and accommodate it in the dynamic of the emerging capitalism. Sombart, like Weber, studied capitalism onwards from the elaboration of ideal-types that he developed, both in this work as in "Le bourgeois: contribuition à l'historie morale et intellectuelle de l'homme économique moderne" (1909). When studying capitalism, Sombart verified that "One of the most important facts in the growth of modern economic life is the removal of the centre of economic activity from the nations of Southern Europe — the Italians, Spaniards and Portuguese... to those of the North-West — the Dutch, the French, the English and the North Germans. The epoch-making event in the process was Holland's sudden rise to prosperity, and this was the impetus for the development of the economic possibilities of France and England" (ibidim 12). The author links this geographic displacement from the centres of production of richness to the displacement and relocation movements of Jews.

Such movements, produced by various persecutions that were made to them from the South, were extended to the protestant countries, not being confined to the Inquisition action areas, although Jews were more tolerated in the North. Sombart states that, "…is indeed surprising that the parallelism has not before been observed between Jewish wanderings and settlement on the one hand, and the economic vicissitudes of the different peoples and states on the other. Israel passes over Europe like the sun: at its coming new life bursts forth; at its going all falls into decay" (Sombart, 2001, 13). To sustain this hypothesis, the author systematically analysed the evolution of Jewish fortunes since the 15th century and concluded that, "Now it is a remarkable thing that the brief space during which Antwerp became the commercial centre and the money-market of the world should have been just that between the coming and the going of the Marranos (Iberian Jews converted by force to Christianism). It was the same in England. The economic development of the country, in other words, the growth of capitalism ran parallel with the influx of Jews, mostly of Spanish and Portuguese origin" (Sombart, 2001,14/15). However, Sombart considered that these were not sufficient evidence to establish a true causality between the two phenomena and for that, he was dedicated to the typifying, both from the capitalistic spirit as from the capitalistic entrepreneur. The author concludes that there are three characteristics on the second that clearly adapt to the first's spirit: 1) Abstraction capacity, with consequent relative despise for the qualitative aspect of things and simultaneously the overvaluation of the quantitative; 2) Prevalence of the willpower and 3) Focus on self-interest (Sombart, 1909, and 1911). From the analysis that he made of the Jewish people, Sombart concluded that they possessed three mentioned characteristics that, together with various historical factors, namely those that derived from their persecution, enable that they had contributed in a wide scale not only for the creation of the spirit of capitalism and the economical international relations, but equally for the diversity and quality of the commercialized products and the luxury goods monopoly, dominating the product exchanges trendy among the aristocratic elites: gold, silver, pearls, gemstones, etc. Indeed, according to Sombart the Jews were the first to be installed in the New World exploring new areas where such products came from and, since remote ages, always dominated by land, the commerce with the Orient. Thus, joining the past and present, the Jews created modern trade. The author states that, "It was by the character of their trade that they partially revolutionized the older forms, and thus helped to make commerce what it is to-day" (Sombart, 2001, 14/22). Furthermore, the Jewish influence over capitalism cannot be limited to its extension: "I attach to their influence, cannot be adequately explained merely from the point of view of their numbers. It is rather the particular kind of influence that I lay stress on, and this can be accounted for by a variety of complex causes". (ibidem, 33). Some factors seem to have been important, such as: a network organization, a familiar connection that crossed several territories and the specificity of the Jewish character that made them frequently assume the role of funders of the communities where they lived (ibidem, 34, 38). Sombart linked Jews, both to the development of colonial empires, as to the implementation of the Modern States dependant on the existence of precious metals for their economies (Sombart, 2001,14/23, 38 and subsequent) and considered to always having existed an association between politic leaders and Jews, in the sense, that the first protect the second from the persecutions they suffered by pre-capitalistic forces, while the second provide the first, both with the materials needed to the maintenance of their sovereignty (weapons, munitions, food in time of war), as with loans in general for the current needs (ibidem, 38-45). The contribute of the theory of the elites to the explanation of social change became central in the sociological theory. Effectively, being the social inequality a phenomenon presented in all societies, the privilege and the political domination through the exercise of political power and its formal structures of power, granted, and always grant in all societies the existence of dominant and dominated. The contribution of Gaetano Mosca to the sociology of elites enables us to also analyse some aspects connected to the life of Doña Gracia.

This realistic thinker, pro-Machiavelli, prolific author (vid. e.g. Mosca, 1884, 1923, 1939 [1896]); Mosca and Bouthoul, 1936 based on a pessimistic anthropology (contrary to the myth of the good savage) separates the moral politic, and states that all societies, without exception, are characterized by having organized elites and undifferentiated masses without cohesion. For their organization, but also by the material conditions or intellectual superior qualities, the privileged birth, work capacity, ambition, or any other appreciated characteristics valued by society, the elites dominate the masses and exhale power. Mosca distinguishes the State models in four categories, two autocratic (the feudal State and the bureaucratic) and two liberal (liberal and representative) and analysis in these types of State, the groups that exercise political power and its characteristics that distinguish them from the masses. Therefore, typifying elites in: "priestly aristocracy", "military aristocracy", "money aristocracy" and "intellectual aristocracy" (Mosca, 1923). "Money aristocracy", whose distinctive and origin access to power are based on possession of richness, would be, according to the author's understanding, the prevailing class of the modern bureaucratic States. Doña Gracia Nasi lived at a time of history in which the Modern State was being formed and, therefore, was subjected to processes of complex social dynamic that simultaneously involved, feudal and modern governmental bureaucratic elements in the process of modern economy emergence that would result in liberalism. Doña Gracia Nasi integrated, as we saw, the "money aristocracy" of her time, having employed direct, significant and considerable influence over political elites (aristocracy and royal houses) with which she established very privileged relationships. During the beginning of the modern era, the predominant social distinction criteria was still based on status heredity, the top being represented by dynastic families which originated in the Middle Ages, but progressively, the distinction based on richness became more prevalent as the money economy developed and needed more and more currency (Sombart, ibidem). The interconnection between these two elites (political and economic) was fundamental, both in the maintenance of power for great dynasties that would become great colonial empires, as in the affirmation of the National Modern State of the bureaucratic type. "Elites may be defined as persons who, by virtue of their strategic locations in large or otherwise pivotal organizations and movements, are able to affect political outcomes regularly and substantially" (Higley, 2008: 3). Effectively, according to Mosca (1923, 1939), the formation of elites is strictly determined by the social structure and constituted by members of higher classes, that is, the richest, that, in turn, are the ones that have the most power. The author states that "the ruling class distinguished from the political class includes all the characteristics of ruling class, but it is more specific about the nature of minorities. The minority is not only conscious, cohesive and generally powerful, but is also characterized by the absolute monopoly of political power. The ruling class is the minority group which enjoys a great deal of power of any kind; social, economic, religious, even political. The political class, on contrary is strictly limited to the political arena...In Mosca's theory any member of the upper class – a baron or entrepreneur – is a member of the ruling class but he will not necessarily be a member of political class" (Zannoni 1978, 9). Both Sombart and Mosca, are inserted in what has been called classical sociology, which is characterized in great measure for the concern of establishing the disciplinary statute of sociology and by the search of general theories. These authors, contrary to the other classical ones, related the existence of elites with social structure and searched for explanations and causalities of general type, opposing to the teleonomic visions of history and advocating for this a certain circularity (Mosca, 1923). More recently, another fundamental perspective emerged, with great pertinence for the explanation of the elites and although it has been developed to understand the contemporary world does not stop being sufficiently widespread to the point that it provided important explanatory elements for our analysis. Pierre Bourdieu (1984) analysis society as a crystallizing of the differentiation processes. Bourdieu's theory relates the elite to their tastes, ways of life, consumerism habits, culture and preferences, in

general. The author characterized French contemporary bourgeoisie giving them a type of ideal and bourgeois spirit, theoretically and methodologically built in differently from Sombart, but that equally shows the existence of different groups within society, these groups produce concepts/cultures that mutually antagonize and define, that locate them within different social representation scopes that, in turn, are the motors of its mobilization for social action or inaction. Bourdieu showed how the senses created by culture could condition and change "...the whole experience of a social relationship or which modifies the schemes of perception, shows something else, other properties, previously unnoticed or relegated to the background (such as common interests hitherto masked by ethnic or national differences); a separative power, a distinction, diacrisis, discretion, drawing discrete units out of indivisible continuity, difference out of the undifferentiated" (Bourdieu, 1984:479). Bourdieu took as a basis the Weberian concept of "elective affinity" (Weber, 1958; Howe, 1978), that is, the existence of a connection between beliefs, ways of acting, and, consequences that are not foreseen in collective action. The author shows that the elites ensure their reproduction in power through the possession of various types of capital, including, social, cultural, economic, political capital, etc: "The primary differences, those which distinguish the major classes of conditions of existence, derive from the overall volume of capital, understood as the set of actually usable resources and powers - economic capital, cultural capital and also social capital. The distribution of the different classes (and class fractions) thus runs from those who are best provided with both economic and cultural capital to those who are most deprived in both respects" (Bourdieu, 1984, 114). Such concept (social capital) enabled to empirically identify the existence of nets of connections between privileged actors, with similar capitals, which constitute the power elites that dominate societies. Bourdieu stated that "Individuals do not move about in social space in a random way, partly because they are subject to the forces which structure this space (e.g., through the objective mechanisms of elimination and channelling), and partly because they resist the forces of the field with their specific inertia, that is, their properties, which may exist in embodied form, as dispositions, or in objectified form, in goods, qualifications etc" (ibidem, 110). The author argues also that "The network has its ultimate source in the opposition between the 'elite' of the dominant and the 'mass' of the dominated, a contingent, disorganized multiplicity, interchangeable and innumerable, existing only statistically". (ibidem, 468). Several analyses of social networks have been made and a considerable theoretical production is now at our disposal, clearly showing that the elites act accordingly amongst themselves (Hughes, 1993: 175; Gaxie, 1983). The theory of nets developed wide analysis capacities, offering, today, quantitative models that enable, to some extent, to objectify the world of influences and domination deriving from the organization of society in networks (Barabási and Albert, 1999, Barabási, 2002, Albert and Barabási, 2002, Guara, 1990, Spacey et al. 2010).

## 4. METHODOLOGY AND RESEARCH MODEL

The life histories' methods, already widely used for decades by the social sciences, always departs from the real to the conceptual. Therefore, starting by the material collection and only subsequently are the collected elements analysed, interpreted and the data criticized. In the present case, the method is historical and not truly biographical since the life in analysis is already finished and all its information comes from written sources. Therefore, it is about, a biography without the possibility of maieutic construction or psychography. We only look for building a document of etnobiographical/historical type that attributes to the actress in analysis the exemplary value of an element that reflects the spirit and action of her time, space and social position. However, we do not cease, to present as a life history, although with the own limitation of a history that we cannot control through the verifying of testimonies and, therefore, is solely based in existing documents before the beginning of the data collection. Such circumstance delimits our study's scope to "the formalized and represented reality", preventing us from

accessing the "vivid reality" (Poirier, 1995, 30/31). Therefore, it is only about, building a "he", or "an exterior personality field" (ibidem, 36). In any case, even at the presentation level we gave priority to the life history's narration and only after presenting the theoretical/problematic context and the historical/sociological model in analysis. The analysis model constructed to this research, as shown in Figure 2, includes the consideration of three types of explicative axes:

- A – Axis of exogenous variables: historical, said exceptional or irregular:
- A.1. Politic/ideological variables
- A.2. Economical/financial variables
- A.3. Scientific/technological variables
- B – Axis of endogenous variables: Sociological, said recurrent or regular:
- B.1. Societal, relational and agent organizational.
- B.2. Cultural performative or plastic.
- B.3. Symbolical, conceptual/idiosyncratic or ethical.
- C – Axis of residual variables: not evaluated by the model:
- C.1. Unknown variables.
- C.2. Not considered variables due to impertinence or no feasibility.

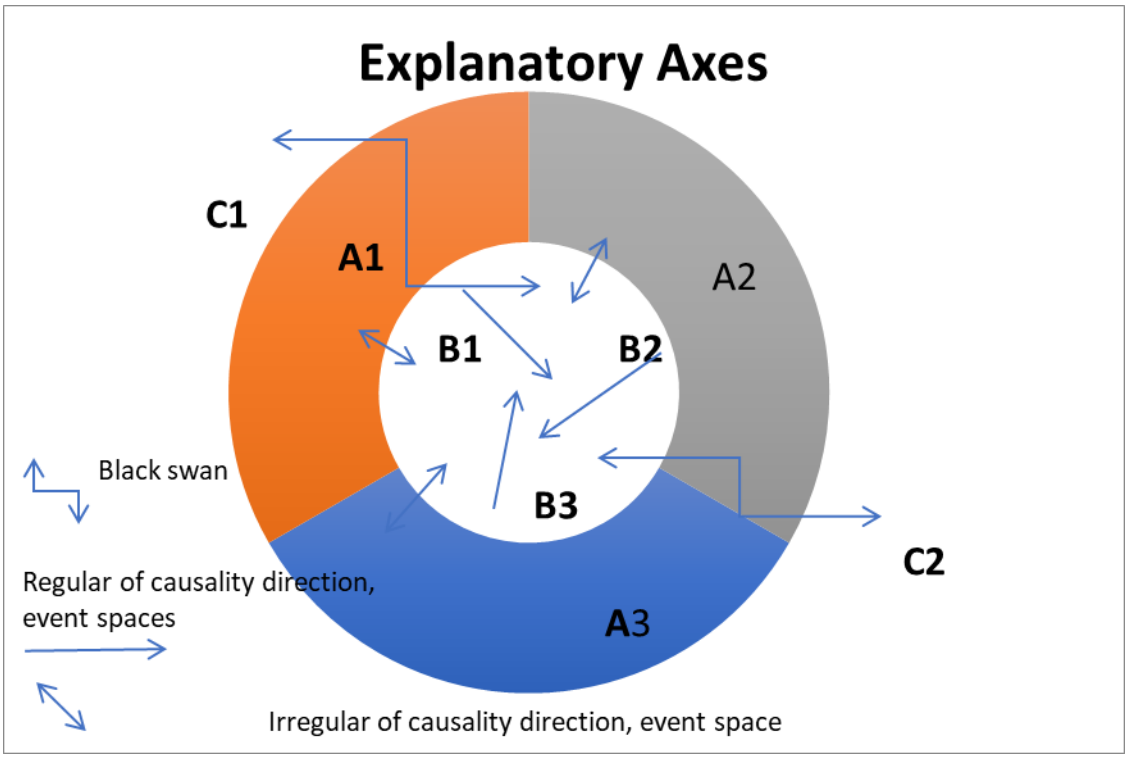



*Figure 2: Explanatory axes model representation*
*(Source: Developed by the authors)*

## 5. OBSERVATION PROCESS

Being impossible to currently observe Doña Gracia Nasi, we analysed the most diverse documentation written about her, in order to, reconstruct her life and work. Despite being a Portuguese citizen, there are very little things written about Doña Gracia in Portugal, being more studied in the USA. Thus, a great part of the work that we now present was developed in the USA. To better understand the profile of Doña Gracia Nasi, we decided to integrate for some months a year, during approximately 3 years, the Jewish community of College Station, in the State of Texas, spending time, even weekly going, at Fridays, the synagogue of Texas A&M University to take part in the Shabat.

We interviewed, several times, the Rabbi of the community, trying to identify within the community, entrepreneurial and reference women of the community. This procedure enabled us to watch the behaviour of people with the same beliefs as Doña Gracia, and of similar profile, to better understand the way in which Jewish entrepreneurs act. They live in relatively small communities, developing a strong spirit of mutual help to cope with other massified beliefs. They value personal development, rarely accepting preconceived ideas, fostering heated debates. Praising intensively the work of past generations, looking for references that work as an inspiration for present and future generations. Thus, justifying some attitudes of Doña Gracia Nasi, as she bribed people to avoid the death of other Jews and financed Torah's translations to take the culture to other stops and also the construction of synagogues. The elites assume the community's significant social responsibility, in order to, avoid that a minority culture succumbs to the growing absorption process of the dominant cultures. This community also has the particularly of being inserted in a city and region with economic superavit, like Doña Gracia Nasi was in the convergence business centre that resulted from the discoveries, allowing the understanding that this class tries to search for macro-economic contexts that enable them to develop, them simultaneously being a factor of development.

## 6. CONCLUSIONS

We can consider that Doña Gracia Nasi was well-fit to the bourgeois ideal-type capitalist elite of her time. In fact, it is possible to state that Doña Gracia Nasi was part of an international entrepreneurial elite, that is reflected by the level of her relationships and influences in the different royal courts with which she was in direct interaction both as an entrepreneur and financier, but also considering the internationalization of her businesses in general. Furthermore, we can observe the existence of a network of elitist connections that can be attributed to the success of Doña Gracia Nasi as an entrepreneur, since her connections were of the highest level, the economical/entrepreneurial dimension of her life seems to have been the only evident factor of protection towards the vulnerabilities related to the persecutions made throughout Europe to the Jews. Effectively, her success was mostly due to her privileged contacts and the fact that her fortune/companies, were functionally useful and needed in the sustenance scope of the neo-state or neo-capitalist in the time she lived. Therefore, we can attribute the historical/sociological conditions a role, at least as important as the psychological profile of Doña Gracia Nasi, in the explanation of her success as a capitalist businesswoman. On the other hand, the facts connected to the Jews' expulsion from Spain and the persecutions in Portugal, political phenomena of centralization of royal power, Europe's geographical expansion, occurrence of her widowhood and her brother's, among others, contributed as exceptional or historical factors to explain the path and the life history of the actress (A – Axe of exogenous variables: historical, said exceptional or irregulars). In contrast, the occurrence of factors connected to the type of current social inequality, to the nature of the elitist political domination, to the characteristics of elite social actions operating in networking structure and to the own characteristics of the production of richness system – capitalism – the commercial and financial nature of international and the own structural organization of societies, contributed as sociological factors of generator repetitive/systematic nature (B – Axe of endogenous variables: Sociological, said recurrent or regulars). Consequently, we can argue as a work hypothesis that it was possible that Doña Gracia Nasi escaped inquisition and maintained her fortune due to the fact of being inserted in a power elite (vide, Mosca's ruling class), although it did not belong to a political elite. This is shown by the political elite interferences in her favour and the constant privileged relations that the businesswoman maintained with the political class. Considering that Doña Gracia Nasi belonged to an ethnic/religious group, that was as a whole actively pursued, the fact that she belonged to a ruling class, as understood by Mosca, may be the predominant factor in the explanation of success, influence and no

discrimination of her gender and religion, not only in Portugal, but all over her geographical life path. A future study could be carried in order to obtain a more precise and detailed characterization of these variables considering our operational model, emphasizing with accuracy the several intervening factors and its interconnections. In such a subsequent research, it would be interesting to make a critical operative analysis of the instrumental, moral and intellectual factors of Doña Gracia behaviour that could be assessed from other documents, allowing to better elaborate her characterization within the Sombartian ideal-type scope.

**LITERATURE:**

1. Albert, R. & Barabási, A.-L. (2002). Statistical mechanics of complex networks. Reviews of Modern Physics, 74(1), 47–97.
2. Alexander, J. (1982). Theoretical Logic in Sociology. Vol. 1, Positivism, Presuppositions, and current controversies. Berkley: University of California Press.
3. Barabási, A. (2002). Linked: The New Science of Networks. New York: Perseus Books Group.
4. Barabási, A.-L. & Albert, R. (1999). Emergence of scaling in random networks. Science, 286 (5439), 509–512.
5. Bessa, A. (1993). Quem Governa? Uma análise Histórico-Política do Tema da Elite. ISCSP, Lisbon
6. Bessa, A. (2002). Elites e Movimentos Sociais. Lisboa: Universidade Aberta, Instituto Superior de Ciências Sociais e Políticas.
7. Bottomore, T. B. (1974). As Elites e a Sociedade, Rio de Janeiro. Edições Zahar.
8. Bourdieu (1979): La distinction. Critique sociale du jugement, Ed. De Minuit, Paris.
9. Bourdieu (1989): La noblesse d'Etat. Grandes écoles et esprit de corps, Ed. De Minuit, Paris.
10. Bourdieu, P. (1984). Distinction. A social critique of the judgement of taste, Harvard University Press: Cambridge, Mass.
11. Bourdieu, P. (1989a). The Logic of Practices, Cambridge, MA: Polity Press
12. Bourdieu, P. (2005). The Social Structures of the Economy. Cambridge: Polity Press.
13. Brooks, A. (2002). The Woman Who Defied Kings: The Life and Times of Doña Gracia Nasi. Minnesota, Paragon House.
14. Busino, G. (s/data). Elites e Elitismo, Porto. Rés-Editora.
15. Coleman, J. (1986). Social Theory, Social Research and a Theory of Action. American Journal of Sociology 91, 1039-1335.
16. Coleman, J. (1987)." Microfoundations and Macrosocial Behavior." In: Alexander, J. et al. (eds.), The Micro-Macro link. Berkeley: University of California Press: 153-173.
17. Collins, R. (1981 a). "On the Microfoundations of Macrosociology" in: American Journal of Sociology 86, 984-1014.
18. Collins, R. (1981 b). "Micro-Translation as Theory-Building Strategy." In: K. Knorr-Cetina and A. Cicourel (eds.), Advantages in Social Theory and Methodology. New York: Methuen: 81-108.
19. Dahl, R. A. (1961): Who governs? Democracy and power in an American city, Yale University Press,
20. Daloz, J. P. (2010): The sociology of élite distinction. From theoretical to comparative perspectives, Palgrave Macmillan, London.
21. Gaxie, D. (1983): "Les facteurs sociaux de la carrière gouvernementale sous la Cinquième République.
22. Hartmann, M. (2007): The sociology of elites, Routledge, London/New York.
23. Higley, J. (2008). Elite theory in political sociology, University of Texas at Austin.

24. Howe, H. (1978): "Max Weber's elective affinities", American Journal of Sociology, 84 (2), pp. 366-385.
25. Hughes, T. (1993): Networks of power. Electrification in Western Society, 1880-1930 (Third edition), The Johns Hopkins University Press, Baltimore/London.
26. Leite, E. (2013). An academic contribution toward qualitative evaluations of surprise business takeover attack: an historical perspective. Ph.D. Thesis, UTAD, Vila Real, Portugal.
27. Marx, K. (1977). Capital. New York: Vintage Books.
28. Michels, R. (2001 [1915]). Political parties: a sociological study of the oligarchical tendencies of modern democracy, Batoche Books, Kitchener.
29. Mosca, G. (1884). Sulla teórica dei governi e sul governo parlamentare. Studii storici e social. Torino: Loescher.
30. Mosca, G. (1923). Elementi de scienza política. Turim: Fratelli Bocca Editori
31. Mosca, G. (1939 [1896]): The ruling class, Westport: Greenwood Press.
32. Mosca, G. & Bouthoul, G. (1936). Histoire des Doutrines Politiques depuis l'Antiquité jusqu à nous jours. Paris: Payot.
33. Pareto, V. (1991 [1901]): The rise and fall of the elites. An application of theoretical sociology, Transaction Publishers, New Brunswick, New Jersey.
34. Poirier, J., Clapier-Valladon, S. & Raybaut, P. (1995). Histórias de Vida Teoria e Prática. Oeiras, Portugal: Celta.
35. Portugal, S. (2007). "Contributos para uma discussão do conceito de rede na teoria sociológica". RCAAP, EBSCOhost (accessed March 18, 2016).
36. Ritzer, G. (1979). "Toward an Integrated sociological Paradigm." In: W. Snizek et al. (eds). Westport, Conn.: Greemwood Press: 25-46.
37. Ritzer, G. (1981a). Toward an integrated Sociological Paradigm: the Search for an Exemplar and an image of the subject Matter. Boston: Allyn and Bacon.
38. Ritzer, G. (1996). Modern Sociological Theory, McGraw-Hill book Co.
39. Cecil Roth (1977). Doña Gracia of the House of the Nasi. The Jewish Publication Society, Philadelphia-Jerusalem.
40. Sombart, W. (1928, orig. 1909). Le bourgeois: contribuition à l'historie morale et intellectuelle de l'homme économique moderne. Retrieved on 13 de March 2016 in: http://classiques.uqac.ca/classiques/sombart_werner/le_bourgeois/le_bourgeois.html
41. Sombart, W. (2001, orig. 1911)). The Jews and modern capitalism. Ontario: Batoche books Ltd.
42. Spacey, K., Rudin, S., Brunetti, D., et al. (Producers) (2010). The social network [Film]. Culver City, CA: Columbia Pictures.
43. Usque, S. (1965). Consolations for the Tribulations of Israel. Philadelphia: Jewish Publication Society.
44. Weber, M. (1930). The Protestant Ethic and the Spirit of Capitalism, Unwin Hyman, London & Boston.
45. Weber, M. (1958): The protestant ethic and the spirit of capitalism. New York: Scribner.
46. Weber, M. (2003). The Protestant Ethic and the Spirit of Capitalism. Translated by Talcott Parsons originally published by Scribner, New York 1958, Library of Congress.
47. Wiley, N. (1988). "The Micro-Macro Problem in social Theory". Sociological theory 6, 254-261.
48. Wright Mills, C. (1956): The power élite, Oxford University Press, New York/London.

# REVOLUTION IN INDUSTRY AND EVOLUTION IN EDUCATION OR DEVELOPMENT OF INTELLIGENCE

**Venelin Terziev**
*Georgi Rakovski Military Academy, Sofia, Bulgaria*
*University of Rousse, Rousse, Bulgaria*
*Kaneff University Hospital, Rousse, Bulgaria*
*terziev@skmat.com*

**Marusya Lyubcheva**
*University "Prof. d-r Assen Zlatarov" – Bourgas, Bulgaria*
*milyubcheff@gmail.com*

**Olga Andreeva**
*Rostov State University of Economics, Rostov-on-Don, Russia*
*olvandr@ya.ru*

**Marin Georgiev**
*Kaneff University Hospital, Rousse, Bulgaria*
*clementon@abv.bg*

***ABSTRACT***
*For almost ten years now, Europe has been existing and focusing on three main goals – intelligent, sustainable and inclusive growth. All resources are organized and mobilized to achieve them, but it is more than obvious that education and science have a leading role. On the one hand, because these goals are a continuation of the paradigm for creation of "knowledge-based economy" introduced in 2000, but on the other hand, because it is clear that modern technical and technological development is at such a stage that without science and innovation fast growth in development cannot take place. Without underestimating other types of growth, the intelligent is the one that performs the basic functions of achieving economic growth related to innovation, high efficiency, quality, productivity and overall sustainable development. The goal of the present publication is to study the process of technological change as revolutionary and the period of our development today as Industry 4.0.*
***Keywords:*** *Revolution, Evolution, Industry, Intelligent development*

## 1. INTRODUCTION

When talking about evolution and revolution, irrespective of the fields, we always mean historical transitions and relations between the past, present and future. In terms of education, it is clear that the periods in which results of the changes are reported differ from those in other fields, due to the specifics of the system and the longer period of obtaining relevant results: extended by at least 10 years, during which a person begins and completes at least the first stage of their education (Terziev, Bogdanova, 2019). This period is indefinite and long enough to analyze data from past periods, but it is necessary to move forward. Considering that we are currently living in a period of Industry 4.0, as well as the growing importance of education in the modern world, we need to be ready with these analyses, models and with the interaction of education with other systems in order to be able to define its future, even though it sounds conditional at the moment, because "tomorrow will always be late". In practice, it all starts with education and education must be seen as part of the political, economic and social relations in general in the context of globalization. Transformations in social and economic development in the first decade of the 21st century are a serious challenge to sustainable development and

economic growth, education being part of them. It is indisputable that technological and technical development has passed and will continue to pass through different stages, but we need to assess it on the basis of today's state and interaction between the various elements that influence today`s and future periods. There are several key areas that determine the level of economic growth today – information and communication technologies, digitalization, low-carbon economy, i.e. the high-tech industry. These key areas are linked to global development goals. There are several key systems that support these economic areas - education, science and innovation, each of them being specific, evolving at different speeds, by different mechanisms and not negligible comparing to others (Terziev, Lyubcheva, Solovev, 2020).

## 2. EVOLUTION OF EDUCATION

For almost ten years now, Europe has been existing and focusing on three main goals - intelligent, sustainable and inclusive growth. All resources are organized and mobilized to achieve them, but it is more than obvious that education and science have a leading role. On the one hand, because these goals are a continuation of the paradigm for creation of "knowledge-based economy" introduced in 2000, but on the other hand, because it is clear that modern technical and technological development is at such a stage that without science and innovation fast growth in development cannot take place. Without underestimating other types of growth, the intelligent is the one that performs the basic functions of achieving economic growth related to innovation, high efficiency, quality, productivity and overall sustainable development (Terziev et al. 2020a; Terziev, Dacheva, 2020b). Today we define technological change as revolutionary and the period of our development today as Industry 4.0. It is not difficult to trace the transformations in the development of technologies - from 1 to 4, to assess the complexity and changes they have caused to various aspects of people's lives, such as everyday life, culture, work and leisure. Changes that shape the labour market, the living environment, the political system, technology and human identity.

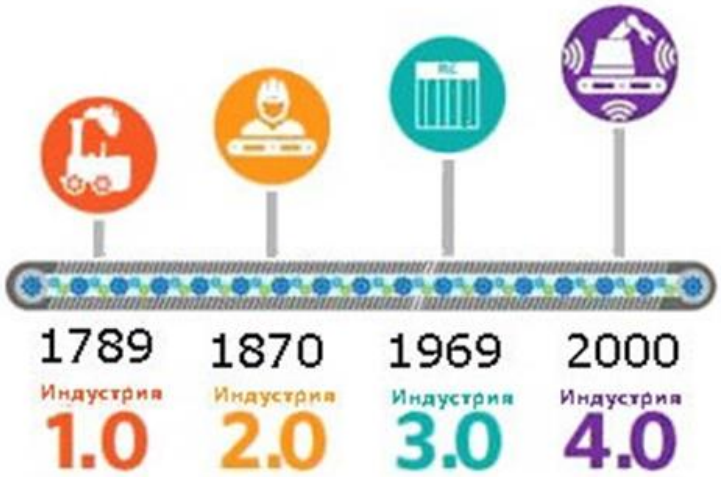



*Figure 1: Transformations of technology (Индустрия – Industry)*

If Industry 4.0 is a tendency in the development of automation and data exchange in production technologies, then we need to think about what basis for this development education and research offer, being inextricably linked to technological development. Should education be measured as Education 4.0 to ensure that it is sufficiently consistent with industrial development? Can we talk about Science 4.0 to provide the necessary basis for technological development? And if they exist in space today or as some options for the future, what is the real situation of their interaction with industry?

## 2.1. Industry X.0., Education У.0., Distance

The rate of new knowledge and skills accumulation in the last decade of the XX and the first decades of the XXI century is very different from that of the implementation of technological solutions. Until now, the educational and scientific base supported the technological process/progress well enough. At one point, however, the distance between education and science on the one hand and technology on the other, as separate systems, began to increase not in favour of synergies in economic growth. Such an imbalance is impossible to occur and last for a long period of time, i.e. the education cannot sustain the Fourth Industrial Revolution, because it is at lower stages than the fourth level. In fact, we still can't talk about Education 4.0, but is it possible for both systems to develop at the same speed? The answer lies in a systematic analysis of education in particular. It is well known that education, as a sufficiently conservative system, develops in an evolutionary rather than a revolutionary way. This means we need to find the right matching models between education and Industry 4.0 so that there is no slowdown in technological development, rather than focusing on whether it is level 4.0 or not. If the correlation between education, science, and technology is as described above, what are the factors that determine revolutionary technology in evolutionary educational development? And how long can this discrepancy exist? Is it possible to achieve intelligent growth with such correlation? The answer to this question can be yes and no. At first glance, we should answer no, because this discrepancy could create problems for the whole development process. The deeper answer to this discrepancy must be sought in the differences of the systems and their essential characteristics, which determine the mechanisms in their internal changes - principles, factors and criteria. The education system predetermines the other two (science and technology). The accumulation of a sufficient basis in terms of quantity and quality is necessary for the development of research and technology. The axis of this dependence is one-way, but there are branches, though not decisive in this process. It is this accumulation and renewal of the theoretical and informational content of the basis that determines everything else. The conservative model gives the impression of a "slow" development of education - because there is no way to remove from the education system fundamental theories and facts that have been in textbooks for centuries and will continue to exist, unlike some fast-changing databases and information content. The education system itself contains an interaction between fundamental knowledge, databases and information in order to achieve transformed knowledge, which is relevant to each period of development whether we call it "'Industry 2.0" or "Industry 4.0". The evolution of education means it is impossible to change the fundamental knowledge "revolutionary" or too radically. We see examples in which radical changes, albeit in non-technologically defining fields, cause serious conflicts. The fundamental theories in mathematics, physics, and chemistry are part of the continuous fundamental basis. They also change, or rather complement each other, which happens consistently and systematically, sometimes looking back or establishing data and facts. The process can be identified as "two steps forward, one back" and can be associated with upgrading and adaptation, but in any case we need confirmation, which takes a long time. For example, the laws of physics (Newton, Einstein, Lomonosov), the laws of thermodynamics, the Periodic table will continue to be studied, regardless of the name under which it exists in different countries and so on. It took a tremendous amount of quantitative research so that mathematics could become the foundation of computer technology – but no one can remember the names of all those who have invested in this long period of intellectual potential and effort, except one or two. This also fully relates to the advances in chemical and physical sciences that contributed to the creation of new materials for computers, but the computer is a fact and so is computer technology. (When we talk about the development of computer technology, we tend to forget the education behind it). All these fundamental laws, in accordance with new discoveries and additions, are included in the transformed knowledge, which in turn should be considered part of the era.

On the basis of the transformed knowledge (including through the introduction of ICT education and other modern achievements with basic value) science and technology have been developed, which in a certain sense and certain period become autonomous, and can now cause changes much faster, which we consider as "revolutionary". This is exactly what happened with information and communication technologies, with digital technologies, so that we can talk about Industry 4.0. This means that there is a secondary process, which, with the help of education (in its current state), causes accelerated development and achieves other parameters of development in which computerization, digitalization, e-control, DG networks find their defining place. This also means something very important - the structure of the educational base can be considered as concentric - central part with a strong evolutionary character and peripheral circles in different areas where movement is accelerated - self-developing spaces in which there is a reduction in the length of scientific -technological chains. In this sense, the evolution of education and the creation of transformed knowledge have actually provoked the possibility of revolutionary scientific and technological solutions and this has created the next paradigm with the participation of knowledge - formulated as a knowledge triangle (knowledge – research – innovation). In other words, the discrepancy has become compliance.

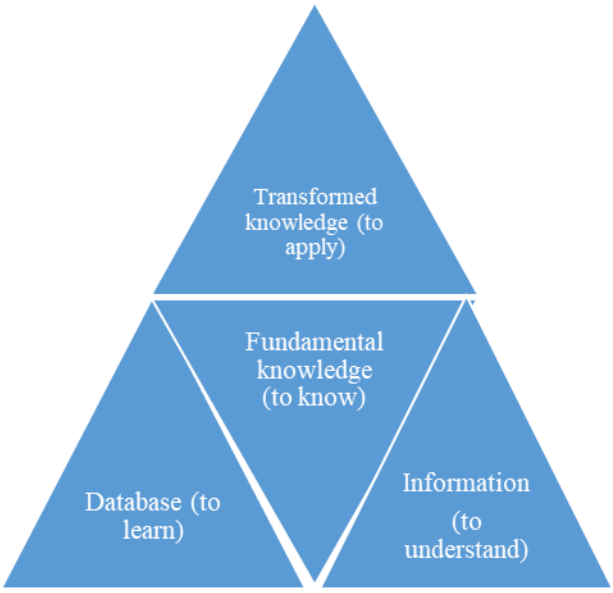



*Figure 2: Evolution of education*

It has become very common to talk about a knowledge triangle between education, science and business and with its help explain much of what is happening or not happening in the interaction between the individual elements. In recent years, this triangle exists in another slightly modified version: education - research - innovation. We use them in different contexts – in one case subjective, in the other case as process. However, both options are important enough to ensure growth and intellectual growth above all, as will be discussed later. In the period of Industry 4.0 we often talk about digital education. The question is what is meant by "digital education" and to what extent it exists today. An almost systemic error is made here. The digitalization of education is seen as the introduction of information and communication technologies in learning process in various disciplines, as a method of teaching and learning. The content of the educational elements can be presented in different ways, but this does not change its essence. Rather, it changes its perception. Therefore, other criteria should be considered in terms of educational models. It is still not enough to work on computers and tablets at school and use electronic platforms to call education digital. We can upload knowledge from the 19th century, a lecture course from the 20th century or even older on the platform.

These methods are undoubtedly significant, but are insufficient and do not define education as digital. It is necessary to change the content of the basis, both fundamental and peripheral in order to derive new transformed knowledge about the new technology as the content of processes, mechanisms, and interactions. Adapted to the current situation, learning content is the key word in education. The integration between methods and content, and if both meet the definition of digital, then so does the educational model. The changed content should make it possible for the school to train experts with high-level skills, including high digital skills for different sectors (digital management of organizations, digital technology management, high technology, digital commerce, digital data exchange, skills for problem solving in different areas, integrated skills, complex competencies), but if the need to change the curriculum is perceived as a formality, then the problems will continue to accumulate and education will continue to lag behind. Schools and universities as educational institutions are responsible for bringing education as close as possible to the revolutionary nature of technology, which means complexity - starting from the types of structures, going through the organizational elements, tools and reaching quality. Administrations and teaching communities direct their efforts to this process and more precisely to its improvement. Rethinking education in this context is an important step – continuously updated content, combined with new teaching methods and teaching staff who are aware of their responsibility in terms of development. A next important task is to develop real digital education by creating platforms for the exchange of transformed knowledge (Kyriakopoulos et al. 2020c; Solovev et al. 2020d). Knowledge sharing is already becoming a paradigm of development. It is not enough to provide knowledge at university/school only for its pupils and students. Knowledge must reach the maximum number of users. Many people study outside of school and university.

## 3. EVOLUTION VERSUS REVOLUTION IN EDUCATION

Is it possible for education to develop revolutionary? How to influence the acceleration of evolutionary changes in education? The questions we are seeking answers to are whether Bulgarian education is ready for the challenges of today's interconnected and digitalized world, whether it possesses necessary skills, how to rethink the concept of uninterrupted education and what the place of vocational education in it is, as well as what the current policies to meet the needs of the future are. Influencing development is not only possible, but is a natural move in the interaction between the elements of a system or the systems between each other. As far as the education system is the one that mainly implements and spreads knowledge, we need to talk about both knowledge and education. The influence is defined as a result of various factors, depending on the concentricity of the structure of knowledge accumulation, as well as depending on the structures that shape knowledge. The conservatism of the education system is one of the main factors with which we associate the slower changes in the system. It is expressed both in its structure and content. The structure related to the types and kinds of schools, the models for the implementation of education, the networks of educational structures, the establishment of universities and colleges – these are issues whose decisions go through a long process of regulations, legal procedures, administrative acts, etc. Of course, there are changes, but in their essence they are partial, sometimes when we don't like them, we define them as "made in pieces". Some of them do not lead to any improvement and acceleration in the development of the system, they are useless and even harmful (such as the transformation of technical schools into vocational schools). Others lead to significant changes and a sense of improvement, but the analyses, although difficult to make their way, show different results (as was the transformation of all high schools into universities). Content is also hard to change due to state educational requirements and standards. Knowledge at its core changes slowly enough to keep the necessary foundation. In this sense it is especially important to maintain balance, as well as to influence all areas.

Because when we talk about education of the future, we must not forget about all the interdisciplinary and creative cultural connections, without which the general development would be distorted. The changes in education are also correlated with the methods used in training carried out faster due to the introduction of results from research and industrial development, i.e. we can observe the feedback effect. Here is the role of ICT and other methods in the educational process, which facilitate the perception of knowledge, and with which education comes out to some extent of its conservatism and approaches Industry 4.0 faster, but this still cannot be called a revolution. The conservatism of the education system was to some extent overcome by several important steps taken after 2000 that affected its quality and the pace of change - the Lisbon Strategy (defining education criteria), the Bologna process and the introduction of easy-to-understand and comparable education degrees (bachelor, master and doctor); introduction of academic credit system (ECTS) as units of student employment; introduction of European quality dimensions; removal of the existing obstacles to the free movement of students and teachers in the European area (European and National Qualifications Frameworks, introduction of key competencies (mother tongue, mathematics, foreign language), introduction of the Lifelong Learning Programme. Where do these new elements lead in the education? They are not fundamental by themselves, but they have an added value as peripheral and organizational elements that improve education, image of the educational foundation and increase the sustainability of the educational base. The transfer of knowledge and skills, which in turn underlie the research and technological process, is part of the impact on the evolutionary development of education, which increases its usability. There is another element in the evolutionary model of education that is worth considering and that is shared knowledge. Shared knowledge is the semantic content of education as a whole, because going beyond individual possession knowledge is being used by communities, i.e. from individual it becomes communal or corporate. This is also a factor in accelerating the development of educational models. Shared knowledge expands the perimeter of transformed knowledge, and can relate to some extent to non-formal or informal education and can significantly affect the rate of change in the education system without radicalism, from which content may be lost. The transition from individual to corporate knowledge provides another opportunity for realization and this is a new paradigm – knowledge management. Perhaps this is the closest thing to the changes in the educational system towards the revolutionary nature of technology, because the mechanisms used in knowledge management, in addition to using computer technology and devices, incorporate technological content that greatly upgrades the fundamental and peripheral basis of education. In the third place is the issue of leadership in education. It is time to talk about leaders in education in the full sense of the term. No strategy or any document can replace the role of the leader in education - a factor that determines the true criteria for quality, dissemination and implementation of knowledge, this is the way towards faster evolution. One of the tasks in the management of education is to make leadership in the system as a defining characteristic feature and not only formally, but together with the responsibility it brings. The leader in education (teacher of the future) is a constantly improving professional with willingness, intellect and high emotional intelligence, who being in constant interaction with other systems can identify and provoke those skills that will make people successful. Knowledge societies can also find a place in every school and university. It is through them that interdisciplinarity can be achieved, which is also very important for the development of education. The categorization as “innovative schools” and “research universities” is possible to detach a part of the young emerging intelligent people and give them a higher start for development, but it must be combined with the parameters of the whole educational environment in order not to contradict the general principles of development and to avoid the possibility of creating conflict between the individual elements, groups or even regions. The curriculum is structured, subject to educational standards and in its sense is uniform for the

respective types of schools. The standards should ensure the possibility of a change to be introduced before the end of a full course of study. This will ensure the evolution of education, corresponding to evolutionary or revolutionary changes in social processes. Universities are quite liberal in terms of curriculum. Evolutionary changes in university education are more favourable due to the fact that in addition to teaching (educating) they are engaged in research, elements of which can be included in teaching programmes. These activities determine criteria and indicators through which the necessary control is executed, ratings are made and the quality of implementation is assessed. The educational environment, perceived as ecosystem, is extremely specific in order to be regulated sporadically with pseudo-creative tools or with frequent changes in the legislation. It has a clear hierarchical pyramidal structure, as have all the stratification systems, the top of which is always occupied by the experts with their highest potential - those who bring change and can bring the system as close as possible to the requirements of society. In other words, the creativity of the young generations, provoked by the teacher and the educator, must develop in such a way as to ultimately produce high expert potential in the full meaning of the term.

## 4. RESEARCH AS PART OF THE PARADIGM OF A REVOLUTION IN TECHNOLOGY

The transition from education to research is a natural way to technological development. Universities and research centres are the main carriers of research potential and have independent significance, but in order to reach a technological product, unconditional interaction with an industrial operator is required. The nature of this interaction actually determines the nature of the industrial period. The Industrial Revolution 4.0 is driven by the transition from automated to digital systems – as part of research efforts in mathematics, physics, chemistry on the one hand and applicable technological solutions in computer systems on the other. Accumulated database allow research to become innovative technologies that are applied in industry, move fast enough and generate new solutions on their own, as well as offer economic growth. The distance between research and technology is much smaller than between education and science or education and industry. On the one hand, science employs human capital with high expertise (knowledge, skills and competencies acquired in the education system and outside of it), who work in a synergistic model in terms of methods and tools for research and technology development. This leads to a shortened period of research chains and offering implementation solutions to the business, which change the essence of the industrial age. The factors that determine the changes both in the research system and in the "science – business – innovation" (Terziev, Lyubcheva, Solovev, 2020) interaction are human capital, financial resources and international cooperation. Interventions to accelerate research are related to the creation of various structures, agencies and institutions. One of the leading structures at European level is the European Institute of Innovation and Technology, whose mission is to strengthen the EU's innovation capacity "by promoting synergies and cooperation between academic, research and innovation activities that meet the highest standards, including by promoting entrepreneurship". The knowledge societies that underlie the development of projects in various scientific fields, incl. for building strategies for science development, centres of excellence, etc. The changes taking place in all sectors of socio-economic life obviously reflect on the capacity of human capital. Efforts to improve the capacity and competencies of the human resources have their reflection in various instruments - programmes and programme documents – Rethinking higher education, New Skills Agenda for Europe, financial instruments – Horizon Programme. All this, together with the idea of a targeted innovation policy that encompasses both science and technology systems, contributes to some compensation for the distances between systems. The research, divided into separate programmes of different institutions (EC, national institutions, agencies) are supported by serious tools, which makes

the progress in science tangible. They involve transnational cooperation, networking, mobility and cover interdisciplinary areas, which is crucial for the realization of revolutionary discoveries. That is why investment in research and innovation, which we define as investment in the future, are so crucial. WHERE ARE WE? They create an environment to improve competitiveness and allow businesses to create more and better jobs. Strengthening industrial innovation, including investment in key technologies, easier access to funds and support for innovative entrepreneurship, are among the important steps in developing the synergies between research and innovation. Research and innovation policies ensure that technological breakthroughs and revolutionary solutions become viable products with real potential and high added value, which is beneficial for society by improving the quality of life.

## 5. GROWTH OF INTELLIGENCE - A SYMBIOSIS OF KNOWLEDGE AND HUMAN RESOURCES

None of the areas mentioned above can be considered separately from human resources/human capital. The centre of the knowledge triangle, recognized as a model for growth of intelligence, is MAN, the bearer of knowledge, the one who does research and implements innovations. In this sense, human resources and their development are crucial for the development of any organization and company, as well as for growth of intelligence in general. Growth of intelligence is driven by several essential elements:

- education – encouraging people to learn and develop their skills;
- research – supporting research teams (knowledge communities) in the field of high technology, ICT, climate change, etc.;
- innovations – creating new products/services, that generate growth and jobs and help solve social problems;
- digital society – using information and communication technologies.

Growth of intelligence is a continuation of the idea of creating a knowledge economy translated into a new language, namely the realization of the knowledge triangle in which universities, research institutes and centres play a significant role. This is where the expert human resource/capital intersects with the ideas of innovation and technological development. Universities and research centres in their dual role - to prepare and develop human resources on the one hand and to create innovations on the other, have a very significant contribution to the realization of intelligence growth. That is why the support for universities at all levels is essential, using various means, incl. political, financial, organizational and legislative.

## 6. CONCLUSION

Leading initiatives of intelligence growth are related to the accelerated development in the field of digital technologies, the establishment and functioning of the Innovation Union, the establishment of the "Youth on the Move" programme (Terziev, 2020e). Integration between research and innovation created by human capital is implemented in intelligent growth through various tools and initiatives. The "scientist at the centre" is the message that makes it clear that human resources are the driving force. Through the symbiosis education-science-innovation and with human driving force the distance to Industry 4.0. is decreasing. The functioning of a common European research area is a necessary condition in this process, due to the need for internationalization of research driven by globalization. The role of not only integration as a principle, but of partnership between the subjects as a model is growing. Universities are one of the most active in the implementation of international partnerships – leaders in ideas, creativity, forecasting and determining directions of development. It should be emphasized that in Bulgaria we need to create internal partnerships, which would have a very positive impact on the regional development of the country.

The country has a rich network of universities and colleges, but unfortunately none of the inter-university networks like those in other countries that work actively, efficiently and successfully. And this is the way to create centres of excellence. I should say that whatever strategies we use, if there is no partnership and the creation of university expert teams, there can be no success. Nor will it be enough to use partnerships with universities abroad, for which Bulgarian universities usually play a secondary role. It is not about official cooperation, ensured by contracts that often do not work, but about creating expert teams that implement partnership and cooperation. And in addition to building partnerships, it is essential that they are sustainable, i.e. that they have long-term business prospects. And thirdly - the interaction with business. Research will not be alive if it is not done. Technologies change so fast that if a created innovation is not implemented within a year, it irretrievably loses its value and if it is not created in partnership with the business in our country, the business will get same or similar technology from abroad. Research shows exactly such situations – business prefers to trust an imported innovation than one created by our university or institute. Which in turn gives a chance for higher growth of the foreign economy. This is the reason why we are talking about the need to achieve integrated growth not only at the EU level, but also in our country – a national expression of it. In the context of intelligence growth, the best option is to include business representatives in the expert partner teams. It is also about building trust between science and business, which is part of the value system of the current industrial age. Among the prerequisites for the realization of intelligence growth, and with its increasing importance, is the development of start-ups and entrepreneurship. They are again based on the leading role of human capital and the research-innovation interaction. Their future in our country is just as important as in Berlin, Lisbon and Stockholm. Each era has its own industry that symbolizes it. In the 19th century, these were the railway companies. Car manufacturers, radio and television channels and information and communication technology companies have marked the 20th century. Now, in the 21st century, is the time of digitalization and of the start-ups and entrepreneurship that use and develop it. Their advantage is not simply in the implementation of new technologies. A start-up in a key area is much more than a small or young company that applies digital technology to its work. This is something much more important. It is a combination of values and technology! What are the key values embedded in their DNA? Ambition, speed, entrepreneurship, striving for leadership. They strive to occupy a central place in their environment, in their ecosystem, to dominate it. The difference is in tradition and innovation, in routine and leadership, in human capacity and the combination of human capacity and digitality, in following well-known paths and tolerable risk. This type of entrepreneurs has led technical progress through all the industrial revolutions, but of course at different levels. This is the new type of business model that breaks traditional connections and creates huge network potential that can solve a given problem at once and lead it to a successful end. It's like a race where only the first ones win. The battle not only for profit, but also for leadership, which brings many other benefits, is what motivates them. Start-ups covering key economic areas definitely possess revolutionary innovative achievements. This is contagious and is already moving into a new trend for the development of key areas, namely the creation of artificial intelligence. This is a product of this same human capital, which is already on its way and is very likely that the next industrial period will be connected with it.

**LITERATURE:**

1. Terziev, V., Bogdanova, M. (2019). *The academic capitalism and the new business model of the universities*. // Proceedings of ADVED 2019 - 5th International Conference on Advances in Education and Social Sciences, 21-23 October 2019, International Organization Center of Academic Research, Istanbul, Turkey, 2019, pp. 477-484, ISBN: 978-605-82433-7-8.

2. Terziev, V., Lyubcheva, M., Solovev, D. (2020). *The interaction: business - education - investment for development*. // Proceedings of INTCESS 2020- 7th International Conference on Education and Social Sciences 20-22 January, 2020 - DUBAI (UAE), International Organization Center of Academic Research, Istanbul, Turkey, 2020, pp. 865-869, ISBN: 978-605-82433-8-5.
3. Terziev, V., Dimitrovski, R., Pushova, L., Georgiev, M., Solovev, D. (2020a). *Change management and digital age training*. // Proceedings of INTCESS 2020- 7th International Conference on Education and Social Sciences 20-22 January, 2020 - DUBAI (UAE), International Organization Center of Academic Research, Istanbul, Turkey, 2020, pp. 730-738, ISBN: 978-605-82433-8-5.
4. Terziev, V., Dacheva, I. (2020b). *Innovations in Bulgarian education*. // Knowledge – International Journal Vol. 38.2, Institute of Knowledge Management, Skopje, N. Macedonia, 38, 2020, 2, pp. 343-347, ISSN 1857-923X (for e-version), ISSN 2545 – 4439 (for printed version).
5. Kyriakopoulos, G., Solovev, D., Kuzora, S., Terziev, V. (2020c). *Exploring research methods and dynamic systems toward economic development: an overview*. // Proceeding of the International Science and Technology Conference "FarEastCon 2019", October 2019, Vladivostok, Russian Federation, Far Eastern Federal University, Smart Innovation, Systems and Technologies, vol 172. Springer, Singapore, 2020, pp. 1-29, (Online) ISBN978-981-15-2244-4, (Print) ISBNOnline ISBN978-981-15-2243-7.
6. Solovev, D., Kuzora, S., Kyriakopoulos, G., Terziev, V. (2020d). *Algorithmic approach to the assessment of innovation*. // Proceeding of the International Science and Technology Conference "FarEastCon 2019", October 2019, Vladivostok, Russian Federation, Far Eastern Federal University, Smart Innovation, Systems and Technologies, vol 172. Springer, Singapore, 2020, pp. 31-50, (Online) ISBN978-981-15-2244-4, (Print) ISBNOnline ISBN978-981-15-2243-7.
7. Terziev, V. (2020e). *Factors influencing education* system. // Economic and Social Development (Book of Proceedings), 50th International Scientific Conference on Economic and Social Development Development, 13-14 February 2020, Chelyabinsk, 2020, pp. 651-656, ISSN 1849-7535.

# ANALYSIS OF SELECTED PROBLEMS OF THE MODERN WORLD IN THE CONTEXT OF MUNICIPAL WASTE MANAGEMENT

**Karolina Gwarda**
*Gdynia Maritime University, Poland*
*k.gwarda@wpit.umg.edu.pl*

***ABSTRACT***

*Mankind has long struggled with the problem of waste, but it was not until the nineteenth-century industrial revolution that a sharp increase in production and an avalanche of new inventions started generating huge amounts of problematic and increasingly harmful waste. The problem of waste as a global threat to the environment is therefore an entirely new phenomenon, fully determined by human activity over the past 200 years. However, looking through the prism of the growing global population, urbanization and excessive consumerism, it can be expected to become even more burning. The aim of the article is to show selected causes and effects of improper municipal waste management in a global perspective. The analysis was performed taking into account demographic, social, urban, raw-materials, energy and environmental factors.*

***Keywords:*** *municipal waste management, solid waste management*

## 1. INTRODUCTION

The picture of the modern world, inhabited by over 7.7 billion people (UN, 2019, p. 1) spread across more than 190 countries, is extremely diverse in many ways. Projections for the coming decades show that the Earth is on the brink of a significant demographic explosion. However, mankind is increasingly aware of the fact that the world is beginning to grapple with many issues and threats that until recently did not exist or passed unnoticed. Very often, due to economic and financial motives, as well as the sheer scale of these emerging phenomena, they have a global outreach and by default assume global dimensions. What is more, because of their interconnection and interpenetration, problems may quickly escalate and become difficult to solve. An example is municipal waste, which is a byproduct of everyday human activity that poses a serious threat to the environment around the world (Ogundipe, Jimoh, 2015, p. 1305). The reasons for this state of affairs should be sought mainly in demographics, since the growing global population means increased demand for food whose consumption generates a large amount of municipal waste. It is also not without significance that the world is becoming an increasingly urbanized place, while the high standard of living in affluent countries and overconsumption in emerging markets create a constant, unbridled demand for more and more goods. In all this, improper waste management contributes to the wastage and depletion of raw materials, and therefore to economic losses. Using the natural environment as an outlet for waste leads to environmental destruction and pollution, climate change, air pollution, all of which have a direct impact on numerous ecosystems and species. The negative effects of improper waste management come to the foreground especially with regard to raw-materials, energy and environmental factors. In the following sections, the causes and effects of inappropriate municipal waste management were analyzed.

## 2. GLOBAL TRENDS IN MUNICIPAL WASTE MANAGEMENT

According to World Bank data, 2.01 billion tons of municipal solid waste are generated around the world every year. Worse still, at least 33% of that waste is not managed in an environmentally safe manner. The amount of waste generated per person per day averages 0.74 kilograms but can range anywhere from 0.11 to 4.54 kilograms. Most municipal waste is generated by high-income countries - around 34%, or 683 million tons of the world's waste.

Global waste is expected to reach 3.40 billion tons by 2050. It should be noted that there is a positive correlation between waste generation and income levels. The daily generation of waste per capita in high-income countries is projected to increase by 19% by 2050, and 40% or more in low- and middle-income countries. Currently, the region of East Asia and Pacific (23% of the global amount) generates the largest amounts of waste, while the region of the Middle East and North Africa accounts for 6% of the world's municipal waste. However, in the fastest growing regions – that is, Sub-Saharan Africa, South Asia, and the Middle East and North Africa - the total amount of waste generated is expected to increase more than twofold, or even threefold, by 2050 (The World Bank, 2018, pp. 3-8). Detailed data on this is shown in Fig. 1.

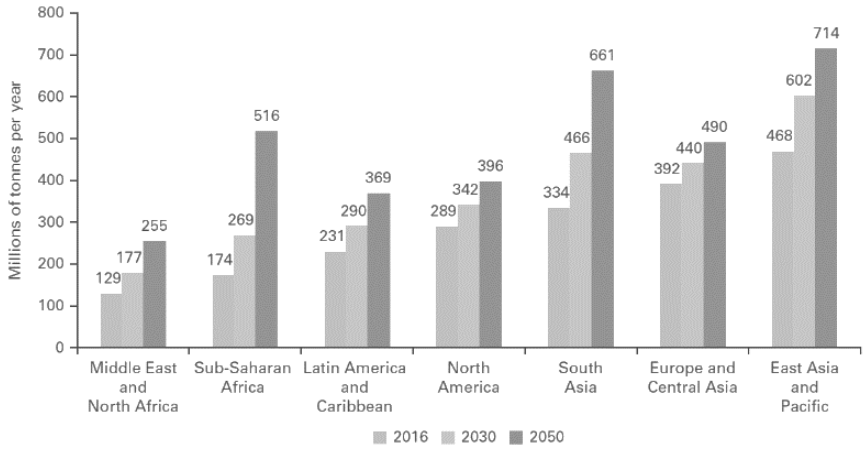



*Figure 1: Projected waste generation, by region (millions of tonnes/year) (Source: The World Bank. (2018). What a Waste 2.0 A Global Snapshot of Solid Waste Management to 2050. Retrieved 10.10.2020 from https://openknowledge.worldbank.org/handle/10986/30317 p.20.)*

Unfortunately, more than half of the waste in these regions is currently disposed of in the form of open dumping, meaning that the projected increase in waste will have serious implications for the environment, health and the well-being of the world's population. It should also be borne in mind that the composition of the waste itself depends on the level of income, which is related to the different consumption and wealth patterns in a society. High-income countries produce relatively less food and green waste (about 32% of all waste), while generating more recyclable dry waste such as plastic, paper, cardboard, metal, and glass (51% of waste). Middle and low-income countries generate 53% and 57% of food waste and green waste, respectively. It should also be noted that the share of organic waste increases along with the decline in economic development. In low-income countries, materials that can be recycled make up only 20% of the waste stream. On average, all regions generate around 50% or more of organic waste, with the exception of Europe, Central Asia and North America, which generate more dry waste. It is food waste and green waste that constitute the most numerous group - 44% (The World Bank, 2018, pp. 19-22). A detailed percentage breakdown of global municipal waste is shown in Fig. 2.

*Figure Following on the next page*

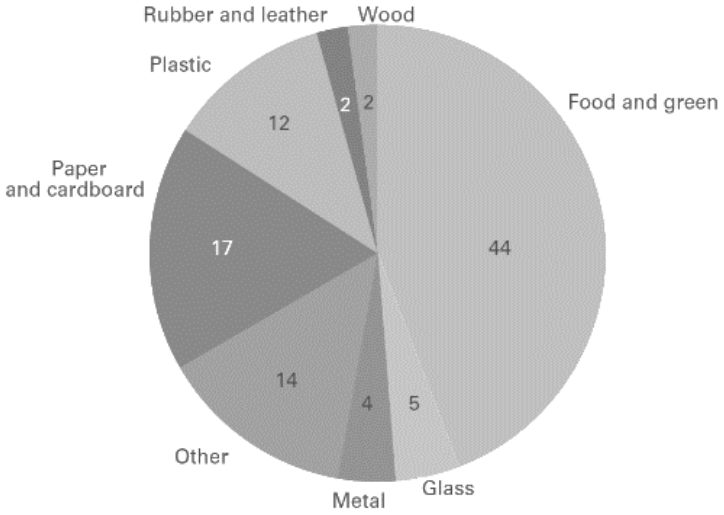



*Figure 2: Global waste composition (percent)*
*(Source: The World Bank. (2018). What a Waste 2.0 A Global Snapshot of Solid Waste Management to 2050. Retrieved 10.10.2020 from https://openknowledge.worldbank.org/handle/10986/30317 p.29.)*

Another important aspect of waste management is waste disposal and neutralization. In the global perspective, the majority of waste – about 70% - is deposited in various types of landfills: open dumps, sanitary landfill with landfill gas collection, unspecified landfill (Chen D., et al., 2020). Proper waste disposal or treatment is usually practiced in high- and middle-income countries (where only 2% of waste is landfilled). In lower-income countries, as much as 93% of all waste is landfilled. Figure 3 shows how to deposit or treat the global municipal waste stream.

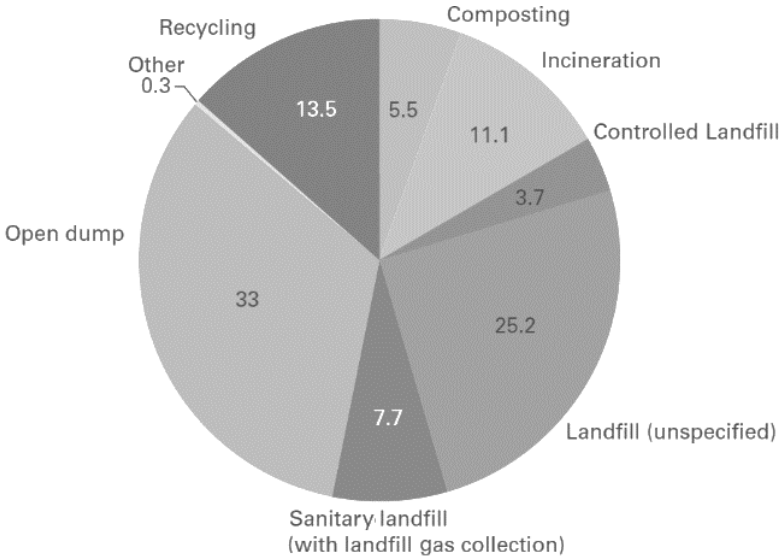



*Figure 3: Global treatment and disposal of waste (percent)*
*(Source: The World Bank. (2018). What a Waste 2.0 A Global Snapshot of Solid Waste Management to 2050. Retrieved 10.10.2020 from https://openknowledge.worldbank.org/handle/10986/30317 p.34.)*

As can be seen, it is necessary to identify the causes of this global problem and seek comprehensive solutions that will improve and curb the projected amounts of municipal waste and the way of its disposal and treatment to make it more environmentally friendly.

## 3. SELECTED CAUSES OF THE GLOBAL PROBLEM WITH MUNICIPAL WASTE

### 3.1. Demographic, social and urbanization factors

In a 2019 report prepared by the United Nations' Department of Economic and Social Affairs, the so-called *medium scenario* forecasts the world population to grow from 7.7 billion in 2019 to 8.5 billion by 2030, 9.7 billion by 2050, and close to 11 billion in 2100 (UN, 2019 , p. 1). Population growth was estimated in three different scenarios, known as: low, medium, and high. Figure 4 illustrates the past and future evolution paths of the world's population under these three scenarios over the course of the years 1950-2100.

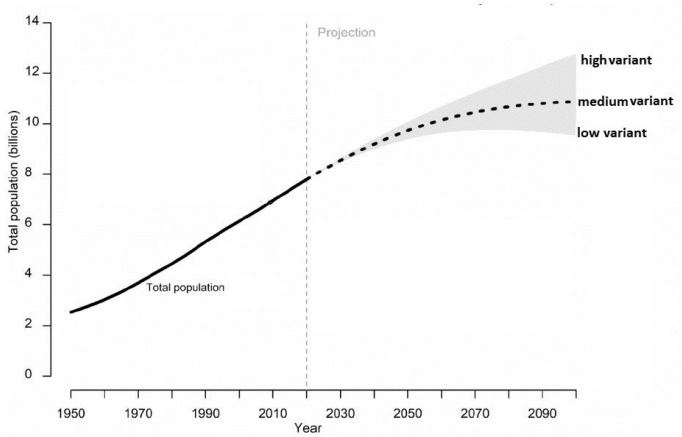



*Figure 4: World population in 1950 - 2100 (three possible variants of development) (Source: Own elaboration based on Unitet Nations. (2019). World Population Prospects 2019. Retrieved 10.10.2020 from https://population.un.org/wpp/Publications/Files/ WPP2019_Highlights.pdf)*

A growing world population leads to increased consumption and thus to an increase in food demand, which is often markedly unbalanced. Taking into account the current UN population projections, and assuming that the current lifestyle and consumption patterns remain unchanged to meet demand, agriculture in 2050 will have to produce 50% more food, feed and biofuels than in 2012 (FAO, 2017 , p. 62). It is expected that changes in the demand for food will also be influenced by the demographic structure and spatial distribution of the population. In 2018, more than half of the global population lived in urban areas (55%), but this percentage is expected to reach 68% by 2050. Urbanization, coupled with the overall trend of global population growth, shows that, by 2050, as many as 2.5 billion people could arrive to settle in urban areas, with nearly 90% of this increase expected to be recorded in Asia and Africa alone (UN, 2018, p. 5). It can therefore be concluded that the world is becoming an increasingly urbanized place, but increased urbanization also entails problems with effectively managing municipal waste for both developing and emerging cities. The global waste crisis would not be as alarming were it not for mass production and ubiquitous consumerism. It is estimated that annual consumption in emerging markets will increase to USD 30 trillion by 2025 (compared to USD 12 trillion in 2010), accounting for nearly 50% of global consumption (compared to 32% in 2010). It is also forecasted that the number of inhabitants with sufficiently high incomes will become significant consumers of goods and services. Referring to the trend of urbanization, about 600 million people are projected to live in just 440 cities located in emerging economies alone (McKinsey Global Institute, 2012, p. 1). Global economic growth increased fivefold between the 1950s and 2009. In 2019, world GDP growth stood at 2.4%, the lowest record since 2009. According to Central Bank forecasts, the upcoming years are likely to look as follows in terms of GDP growth: 2020 - 2.5%, 2021 - 2.6%, 2020 - 2.7%.

## 4. SELECTED EFFECTS OF THE GLOBAL MUNICIPAL WASTE PROBLEM

### 4.1. Raw-material and energy factors

For years, human society lived under the conviction that water, air and soil resources are unexhaustive. This led to constant exploitation of natural resources, largely by urban populations, thus giving rise to an uncertain future for all of us. Rapidly urbanizing emerging economies and their increasingly well-off consumers are now the driving source of demand for the world's dwindling capital and depleting natural resources. That is despite the fact that, over time, this will inevitably result in reduced economic growth and possibly also continuous fluctuations in the price of raw materials. Current consumption patterns are so that the demand for natural resources already exceeds 41% of the Earth's spare production capacity. If these consumption and production trends are maintained until 2030 and the projections of 11-billion population hold true, human species will soon need a new planet Earth to retain its current lifestyle and consumption (WWF, 2016, p. 15). In a human-footprint analysis prepared by Global Food Network, a non-profit organization that develops tools to promote sustainable development, including the ecological footprint measuring the amount of resources owned and used, the annual pool of natural resources for 2020 was exhausted on August 22 (the global economic crisis caused by the coronavirus pandemic delayed the day of crossing the ecological-debt threshold by three weeks). The report compiled by the International Resource Panel (IRP) think tank, which is part of the UN Environment Programme, concluded that the amount of raw materials extracted by the broadly understood industry has tripled in 40 years. In 1970 it was 22 billion tons, compared to 70 billion tons in 2010. This data included basic materials such as biomass, fossil fuels, metal ores and non-metal minerals (UNEP, 2016, p.5). As can be seen, the demand for resources is increasing at an unsustainable pace. By 2017, the world consumption of these materials reached 90 billion tonnes. By 2050, the consumption of primary raw materials is expected to increase to 186 billion tons, provided that current consumption trends are maintained (Hatfield-Dodds S.et. all, 2017, pp. 403-408). The impact and rate of growth vary depending on the type of natural resources. Under current trends, fossil fuel extraction are set to increase by 53% between 2015 and 2050, biomass and metal ore extraction will rise by 87% and 96%, respectively, while non-metallic raw materials are projected to increase by 168%. Figure 5 shows the current and forecasted (based on current growth trends) global resource extraction divided into four categories (biomass, fossil fuels, metal ores and non-metallic minerals) in the years 2010-2050.

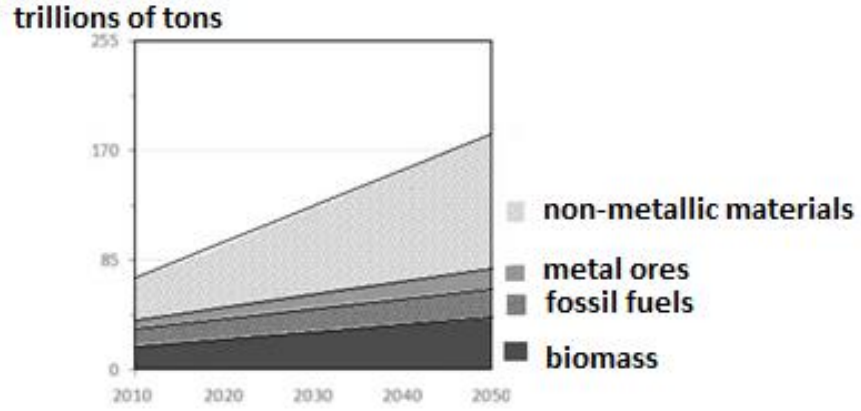



*Figure 5: Global resource extraction 2010-2050*
*(Source: Hatfield-Dodds S.,et.all. (2017). Assessing global resource use and greenhouse emissions to 2050, with ambitious resource efficiency and climate mitigation policies. Journal of Cleaner Production, 144, p. 409)*

It is estimated that four of the nine planetary boundaries have been crossed irreversibly, changing the functioning of the main processes in the earth system (IRP, 2017, p. 17). Needless to say, this accelerated demand for raw materials and their overexploitation comes with alarming implications for the environment. The high standard of living in industrialized countries and the overconsumption in emerging and developing markets create a constant, unbridled demand for an ever greater amount of commodities, natural resources and energy. Ultimately, this may deplete essential natural resources, cause price fluctuations that can trigger armed conflicts, and further aggravate climate change from the enormous energy inputs generated by their extraction, consumption, transportation and disposal.

### 4.2. Environmental factors

Embedding natural environment in the management process leads not only to the scarcity, depletion and overexploitation of resources for the sake of meeting society's growing needs, but also to environmental destruction and pollution. The negative impact of municipal waste on the environment is significant and burdensome, especially in heavily populated areas such as cities. Landfills are repsonsible for releasing methane into the atmosphere, Methane is a powerful greenhouse gas contributing to climate change and it arises from the presence of microorganisms and biodegradable waste, such as food or paper, in landfills. Methane ($CH_4$) stays in the atmosphere much less time than carbon dioxide, but it has a much more pronounced greenhouse effect. It is estimated that, between 1990 and 2005, global $CH_4$ emissions from landfills increased by around 12%, from 706 to 794 Mt $CO_2$. Between 2005 and 2030, emissions are projected to increase by around 21%, from 794 to 959 Mt $CO_2$. The growing global population, ever-wealthier societies and progressive industrialization all result in the incrased amount of waste generated and are factors driving this trend to new extremes. An equallly important environmental issue faced by the modern world in the context of municipal waste is the pollution of the Earth with plastic, which is used for the production of packaging among other other purposes. In 2016, a total of 335 million tons of plastics were produced in the world (thermosets and thermoplastics, polyurethanes, adhesives, sealants), 18% of which is owed to the production having place in the European Union. Over the last 50 years, the amount of plastics produced increased nearly twentyfold. Unfortunately, there is no hope for a reversal of this global trend, although in Europe the level of production has remained fairly stable over the last ten years (Fig. 6).

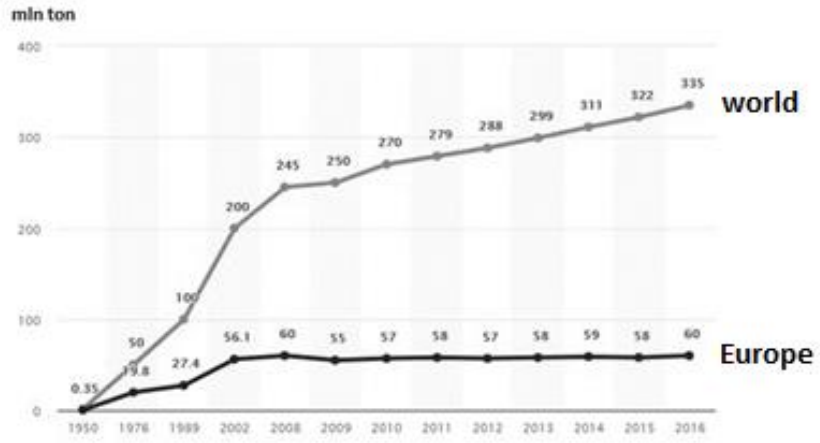



*Figure 6: Global plastic production from 1950 to 2016 (in million metric tons) (Source: The Statistic Portal. Retrieved 09.09.2018 https://www.statista.com/statistics/ 282732/global-production-of-plastics-since-1950)*

Studies have shown that (Geyer, R., Jambeck, J., Lavender, L., 2017, p.1-2):

- by 2016, 8,300 million metric tons (Mt) of virgin plastics were produced,
- by 2015, 6,300 Mt of plastic waste was produced,
- 9% of this waste was recycled, 12% was incinerated and 79% was deposited in landfills or in the natural environment,
- with the current trends in production and waste management, 12,000 Mt of plastic waste will be deposited in landfills or in the environment by 2015.

Plastics become particularly problematic when plastic waste ends up in the natural environment, including various types of water bodies. World data - based on information on solid waste, population density and economic status - indicates that in 2010 alone anywhere from 4.8 to 12.7 million tons of plastic waste (of which about 236,000 tons were microplastics) posing a threat to ecosystems and human health were released into the oceans and seas as a result of improper waste management,. As much as 95% of plastic waste that enters the oceans through rivers comes from only 10 rivers, 2 of which are located in Africa with the other 8 in Asia (MoEFCC, 2018, p.64). Many marine organisms consumed by humans, such as fish and crustaceans, cannot recognize plastic waste in food and therefore contain undigested plastic scraps. Other physical hazards include asphyxiation and entanglement. It is estimated that around 100,000 marine animals are killed each year by plastics (WWF, 2018, p. 64). If the current trend of water pollution with plastic continues, the amount of plastics will triple by 2025. This means that their total weight will exceed the total weight of the fish (UN, 2019, p. 32). In addition, the five plastic-waste islands located on the surface of the oceans are another difficult problem to solve. The largest of these is located in the Pacific Ocean and covers the rapidly expanding area of 1.6 million km2, which is larger than the territories of Germany, France and Spain combined. While Europe is responsible for only a small part of the plastic that pollutes waters, a study carried out in the Mediterranean found that 18% of tuna and sword fish had plastic debris in their stomachs. What is more, plastic waste also pollutes the Baltic Sea and is just as serious a problem there as elsewhere. According to WWF data, 56% of the waste on the Baltic beaches is plastic, which then ends up mostly in the sea. Another very serious group of pollutants are fish-set nets abandoned as a result of random events (storms, collisions, snags), the annual number of which ranges from 5,500 to 10,000 and totaling a weight of 810 tons (WWF, 2015, p. 6). Waste-caused pollution is a problem not only in the aquatic environment. Cities are growing in both size and population, producing an increasing mass of waste and prompting the need for more space to collect, segregate, store, and incinerate waste, which in turn destroys the natural habitats of fauna and flora. The scale of these phenomenon is large, given that waste treatment stations and landfills require significant areas and can themselves contribute to water, air and soil pollution, while waste incinerators emit particles of harmful substances into the air.

## 5. CONCLUSION

The projected increase in the mass of municipal waste and its improper management may pose a serious threat to the modern world, and thus to its inhabitants. The growing global population, many of whom will largely relocate to urban areas, will be a huge challenge, as human existence and activity are associated with the generation of waste, which is an indispensable byproduct of our lives. In developing countries focused on boosting consumerism, the amount of municipal waste generated is constantly growing, and its composition has changed along with technical advancement. It is therefore pivotal to identify the causes and effects of this global problem in order to be able to take the right countermeasures. Due to their large diversity, these challenges can be analyzed on many levels, including demographic (an increase in the global population), social (consumerism), urbanization (the trend of moving into cities), raw materials and energy (depletion of raw materials in the perspective leading to a reduction in economic

growth) and environmental (air, soil, groundwater and water pollution) . The current state of affairs requires prompt action and a shift in attitude to minimize waste production so that it does not disturb or degrade the planet. Lack of awareness-raising initiatives, thoughtless purchases, poor segregation of waste, and the resulting low level of waste recovery and recycling, will only cause further harm to our environment.

**LITERATURE:**

1. Chen D. et all. (2018). *The world's growing municipal solid waste: Trends and impacts.* Environmental Research Letters 15 (7).
2. FAO. (2017). *The future of food and agriculture: Trends and challenges.* Retrieved 10.10.2020 from http://www.fao.org/3/a-i6583e.pdf
3. FAO. (2018). *The future of food and agriculture – Alternative pathways to 2050.* Retrieved 10.10.2020 from http://www.fao.org/3/I8429EN/i8429en.pdf
4. Geyer, R., Jambeck J., Lavender Law K. (2017). *Production, use, and fate of all plastics ever made.* Science Advances. 3(7).
5. Hatfield-Dodds, S., et all. (2017). *Assessing global resource use and greenhouse emissions to 2050, with ambitious resource efficiency and climate mitigation policies.* Journal of Cleaner Production. 144.
6. IRP. (2017). Assessing global resource use: A systems approach to resource efficiency and pollution reduction. Retrieved 30.10.2020 https://www.resourcepanel.org/reports/ assessing-global-resource-use
7. McKinsey Global Institute. (2012). *Urban World: Cities and the rise of the consuming class.* Retrieved 10.10.2020 from https://www.mckinsey.com/featured-insights/urbanization/urban-world-cities-and-the-rise-of-the-consuming-class#
8. MoEFCC. (2018). *Plastics in life and environment.* Retrieved 30.10.2020 http://www.indiaenvironmentportal.org.in/files/file/Plastics%20in%20Life%20and%20Environment.pdf
9. Ogundipe, F.O., Jimoh, O.D. (2015). *Life cycle assessment of municipal solid waste management in Minna.* Nigeria. Environmental Research. No. 9 (4).
10. The World Bank. (2018). *What a Waste 2.0 A Global Snapshot of Solid Waste Management to 2050.* Retrieved 10.10.2020 from https://openknowledge.worldbank.org/handle/ 10986/30317
11. UN. (2017). *Towards a pollution-free planet: Report of the Executive Director.* Retrieved 21.10.2020 https://pdfs.semanticscholar.org/c10d/97ac736205effee0bf8781aece53995b7f79.pdf?_ga=2.146327479.2065180805.1606649355-2042752759.1606649355
12. UN. (2018). World Urbanization Prospects The 2018 Revision. Retrieved 02.11.2020 from https://population.un.org/wup/Publications/Files/WUP2018-Report.pdf
13. UN. (2019). *World Population Prospects 2019.* Retrieved 10.10.2020 from https://population.un.org/wpp/Publications/Files/WPP2019_Highlights.pdf
14. UNEP. (2016). *Global material flows and resource productivity*. Retrieved 11.10.2020 www.resourcepanel.org/file/423/download?token=Av9xJsGS
15. WWF. (2015). Removal from the bottom of the Baltic Sea of fishing gear lost by fishermen. Retrieved 21.10.2020 https://www.wwf.pl/sites/default/files/2017-07/Usuwanie%20z%20dna%20Ba%C5%82tyku%20utraconego%20przez%20rybak%C3%B3w%20i%20zalegaj%C4%85cego%20sprz%C4%99tu%2C%20raport%20ko%C5%84cowy.pdf
16. WWF. (2016). *Living Planet Report, Risk and resilience in a new era.* Retrieved 10.10.2020 from http://awsassets.panda.org/downloads/lpr_living_planet_report_2016.pdf
17. WWF. (2018). *Living Planet Report - 2018: Aiming Higher.* Retrieved 21.10.2020 https://www.wwf.fr/sites/default/files/doc-2018-10/20181030_Living_Planet_Report-2018.pdf?utm_source=website&utm_medium=infog%20great%20acceleration

# THE USE OF FUZZY MODELLING TO INVEST IN THE POLISH CAPITAL MARKET IN THE PANDEMIC ERA

**Ewa Pospiech**
*University of Economics in Katowice*
*1 Maja 50, 40-287, Poland*
*posp@ue.katowice.pl*

***ABSTRACT***

*Many tools can be used to build a portfolio consisted of capital market instruments. When deciding to invest in stocks, you can take different approaches. Building a stock portfolio is a complex process. Using the fundamental analysis in this process, which enables the assessment of the economic and financial situation of the company, the condition of the enterprise is examined with the use of fundamental and market indicators. Such an approach allows the use of multi-criteria methods in the analyzes, treating the included indicators as evaluation criteria. In a situation where the decision-maker is not able to provide the exact values of the criteria assessments or the decision problem is imprecise (which is the case in many practical matters), fuzzy numbers can be used to describe the phenomenon. The results of using this approach, compared to the market portfolio, under "normal" conditions gave interesting results. Therefore, based on the results obtained in previous studies, which used the TOPSIS methods (in the standard and fuzzy versions), which made it possible to organize companies, build effective portfolios (from among the highest ranked companies) and compare them with the market portfolio, an analysis was conducted aimed at assessing the portfolios generated by the proposed approach and comparing their performance with the market portfolio during the global crisis caused by the pandemic. Therefore, the main objective of the study was to compare the results of the multi-criteria portfolios, taking into account the fuzzy approach, with the market portfolio in the conditions of a global pandemic. The analysis showed that despite the difficult conditions it is possible to generate very profitable portfolios.*
***Keywords:*** *Effective portfolios, FTOPSIS and TOPSIS methods, Market portfolio*

## 1. INTRODUCTION

Investing in stocks requires knowledge and experience from the investor. In this process, it is also worth using quantitative tools enabling a methodical approach to the issue. When constructing portfolios composed of capital market instruments, in particular a portfolio of shares, the time horizon of the investment is important. In the case of long-term portfolios, an important element of the research is the assessment of the macroeconomic environment as well as the economic and financial situation of the companies in which the investor wants to invest his funds. For this purpose, a fundamental analysis is carried out, which allows to assess the condition of companies using selected fundamental and market indicators. This is an important issue in the context of a long-term investment, as the company's favourable situation guarantees its stability, which attracts potential investors. A methodical approach to the assessment of companies is based on the use of methods that allow for conducting analyzes in an orderly manner. Multi-criteria methods can be used to evaluate objects (decision variants) assessed through the prism of many characteristics – such an approach makes it possible to choose those companies in which, in the opinion of an investor, it is worth investing (based on the criteria selected by him, meeting his preferences). When it comes to selecting a portfolio consisting of shares, portfolio analysis tools are often used, in which effective portfolios are determined – portfolios with the lowest risk are built at a given rate of return or the rate of return is maximized at a certain level of acceptable risk (Jajuga, Jajuga, 2015). Due to the different types of risk associated with investments, even when the market is relatively stable, none of the tools used

can guarantee a profit. In turn, when extreme phenomena occur, especially on a global scale (economic and political crises, natural disasters, pandemics, etc.), an immediate, negative reaction on capital markets is visible. The following questions arose: Does investing in equities during a pandemic have to be associated with large losses? Is it possible to obtain profitable portfolios under these conditions? These questions determine the purpose of this article, which is to build effective portfolios consisting of shares listed on the Warsaw Stock Exchange Main Market, constructed on the basis of the results of the fundamental analysis conducted on the basis of 2017-2019, and to evaluate the results of these portfolios in 2020 – the year in which the entire the world is struggling with the coronavirus pandemic. The research hypothesis is: Despite negative market reactions related to the pandemic, it is possible to construct profitable long-term effective portfolios taking into account the fuzzy approach.

## 2. RESEARCH CONDITIONS

It was decided that the research will use the tools that had been used in the previous analyzes, and the application of which gave promising results. The multi-criteria TOPSIS and Fuzzy TOPSIS (FTOPSIS) methods were used, as well as portfolio analysis tools enabling the determination of effective portfolios. Literature studies (Chen, Hung, 2009; Ece, Uludag, 2017; Kazemi et al., 2014; Liu, et al., 2012; Nguyen, Gordon-Brown, 2012; Raei, Bahrani Jahromi, 2012) and previously conducted research (Pośpiech, 2017a; Pośpiech, 2017b; Pośpiech, 2018; Pośpiech, 2020; Pośpiech, Mastalerz-Kodzis, 2015; Pośpiech, Mastalerz-Kodzis, 2016) showed the validity of the use (in various approaches) of the TOPSIS methods (standard and fuzzy) in the issue of supporting the portfolio selection.

### 2.1. Methodology

The TOPSIS method, both in the standard and fuzzy version, is carried out in stages. Its description is included in many studies (Hwang, Yoon, 1981; Jahanshahloo, et al., 2006; Lai, et al., 1994; Roszkowska, Wachowicz, 2013; Trzaskalik, 2014). The end result of the procedure is a ranking of the examined objects, which is built on the basis of the decreasing value of the $S_i$ indicator. In the article, the examined objects are listed companies, and their economic and financial condition is assessed on the basis of selected fundamental and market indicators. The selected indicators constitute the evaluation criteria, and the period from which the data was taken was three years (Tarczyński, 2002). In the standard version of the TOPSIS method, the mean values of the studied indicators from three years were taken into account as criteria assessments, while in the fuzzy approach, the data for three years were the parameters of a triangular fuzzy number: $\tilde{a}_i^{(k)} = (l_{ik}, m_{ik}, u_{ik})$, where $k$ – specifies the criterion number, $l_k$ – the smallest value of the criterion assessment from three years, $m_k$ – the middle value of the criterion assessment from the years, $u_k$ – the highest value of the criterion assessment from three years.
Four indicators were used for the fundamental assessment of the company (Leszczyński, 2004; Tarczyński, 2001; Tarczyński, 2002; Trzaskalik, 2006; Tyran, 2001):

- return of assets ROA (net income/average total assets),
- return of equity ROE (net income/shareholder equity),
- P/BV (price-book value),
- P/E (price-earnings ratio).

It was found that high index values are desirable and therefore each criterion was maximized. It was also found that each criterion is equally important, therefore each of them was given the same weight. The rankings, built using TOPSIS methods, made it possible to determine the sets of companies that were the basis for the selection of the portfolio. Effective portfolios were built (minimum risk portfolios with a given portfolio return rate) using the classic Markowitz approach (Markowitz, 1952).

The results of the effective portfolios were compared with the results of the market portfolio represented by the WIG20 index (the WIG20 is a capitalization-weighted stock market index of the twenty largest companies on the Warsaw Stock Exchange).

### 2.2. The subject of analysis

The analyzes examined the companies that comprised the WIG20 index in December 2019. It was made up of companies representing nine sectors (Table 1).

| Company | Abbreviation | Sector |
|---|---|---|
| ALIOR | ALR | BANKS |
| CCC | CCC | CLOTHES & COSMETICS |
| CDPROJEKT | CDR | VIDEO GAMES |
| CYFRPLSAT | CPS | TELECOM |
| DINOPL | DNP | GENERAL RETAILERS |
| JSW | JSW | MINING |
| KGHM | KGH | MINING |
| LOTOS | LTS | OIL & GAS |
| LPP | LPP | CLOTHES & COSMETICS |
| MBANK | MBK | BANKS |
| ORANGEPL | OPL | TELECOM |
| PEKAO | PEO | BANKS |
| PGE | PGE | ENERGY |
| PGNIG | PGN | OIL & GAS |
| PKNORLEN | PKN | OIL & GAS |
| PKOBP | PKO | BANKS |
| PLAY | PLY | TELECOM |
| PZU | PZU | INSURANCE |
| SANPL | SPL | BANKS |
| TAURONPE | TPE | ENERGY |

*Table 1: Companies included in the research*
*(Source: Own study)*

In the analyzes, effective portfolios were built on the basis of sets containing from ten to fifteen companies – the companies with the highest ranking were selected.

## 3. RESULTS OF EMPIRICAL ANAYSIS

The research period covered the years 2017-2020. Data for fundamental and market indicators, included in the multi-criteria procedure, were taken from 2017-2019, while the annual data for 2019 was used in the construction of effective portfolios. The rankings of companies obtained using the TOPSIS methods are presented in Table 2. Table 3 shows the sets of companies which formed the basis of building effective portfolios. Portfolios for which the variance was minimized at a given value were determined – as this value the average of positive return rates of companies composing the WIG20 index in December 2019 was taken into account.

| Company | TOPSIS (TOP) | | Fuzzy TOPSIS (FTOP) | |
|---|---|---|---|---|
| | $S_i$ | Ranking | $S_i$ | Ranking |
| ALR | 0.568 | 19 | 0.492 | 17 |
| CCC | 0.608 | 6 | 0.529 | 9 |
| CDR | 0.669 | 2 | 0.686 | 1 |
| CPS | 0.583 | 11 | 0.517 | 11 |
| DNP | 0.623 | 3 | 0.594 | 3 |
| JSW | 0.610 | 5 | 0.617 | 2 |
| KGH | 0.586 | 10 | 0.526 | 10 |
| LTS | 0.597 | 8 | 0.551 | 7 |
| LPP | 0.619 | 4 | 0.579 | 4 |
| MBK | 0.574 | 17 | 0.496 | 16 |
| OPL | 0.770 | 1 | 0.562 | 6 |
| PEO | 0.576 | 15 | 0.500 | 14 |
| PGE | 0.576 | 14 | 0.481 | 18 |
| PGN | 0.591 | 9 | 0.531 | 8 |
| PKN | 0.605 | 7 | 0.573 | 5 |
| PKO | 0.575 | 16 | 0.499 | 15 |
| PLY | 0.120 | 20 | 0.396 | 20 |
| PZU | 0.580 | 12 | 0.505 | 12 |
| SPL | 0.577 | 13 | 0.501 | 13 |
| TPE | 0.572 | 18 | 0.461 | 19 |

*Table 2: Values of the $S_i$ indicator and rankings according to the methods (Source: Own study)*

| Methods of ordering | Sets of companies | | | | | |
|---|---|---|---|---|---|---|
| | $n$ = 10 | Companies attached to the previous group in order to obtain a given number set | | | | |
| | | $n$ = 11 | $n$ = 12 | $n$ = 13 | $n$ = 14 | $n$ = 15 |
| TOPSIS | OPL, CDR, DNP, LPP, JSW, CCC, PKN, LTS, PGN, KGH | CPS | PZU | SPL | PGE | PEO |
| FTOPSIS | | | | | PEO | PKO |

*Table 3: The sets of companies – the basis of portfolio selection (Source: Own study)*

In the case of sets with ten, eleven, twelve and thirteen elements, both TOPSIS methods made it possible to determine the same sets, while for sets of fourteen and fifteen elements, different sets were obtained. The obtained sets allowed to designate eight effective portfolios. They are marked with the symbols presented in Table 4.

| Methods | Designation of the portfolio depending on the pre-selection method and the size of the set | | | | | |
|---|---|---|---|---|---|---|
| | $n$ = 10 | $n$ = 11 | $n$ = 12 | $n$ = 13 | $n$ = 14 | $n$ = 15 |
| TOPSIS | P1 | P2 | P3 | P4 | P5 | P7 |
| FTOPSIS | | | | | P6 | P8 |

*Table 4: Designations of constructed effective portfolios (Source: Own study)*

The results of the obtained (hypothetical) portfolios built as at 03/01/2020 are presented in Figures 1-2. They were compared with the results of the PM market portfolio, represented by the WIG20 index.

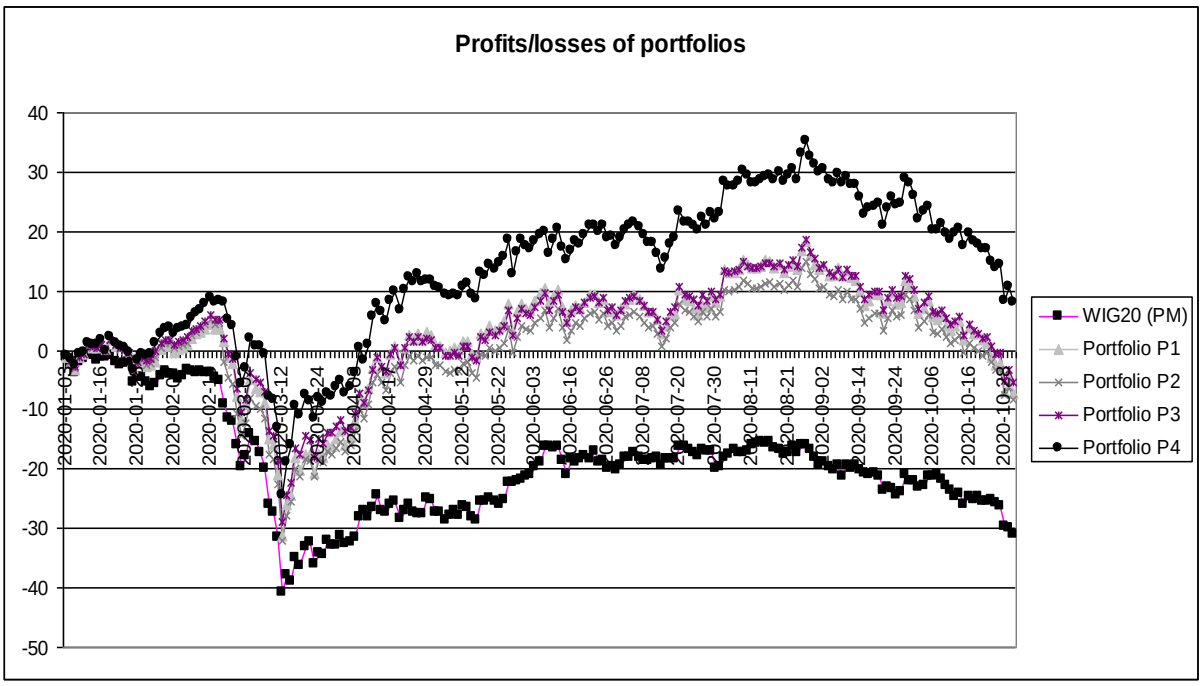



*Figure 1: Profits/losses of portfolios P1, P2, P3, P4 (n = 10, 11, 12, 13) and PM. (Source: Own study)*

P1-P4 portfolios consisted of six or seven companies. In January, the performance of all five portfolios shown in Figure 1 was comparable, recording little gains or losses. Over the twenty days of February, the market portfolio recorded losses of several percent, while the remaining four portfolios showed an upward trend in profits. From the end of February to March 12, 2020, there were smaller profits or increasing losses of portfolios, which was a result of the development of the coronavirus epidemic in the world and in Europe – in the world, the worst situation was in China, and in Europe – in Italy; in Poland, the first COVID-19 patient was diagnosed in early March. The worst results of all portfolios were recorded on March 12, 2020, with losses in the market portfolio reaching -40%, while the remaining portfolios recorded losses of -32% to -23%. From that day on, better and better results were observed over the next few months. The market portfolio recorded losses throughout the analyzed period (from January to October 2020), with the lowest (oscillating around -16%) recorded in the period June-August. Against this background, hypothetical effective portfolios performed much better. After decreasing losses recorded until mid-April, the portfolios were characterized by successive gains. P1-P3 portfolios over the next several months recorded increases from a few to over a dozen percent, achieving the highest result of over 18% on August 28, 2020. Only at the end of the analyzed period (end of October) losses of several percent again were recorded. The P4 portfolio is the best in this ranking – from April 8 it was profitable, with a peak of approx. 35% reaching 27 August. Overall, from the beginning of October, a downward trend has been evident for all portfolios (decreasing profits or increasing losses). The obtained results show that the results of the generated (hypothetical) effective portfolios are much more favourable than the market one. These portfolios have recorded significant profits since April. When analyzing the composition of these portfolios, there are no companies from the banking, energy or mining sectors in their composition. The obtained results also reflect the impact of the pandemic on capital markets – significant losses in the initial phase of the pandemic, in which there were further restrictions, then a slow elimination of restrictions and stabilization of the number of COVID-19 cases (June-August), and further declines related to, among others, the so-called "second wave" of coronavirus and events in the country and the world.

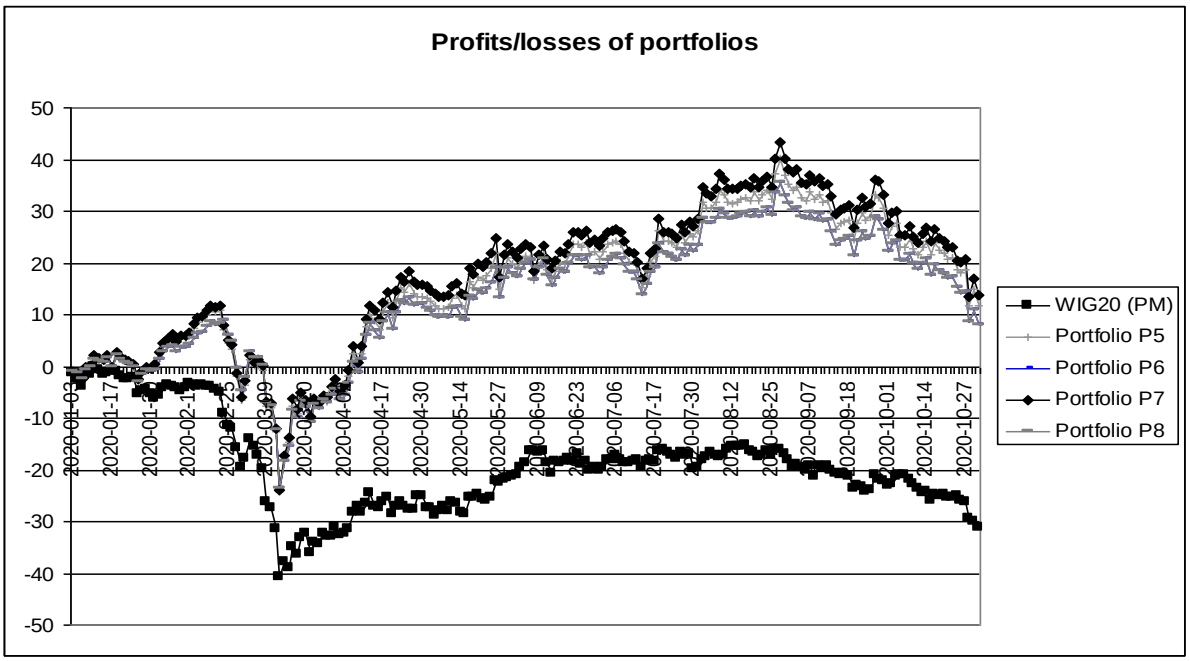



*Figure 2: Profits/losses of portfolios P5, P6, P7, P8 (n = 14, 15) and PM.*
*(Source: Own study)*

The P5-P8 portfolios perform even better compared to the market portfolio and the previously discussed ones. The profit/loss performance is analogous to the P1-P4 portfolios, with even higher profits for P5-P8 – the highest profit of over 43% was recorded by the P7 portfolio on August 27, 2020. The profits of the generated portfolios are similar, and from mid-April 2020 they do not fall below 10%. P5 and P7 portfolios are effective portfolios obtained after preliminary selection using the TOPSIS method – their profits are slightly higher than the other two (P6 and P8) constructed after the initial selection using the FTOPSIS method. However, these portfolios only consist of four securities and their risk (measured by the standard deviation) is higher than that of P6 and P8 portfolios. P6 and P8 portfolios, on the other hand, consist of seven stocks and their risk is lower. The issue of the recommendation regarding the advantage of considering the fuzzy approach in the considerations, which in the cases of many previous studies was more unambiguous, is left to the decision-maker who decides for himself whether he is ready for slightly higher profits at the expense of increasing the portfolio risk, or he prefers a slightly lower profit, accompanied by lower risk (Table 5).

| Risk measure | Portfolio risk | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | P1 | P2 | P3 | P4 | P5 | P6 | P7 | P8 |
| *S* | 1,110 | 1,076 | 1,059 | 1,227 | 1,332 | 1,131 | 1,391 | 1,216 |

*Table 5: Risk of portfolios*
*(Source: Own study)*

## 4. CONCLUSION

The conducted analyzes were aimed at determining the effective portfolios that were generated from the sets of companies obtained on the basis of the initial selection using the multi-criteria TOPSIS methods (standard and fuzzy). The aspect of interest for the author were the results of the obtained portfolios and their comparison with the market portfolio in the situation of the prevailing global pandemic. Eight portfolios were generated – the results of each of them were definitely better than the market portfolio. On the other hand, when comparing the results of the portfolios with the pre-selection of the standard or fuzzy method, identical or slightly better

results were obtained using the TOPSIS method – these portfolios, however, had a higher risk. Moreover, it is worth emphasizing that the obtained effective portfolios consisted mainly of companies belonging to the following sectors: Telecom, Oil and Gas, General Retailers, which indicates those areas that play a huge role in the pandemic era. The surveyed companies did not include, for example, companies from the IT sector (they were not taken into account at all, because they were not included in the WIG20 index), but in the era of remote activity covering more and more areas of life, it can be expected that companies from this sector would end up in a profitable portfolio. The selected portfolios were obtained on the basis of historical data analysis – the economic and financial condition of companies was examined on the basis of selected fundamental and market indicators, while effective portfolios were determined based on historical rates of return. So if the historical data shows a given company in a favourable light, the chances of good performance of the portfolios containing that company are greater.
Research has shown the possibility of building attractive (profitable) portfolios in a situation where the whole world is struggling with the COVID-19 pandemic and its social and economic consequences. There are at least two reasons for obtaining portfolios with such good results: a solid fundamental analysis of companies which shows those in the best condition, and investing in those areas that are booming under these conditions. It can therefore be concluded that the fundamental analysis of companies, the observation of the currently occurring phenomena and trends, and reasonable portfolio management allow for minimizing the existing investment risks and building profitable portfolios even in a difficult time of a pandemic.

**LITERATURE:**

1. Chen, C.T., Hung, W.Z. (2009). A New Decision-Making Method for Stock Portfolio Selection Based on Computing with Linguistic Assessment. *Journal of Applied Mathematics and Decision Science*, *2009*. doi: http://dx.doi.org/10.1155/2009/897024.
2. Ece, O., Uludag, A.S. (2017). Applicability of Fuzzy TOPSIS Method in Optimal Portfolio Selection and an Application in BIST. *International Journal of Economics and Finance*, *9(10)*, 107-127. doi: https://doi.org/10.5539/ijef.v9n10p107.
3. Hwang, C. L., Yoon, K. (1981). *Multiple Attribute Decision Making: Methods and Application*. Berlin: Springer Verlag.
4. Jahanshahloo, G.R., Hosseinzadeh Lotfi, F. and Izadikhah, M. (2006). Extension of the TOPSIS Method for Decision-making Problems with Fuzzy Data. *Applied Mathematics and Computation*, *181(2)*, 1544-1551. doi: http://dx.doi.org/10.1016/j.amc.2006.02.057.
5. Jajuga, K., Jajuga, K. (2015). *Inwestycje – Instrumenty finansowe. Aktywa niefinansowe. Ryzyko finansowe. Inżynieria finansowa.* Warszawa: PWN.
6. Kazemi, A., Sarrafha, K. and Bedel, M. (2014). A hybrid fuzzy decision making method for a portfolio selection: A case study of Tehran Stock Exchange. *International Journal of Industrial and Systems Engineering*, *18(3)*, 335-354. doi: http://dx.doi.org/ 10.1504/IJISE.2014.065537.
7. Lai, Y.J., Liu, T.Y. and Hwang C.L. (1994). TOPSIS for MODM. *European Journal of Operational Research*, *76(3)*, 486-500. doi: http://dx.doi.org/10.1016/0377-2217(94)90282-8.
8. Leszczyński, Z. (2004). *Analiza ekonomiczno-finansowa spółki*. Warszawa: PWE.
9. Liu, Y.J., Zhang, W.G., and Xu, W.J. (2012). Fuzzy multi-period portfolio selection optimization models using multiple criteria. *Automatica, 48(12)*, 3042-3053. doi: http://dx.doi.org/10.1016/j.automatica.2012.08.036.
10. Markowitz, H.M. (1952). Portfolio selection. *Journal of Finance*, *7(1)*, 77–91. doi: http://dx.doi.org/ 10.2307/2975974.

11. Nguyen, T.T., Gordon-Brown, L.N. (2012). Fuzzy Numbers and MCDM Methods for Portfolio Optimization. *International Journal of Computer, Electrical, Automation, Control and Information Engineering, 6(12),* 1593-1605.
12. Pośpiech E. (2017a). Multi-criteria fuzzy modelling in the issue of portfolio selection. In M. Čulik (ed.), *Financial Management of Firms and Financial Institutions 2017. Proceeding (Part III.),* 700-707, Ostrava: VŠB – TU.
13. Pośpiech, E. (2017b). Rozmyte modelowanie we wspomaganiu decyzji inwestycyjnych. *Organizacja i Zarządzanie, 113,* 375-384.
14. Pośpiech, E. (2018). The Risk of Multi-Criteria Portfolios Taking into Account the Fuzzy Approach. In M. Čulík (ed.), *Managing and Modelling of Financial Risks*. 9th International Scientific Conference – Proceedings (Part 2), 411-418, Ostrava: VŠB-TU.
15. Pośpiech, E. (2020). The Multi-criteria Fuzzy Approach to Building and Evaluating Effective Portfolios. *Organizacja i Zarządzanie, 144,* 397-407.
16. Pośpiech, E., Mastalerz-Kodzis, A. (2015). Wybór metody wielokryterialnej do wspomagania decyzji inwestycyjnych. *Organizacja i Zarządzanie, 86,* 379-388.
17. Pośpiech, E., Mastalerz-Kodzis, A. (2016). Zastosowanie metody TOPSIS w ujęciu rozmytym do selekcji walorów giełdowych. *Organizacja i Zarządzanie, 96,* 395-404.
18. Raei, R., Bahrani Jahromi, M. (2012). Portfolio optimization using a hybrid of fuzzy ANP, VIKOR and TOPSIS. *Management Science Letters, 2,* 2473-2484. doi: http://dx.doi.org/10.5267/j.msl.2012.07.019.
19. Roszkowska, E., Wachowicz, T. (2013). Metoda TOPSIS i jej rozszerzenia – stadium metodologiczne. In T. Trzaskalik (ed.), *Analiza wielokryterialna. Wybrane zagadnienia,* 11-40. Katowice: Uniwersytet Ekonomiczny.
20. Tarczyński, W. (2001). *Rynki kapitałowe. Metody ilościowe*. Warszawa: Polska Agencja Wydawnicza PLACET.
21. Tarczyński, W. (2002). *Fundamentalny portfel papierów wartościowych*. Warszawa: PWE.
22. Trzaskalik, T. (ed.). (2006). *Metody wielokryterialne na polskim rynku finansowym*. Warszawa: PWE.
23. Trzaskalik, T. (ed.). (2014). *Wielokryterialne wspomaganie decyzji*. Warszawa: PWE.
24. Tyran M. R. (2001). *Wskaźniki finansowe*. Kraków: Oficyna Ekonomiczna.
25. Data source: www.bankier.pl, access: 03.11.2020.
26. Data source: www.gpw.pl, access: 03.11.2020.
27. Data source: http://infostrefa.com/infostrefa/pl/archiwum, access: 03.11.2020.

# SHARING ECONOMY AS A MODERN ECONOMIC PARADIGM

**Anita Freimann**
*Faculty of Economics in Osijek, Croatia*
*anita.freimann@efos.hr*

**Helena Stimac**
*Faculty of Economics in Osijek, Croatia*
*helena.stimac@efos.hr*

**Maja Rupcic**
*Croatia*
*majrupcic@gmail.com*

***ABSTRACT***

*The new business model called the sharing economy has emerged as a response to the many challenges faced by (international) trade. Growth and development of the sharing economy is the result of globalization, rapid technological development, the emergence of digital platforms, and the growing need for environmental protection. The world's population is growing and resources are limited. The awareness of its residents about the problems in the world is becoming more pronounced, their tastes and opinions are changing. The emphasis is no longer on owning certain goods, but on using them and enjoying them. It has grown steadily in recent years, becoming interesting to a growing number of users, but also to governments as legislators. There is no generally accepted definition or models of the sharing economy; there are many advantages of the sharing economy but there are also challenges, and one of the most significant is the privacy and security of users. This paper presents different models of the sharing economy, as well as its share in economic activity. Increasing advances in information and communication technology are expected in the future, which is the foundation of the sharing economy. The key factors for the further development of the sharing economy are the creation of added value, trust, good experience, and reputation. The primary research that has been conducted (n= 217) has shown that the younger population (students) is very happy to use certain forms of the sharing economy, but they are unfortunately still not familiar enough with the concept of the sharing economy itself. It can be concluded that the sharing economy is an example of a new business model that has an increasing impact and share in the local and international economy.*

***Keywords:*** *globalization, sharing economy, technology*

## 1. INTRODUCTION

International trade is facing frequent changes that are primarily related to information and communication technology that has escalated due to the globalization process. The world has become a global village, innovations are increasing, the desires and demands of the market are increasing, and people are ready and forced to change. Classical economic models are no longer sufficient, and for this reason more and more new economic models are emerging that seek to respond to the needs of the modern market. One such model is sharing economy. The sharing economy is a modern paradigm that is being given increasing importance as it has become exponentially present in the market and in people's lives. The sharing economy has no official definition or commonly accepted name. Some of the most commonly used names in English are *peer-to-peer economy* and *sharing economy*. According to the European Economic and Social Committee (2016), the sharing economy is best defined as a system within which private individuals share their property and services free of charge or for a fee, and this is most often

done over the internet. Botsman (2015) defines the sharing economy as a system of decentralized networks and markets that also use the value of unused assets to meet society's needs by bypassing traditional intermediaries. It can be concluded that the sharing economy is based on the principles of solidarity and cooperation, and is created by the demand for property, resources, time and various skills needed by man. According to Bašić and Jurčević (2017), participants in the sharing economy are service providers, intermediaries and users. The growing need for socially responsible behavior has a great influence on the development of the sharing economy, and the biggest advocates of this way of doing business are young people, that is, a generation group called millennials (people born between 1980 and 2000). The sharing economy can be viewed through various aspects, namely the social, economic aspect, the labor market, the real estate market, and the legal and regulatory aspect. The most famous examples of the sharing economy in the world are Airbnb (accommodation, stay), Easy Car Club (car exchange), Instacart (grocery shopping and delivery), Liquid Space (use of office space or work space), Park At My House (parking spaces; people share their driveway, garage or other parking space), Task Rabbit (small household chores), Uber (passenger transport), BlaBlaCar (passenger transport), Couchsurfing (tourist accommodation), etc.

## 2. ASPECTS OF SHARING ECONOMY

### 2.1. Social aspect

The economy is changing more and more under the influence of various factors, and human trends and habits are also changing. The sharing economy today has emerged as a result of both changes, although the first form of trade was actually barter (exchange). In addition, people have always helped and shared everything among each other. "Today's platforms make sharing easier among people who don't know each other and who lack mutual friends or connections. Just as people used to judge others through their personal assessments or the assessments of the people around them, so today, in line with technological progress, digital assessment systems have been developed to help us assess who to do and share business with on platforms." (Bašić and Jurčević, 2017). The sharing economy enables people with poorer financial opportunities to afford a holiday or some other service (unattainable in standard conditions), that is, it tries to provide everyone with equal access to goods. It also has a positive effect on the environment and reduces its pollution: instead of people buying things and accumulating resources, they share them, which enables the protection of the environment and the reduction of excessive use of non-renewable sources of raw materials. Furthermore, resources that would otherwise remain unused, with this growing phenomenon, they help many in this way. According to Bašić and Jurčević (2017), online education is an important trend which is growing in numbers. The hectic way of life also changes the way of learning. Literature, seminars and trainings can now be found on online platforms, and more and more reputable faculties hold (free) trainings and lectures online. This way of giving educational lectures and other ways of doing business online is especially visible in this time of the COVID-19 epidemic that has imposed that business activities be done online around the world.

### 2.2. Economic aspect

The sharing economy arose as a result of market trends. Market trends are changing along with the development of technology, as well as the scale of supply and demand on a global level. It used to be important to own certain goods, while today the experience that those goods provide is more important. According to Hamari, Ukkonen, and Sjöklint (2016) participation in the sharing economy is cost-effective, the consumer exchanges ownership over a particular good or premises with a particular service at a lower cost. According to Owyang, Tran, and Silva (2013) practicing sharing economics enables you to: cash in surplus or inactive stocks, increase financial flexibility, have access to goods that are not owned by the same person.

Technological progress is increasingly replacing labor and capital, and dematerializing the economy. The population is growing, and certain resources are becoming limited. The sharing economy reduces the overproduction of goods and the accumulation of waste, in such a way as to allow the maximal use of existing goods and the creation of new values. Mobile devices have become a part of everyday life and are the main devices of the sharing economy (Bašić and Jurčević, 2017).

### 2.3. Labor market and real estate market

The labor market is another aspect of the sharing economy. Bašić and Jurčević (2017) state that work through online platforms is divided into two types of work: physical services (which are ordered through online platforms and are performed physically) and virtual services (which can be performed through online platforms or applications). "There are actually no workers on the platforms, but all service providers are self-employed, and the only thing they do is choose the working hours, how much they will work, the amount of compensation and the person or company for which they will do the work, and barriers to entering a certain market niche are quite low." (Bašić and Jurčevic, 2017). In this way people come up with different ways to increase their income, more and more people are turning to this way of self-employment for the reason that they do not want to work in large corporations. The European Union has still not fully addressed self-employment issues on sharing economy platforms, and those platforms are often defined only as intermediaries. Another aspect is the real estate market. As rental platforms are used exclusively for short-term rental of real estate, there is an increase in long-term rental prices. Short-term rent is suitable only for tourist needs. One of the problems is that "the market is not yet regulated, there are problems with taxation, illegal renting and other issues that can bring instability to the market." (Bašić and Jurčević, 2017).

### 2.4. Legal and regulatory aspect

The importance of the sharing economy, and its impact on development, has been particularly recognized by the European Union. The European Economic and Social Committee (2016) notes that the sharing economy encourages solidarity among citizens, creates new jobs and stimulates the growth of local economies, and rationalizes consumption. For this reason, the European Union is taking various measures to ensure that all member states have a clear and equal legislation on the sharing economy. According to Bašić and Jurčević (2017), the most important legal and regulatory restrictions need to be taken in the following areas: tax issues, fair market competition, consumer protection, data and privacy, and worker protection. It is precisely the clear definition of the previously listed areas that will enable the further development of the sharing economy and the safe use of this phenomenon. Tax issues are related to the taxation of platforms, which is significantly discussed, then fair market competition speaks about how competition in the market should be fair, and that all participants should have the same legislative conditions, and a monopoly should be prevented. Great attention is also paid to the protection of workers. Petropoulos (2016) indicates that the main feature of this model is flexible working hours of the service provider, that is, the service provider in most cases chooses when and how long he will work. Therefore, it is necessary to introduce a new employment relationship that will protect workers, and at the same time the flexibility of working hours must not be neglected. The protection of consumers, privacy and their data is a topic that is increasingly presented in the public and great attention is paid to it, be it through the sharing economy, but also in general.

## 3. THE IMPACT OF TECHNOLOGY AND GLOBALIZATION ON THE DEVELOPMENT OF THE SHARING ECONOMY

Technology has an increasing impact on all parts of modern business that are impossible to imagine without the presence of technology. "The sharing economy is based on companies looking for simpler ways to exchange goods. The initial examples of the sharing economy were online classifieds through which people sought employment, love partners, exchanged and sold goods. It continues to popularize and develop in the field of real estate rental and transportation services. Today, the sharing economy is a multisectoral industry that encompasses all aspects of everyday life." (Bašić and Jurčević, 2017). Technology and globalization are one of the main initial drivers of the sharing economy as well as other alternative models of (international) trade. According to Hamari, Ukkonen, and Sjöklint (2016), the sharing economy arose from a number of technological advances that simplified the process of sharing goods and services online. In their book 2.0 Economic, Haring and Storbeck see the world as one big global village, precisely because of globalization and the growing advances of technology. It is the world that has become one big global village, in which information (which was once unthinkable) can be reached with the click of a mouse in a few seconds. With the help of technology and globalization, people are more connected, exchanging their ideas, attitudes and thoughts, and thus building communities. Nowadays, mobile devices are everywhere, there is almost no young person who does not own a "smartphone". In this way, the whole world is "in the palm of everyone's hand". At any time, certain information can be checked, accommodation can be booked, transportation can be ordered and the like. According to Pobi (2018), there are three most important technological drivers of the sharing economy: social networks, mobile applications, and payment systems. Borovac (2014) describes social networks as "a set of internet applications, platforms and media that aim to enable cooperation between people and joint creation and exchange of content." The importance of social networks is that it enables fast and interactive communication between participants. Borovac (2014) lists: Facebook, YouTube, Google+, Twitter, LinkedIn and Instagram as the most popular social networks. Mobile applications are also considered technological drivers of the sharing economy, precisely for the reason that sharing economy platforms via mobile devices and applications can be in everyone's pocket and thus access the platforms at any time. Payment systems also play an important role - secure and fast payments are important to consumers, especially in a world where there are many financial frauds. It is security, speed and trust that are ensured by adequate and secure payment systems. One of the most well-known and widespread payment systems is certainly PayPal. The system is based on a credit card and bank account infrastructure, and payment is made securely and within a reasonable time. The PayPal system makes about 8 million payments on a daily basis and is available in more than 190 countries (Lipovšek, 2019).

### 3.1. Sharing economy in numbers

According to the study An Economic Review on the Collaborative Economy (2016) conducted by Petropoulos at the request of the European Parliament, Asia has most of the platforms for the sharing economy (82), followed by North America (64), Europe (27), Africa and South America. have 3 platforms, then the largest number of employees in the sharing economy is in North America (820 million), Asia (352 million), in Europe the number of employees in the sharing economy reaches 109 million. The sum of all employees in the world through the sharing economy is 1.3 billion, which is a large number if we take into account the total population, and total employment is growing from year to year with the development of new technologies and platforms. The same research indicates the total market value of sharing economy companies expressed in billions of US dollars. Data refer to North America, South America, Europe, Asia and Africa. North America has the highest market value, followed by Asia. The total global market value of the sharing economy in 2016 was USD 4.303 billion.

The use of the sharing economy for accommodation is growing year after year. In the Republic of Croatia, significant growth can be noticed in the last three years. According to Crnjak (2017), in 2017 there were 103,000 accommodation units in the Republic of Croatia, and the average income per household was USD 2,100.00 through Airbnb. The city of Zagreb recorded an increase of 68% in the number of guests that year. The sharing economy has become widespread in the daily life of an individual. Its importance is growing, and with the development of technology, the sharing economy is developing exponentially. It can be concluded that models of the sharing economy are more widespread in the world, and in the Republic of Croatia they are gaining in importance, especially among the younger population. The most famous examples of the sharing economy in the Republic of Croatia are BlaBlaCar, Airbnb, Uber and Solidarity Food Exchange. According to research by the author Lock (2019), entitled Number of Sharing Economy Users in the United States from 2016 to 2021, a continuous growth of users can be seen. For example, in 2018, the number of users was 66.3 million. While in 2020, that number exceeds 81 million users. The authors' predictions say that it will grow by the end of 2020. According to Mazarean (2020) who conducted a survey entitled "Monthly Number of Uber's Active Users Worldwide from 2017 to 2020, by Quarter (in millions)" it is possible to notice a steady growth of Uber users in the world. For example, in the first quarter of 2017, Uber was used by 49 million people, while in the last quarter of 2019, Uber was used by 111 million people worldwide. In 2020, there was a decrease in Uber use due to the COVID-19 epidemic, but the author notes that Uber generated USD 26 billion in the first half of 2020.

## 4. CHOSEN MODELS OF THE SHARING ECONOMY

There is no universal business model of the sharing economy; different authors describe the sharing economy model in different ways. Kumar, Dogan and Lahiri (2017) model the sharing economy in a simple way as a system in which a service provider, service users and platforms that enable service delivery. Then Puschmann and Alt (2016) present the business model of the sharing economy according to three levels of interaction between service providers and users. At the strategic level, the sharing economy connects users and service providers directly or through intermediaries. The process layer shows the processes that users, intermediary platforms, and providers go through in transactions in the sharing economy. The third level shows the use of information systems that serve to connect users and providers in the sharing economy. These are, for example, applications used by users in order to meet their needs from the process phase, then intermediary ones that, for example, ensure transaction execution, billing and evaluation, and those from providers related to customer relations and lifecycle management systems. Constantiou, Marton, and Tuunainen (2017) share the sharing economy according to the level of control exercised by the platform owner over platform participants and according to rivalry. Thus the sharing economy is divided into four models called franchisors, director, captain and gardener. Franchisors and directors, that is, Uber and Handy, have a strict level of control over the participants due to, for example, standardization of services and the issuance of contracts. Directors and franchisors differ according to the degree of rivalry, franchisors feel great rivalry due to the prices of contracted services and constant changes in supply and demand in real time. While the model directors feel low rivalry due to standard service prices. On the left side of the matrix are the captains and gardeners. Captains whose best example is Airbnb feel high rivalry, due to prices and constant changes in supply and demand, while gardeners feel low rivalry. Captains and gardeners have weak control over platform participants (Constantiou, Marton, & Tuunainen, 2017). The following sharing models are described according to Barb and Brat (2018) who divide them into: business model based on approach, market / platform economy, on-demand service providers. The business model based on the approach is also known as the excess capacity model, due to the fact that it is based on underutilized resources.

The model known due to the principle of access to various services and goods through internet platforms. The consumer will not buy a certain product as in the traditional economy, but will access it when he needs it. The platform owner provides tangible and intangible assets that the consumer can rent. The importance of this model is that it forces consumers to a different way of thinking in which access to a product is more important than owning a particular product. The following is a market / platform economy in which consumer relations are in many cases automated. Examples of this model are Airbnb (which facilitates transactions and connects property owners with consumers) and BlaBlaCar (which facilitates the transportation of people). The importance of this model is that it provides benefits to all parties, facilitates the connection of users and providers in a fast and secure way, and refers to traditional products and services such as transport, accommodation. The on-demand service provider model refers to customer-focused service activities. Users require the provision of specific services by other persons or by specialized companies. Value delivery is done through applications and platforms. The platform has the role of ensuring the efficiency of transactions, but at the same time offers an opportunity for evaluation for the provider and consumer of services through an evaluation system (Barbu and Bratu, 2018).

## 5. ADVANTAGES AND DISADVANTAGES OF SHARING ECONOMY

The advantages of the sharing economy most often include: better prices, environmental sustainability, community affiliation, possibility of additional income, use of unused materials, better experience, and trust. According to Tabcum Jr. (2019) most cars are not used 95% of the time. Owning a car often comes with fees, interest, insurance and a number of other costs. It is these costs that can be reduced with sharing economy platforms. In addition, using a sharing economy is cheaper than a traditional economy which further attracts users. This is especially noticeable in the transport sector, for example Uber and BlaBlaCar are often cheaper than taxi services. The sharing economy is environmentally friendly for the reason that it reduces the demand for new goods. Instead, it allows the sharing of goods that remain unused and can be shared multiple times. The sector of the sharing economy that contributes most to the preservation of the environment is the transport sector. This sector improves environmental sustainability by reducing greenhouse gas emissions (Frenken and Schor, 2017). Instead of everyone owning a car, using fuel and gas, more people gather who use the same good together and thus save money, time and participate in preserving the environment. Platforms facilitate the process of sharing between people around the world who do not know each other, have no common connections or common friends. In this way, new social networks and communities are created that share their experience. One example is the socializing of hosts and guests during rented accommodation (Frenken and Schor, 2017). The sharing economy allows people to increase economic independence by earning even after traditional working hours or if they are unemployed. People have flexible working hours, and can use their own goods that they do not normally use. According to Tabcum Jr. (2019) the vast majority of the population owns things they don't need, an estimated 80% of items at home are used less than once a month. In addition, goods become obsolete quickly or have a shelf life, by sharing these goods for a small fee or by renting more people can enjoy those goods, and at the same time one can earn money. For example, you can rent an unused room, bike, car, lawn mower, drill and the like. The sharing economy is evolving and offering more and more innovations that improve the user experience. "Trust is the main currency in the sharing economy. The wealth that a man accumulates is called reputation. Every service has a rating system in which users rate, criticize and praise each other." (Sajter, 2014). It is the rating system that helps to establish trust between users. If a person has a bad rating, there is a high probability that the user will not opt for it. Trust is also considered a major challenge of the sharing economy, and it is precisely because of a lack of trust that many people are not condemned to participate in sharing economy platforms,

especially when renting their own home due to the possibility of theft and damage. Disadvantages of the sharing economy can be classified into five main categories, namely: instability of personal income, less benefits and protections for service providers, service providers are responsible for their own training, capital investment and maintenance costs are the responsibility of service providers, and user privacy and security. "Service providers in the sharing economy are completely dependent on the platform's ability to connect them with customers, so service providers are often unsure whether their services will be in demand at all. Also, in the case of platforms that determine prices independently, service providers are not sure about the price until they start providing that service, and the price can change at any time." (Stojković, 2019). This shortfall is considered one of the most important for the reason that providers are not sure how much income they will have per month. In addition, income may vary from month to month. Furthermore, service providers are not classified as employees, for this reason they do not have minimum wages, paid annual leave, sick leave, health and pension benefits and the like. In addition, if a client cancels, is late, or simply does not show up for a particular service, insurance does not cover such costs (U.S. Department of Commerce, 2016). Service providers are responsible for their own training and the education they need to provide services independently and seamlessly through the sharing economy. Platforms are not required to provide training to service providers because they are not their employees. Service providers are responsible for investing in the maintenance of their services. For example, Uber and BlaBlaCar drivers themselves invest in their vehicle insurance, repairs and maintenance. "Businesses involved in the sharing economy must, as a rule, collect customer data in order to be able to connect customers with service providers in a reliable way. With numerous examples of misuse and insufficient security of user data, it is necessary to consider the risk that participation in the digital economy poses to personal privacy. Data security depends on the legislation and the level of trust that users have in the company to which they provide data." (Brozović et al., 2019). For this reason, it is important to tell users which data is being collected and to ask for their consent for this action. Disadvantages are also related to user safety. "One example of the dark side of the online sharing platform is the wave of reporting cases of rape and abuse via Couchsurfing, through which people can spend the night on their trips for an affordable fee at one of the providers on the platform." (Bašić and Jurčević, 2017). Couchsurfing is an online platform through which accommodation is offered to tourists, that is, it acts as a community of travel enthusiasts who offer each other accommodation at the cheapest prices in all parts of the world. One of the common reasons for not using the sharing economy is precisely fear and mistrust. There is also the issue of theft or other forms of exploitation.

## 6. PRIMARY RESEARCH RESULTS

The primary research was conducted in June 2019 at the Faculty of Economics in Osijek (Croatia) for the purpose of research on youth awareness of the existence of the sharing economy. The target group were second-year undergraduate students, and the study included a total of 217 respondents. The aim of the research was to investigate and find out how familiar students are with the concept of sharing economics and which of the examples they use and to what extent. The research was conducted through the online tool Google Forms. The questionnaire included demographic questions, questions related to international trade, and questions related to the sharing economy. The questionnaire was structured in such a way that most questions had answers offered, while some questions were open-ended. The name of the questionnaire was International Trade Awareness in my Environment. Out of a total of 217 respondents (second-year undergraduate students at the Faculty of Economics in Osijek), there were 149 female students (68.7%) and 68 male students (31.3%). Most respondents (92.9%) belong to the age group of 18 to 24 years, and 3.2% belong to the age group of 25 to 30 years.

A total of 2.3% of respondents belong to the group of 30 to 39 years, and the same percentage of respondents belongs to the group of 40 and more years. 72.8% of respondents with secondary education participated in the survey, while 26.3% of respondents stated that they had completed college or university. The most important research results are listed below. To the question: "Have you heard of the term sharing economies", a total of 59% and 128 respondents answered that they have not heard of the term sharing economies, only 24.4% of respondents answered that they are familiar with the term, and 16.6% of respondents answered that he did not know the answer to this question. Respondents most often heard of Uber (179), BlaBlaCar (144), Airbnb (105), and a total of 21 respondents had not heard of any of the examples offered. It can be concluded that the respondents know about certain examples of sharing economics, but they do not know that these examples belong to the concept of sharing economy. When it comes to using certain platforms, the situation is a little different. To the question "Which platforms have you used so far?" The majority (a total of 104 respondents, i.e. 47.9%) answered that they have not used them. Students most often use Uber (36.4%), BlaBlaCar (22.6%) and Airbnb (15.7%). To the question "What do you think is the advantage of the sharing economy?" respondents were able to choose multiple correct answers. The largest percentage of respondents (55.3%) decided that the main advantage of the sharing economy is cost reduction, 50.2% of respondents answered that the advantage is the connection between consumers and visible reviews, in addition, the sharing economy increases quality of life, creates new jobs and encourages the development of the local economy. When asked "Do you think that distrust is the main challenge of the sharing economy", a total of 45.2% of respondents answered in the affirmative, 23.5% of them believe that distrust is not the main challenge, while 31.3% of respondents said they do not know. Most respondents (43.1%) used the sharing economy in the field of transport, 35.2% in the field of tourism, and 32.4% in the field of food delivery and exchange. Students use different examples, but are not aware that they belong to the sharing economy, that is, they do not know enough about its concept. Unlike knowledge of platforms and various examples, a large number of students did not use sharing economy platforms which is not expected due to the fact that sharing economy in the world is most often used by young people. Students were expected to use the sharing economy mostly for transportation and accommodation, most commonly Uber, BlaBlaCar and Airbnb as research has shown.

## 7. CONCLUSION

The importance of international trade is growing, and the factors affecting it are changing rapidly. Globalization and the development of information and communication technology have a significant and exponential impact on international trade. Classic models find it increasingly difficult to follow modern trends, desires and requirements of the world, and are exposed to increasing challenges. People are eager for change, they are more connected than ever before, and their social responsibility and environmental awareness, which is increasingly being brought to the fore, is growing. The main drivers of the new way of thinking and new consumer habits are millennials, people born between 1980 and 2000. As a consequence of the challenge, new business models are emerging, and one of them is the sharing economy. The sharing economy is a modern paradigm that has no official and accepted definition, and can be briefly defined as the sharing of property or services free of charge or for a fee. It arose in response to a number of challenges related to growing poverty, crisis, environmental pollution, climate change, migration and social irresponsibility. Solidarity, cooperation and reciprocity of people are at the forefront. The focus is on human resources, quality, efficiency, added value as well as on social and environmental responsibility. The sharing economy has a number of benefits for both service providers and users. The main challenge is the privacy and security of users. The European Union pays great attention to the adoption of measures for clear and equal regulation of the sharing economy through taxes, protection of consumers and workers, and

through fair market competition. The result of the sharing economy is solidarity, job creation, rationalization of consumption, and growth of local economies. It can be concluded that the sharing economy is a true example of a new business model that has an increasing impact on the international economy. It allows individuals to be both users and service providers of the sharing economy. The impact can be seen through the results that the sharing economy achieves and the constant growth in the number of users that is expected in the future as well. The impact of the sharing economy is also great in the Republic of Croatia, but the lag behind the large European Union countries such as Germany, France and others is still visible. This result was confirmed by the primary research. Young people are still not familiar enough with the concept of the sharing economy. Most respondents are not familiar with the concept of sharing economy, but recognize some of its platforms or have used them without even being aware that it is precisely the sharing economy. However, given the trends, different research results are to be expected in the future. In order for the sharing economy to develop faster, it is necessary to abandon old habits and accept new ones. Younger people are those who find it easiest to adopt new habits and who use various platforms of the sharing economy. It is expected that more and more products and services will be included in the sharing economy in the future, and that the constant development of information and communication technology will overcome user distrust, improve security and data protection. The COVID-19 epidemic brings economic crisis and disruption of the supply and demand on the market. It is likely that the sharing economy will best adapt to the current situation due to its flexibility and willingness to change, which could further affect the growth of the sharing economy in total (international) trade.

**LITERATURE:**

1. Barbu, C., Bratu, R. (2018). Business Models of the Sharing Economy. volume 19, Issue 2, Romania: University of Craiova. Retrieved 16.08.2020 from: https://www.researchgate.net/publication/330222122_Business_Models_of_the_Sharing_Economy.
2. Bašić, M., Jurčević, A. (2017). Ekonomija dijeljenja. Croatia: Faculty of Economics in Zadar. Retrived 16.08.2020. from: http://sdp-zadar.org/wp-content/uploads/2018/03/Ekonomijadijeljenja.pdf
3. Borovac, N. (2014). Strategije očuvanja privatnosti u okviru modernih društvenih medija. Croatia: Filozofski fakultet u Osijeku. Retrived 16.08.2020 from: https://repozitorij.ffos.hr/islandora/object/ffos%3A1493/datastream/PDF/view
4. Botsman, R. (2015). Defining the Sharing Economy: What is Collaborative consumption-and What isn't? USA: Fast Company. Retrived 01.08.2020 from: http://www.fastcoexist.com/3046119/defining-the-sharing-economy-what-is-collaborative consumption-and-what-isnt.
5. Brozovic, V. et al. (2019). Ekonomija dijeljenja: poslovni model budućnosti? Croatia,Zagreb: Zbornik Ekonomskog fakulteta u Zagrebu, Vol. 17 No. 1, 2019. Retrived 06.08.2020 from: https://hrcak.srce.hr/.
6. Constantiou, I., Marton, A., Tuunainen, V. (2017). Four Models of Sharing Economy Platforms. Indiana: Kelley School of Business at Indiana University. Retrived 16.08.2020 from: https://www.researchgate.net/publication/321576374_Four_Models_of_Sharing_Economy_Platforms
7. Crnjak, M. (17.08.2017). Međunarodna platforma za najam smještaja osvojila Jadran. Croatia: Poslovni dnevnik. Retrived 10.08.2020 from: http://www.poslovni.hr/hrvatska/rast-prometaairbnba-u-hrvatskoj-visi-od-100-330700

8. Frenken, K., Schor, J. (2017). Putting the sharing economy into perspective, Environmental Innovationand Societal Transitions, 23(1), str. 3-10 Boston: Environmental Innovation and Societal Transitions. Retrived 11.08.2020 from: https://www.sciencedirect.com/science/article/pii/S2210422417300114
9. Hamari, J., Ukkonen, A., Sjöklint, M. (2016). The Sharing Economy: Why People Participate in Collaborative Consumption. Journal of the Association for Information Science and Technology. 67. 2047-2059. 10.1002/asi.23552. Retrived 15.08.2020 from:https://www.researchgate.net/publication/255698095_The_Sharing_Economy_Why_People_Particiate_in_Collaborative_Consumption
10. Haring, N, Storbeck, O. (2009). 2.0 Economic., Ney York: Palgrave macmillan
11. Lipovšek, I. (09.05.2019). Online plaćanje smještaja: Top 5 payment gateway sistema u Hrvatskoj. Croatia: Cimerfraj.hr. Retrived 25.07.2020 from: https://www.cimerfraj.hr/ideje/payment-gateway-hrvatska.
12. Lock, S. (2019). Number of sharing economy users in the United States from 2016 to 2021. USA: Statista. Retrived 15.08.2020 from: https://www.statista.com/statistics/289856/number-sharing-economy-users-us/.
13. Mazareanu, E. (2020). Monthly number of Uber's active users worldwide from 2017 to 2020, by quarter (in millions). Germany: Statista. Retrived 16.08.2020 from: https://www.statista.com/statistics/833743/ususers-ride-sharing-services/.
14. Owyang, J., Tran, C., Silva, C. (2013). The Collaborative Economy: Products, services, and market relationships have changed as sharing startups impact business models. To avoid disruption, companies must adopt the Collaborative Economy Value Chain. Altimeter Research Theme: Digital Economies. USA: Altimeter. Retrived 11.08.2020 from: http://www.collaboriamo.org/media/ 2014/04/collabecon-draft16-130531132802phpapp02-2.pdf .
15. Petropoulos, G. (2016). An economic review on the Collaborative Economy. Brusseles: European Parliament. Retrived 16.08.2020 from:http://www.europarl.europa.eu/RegData/etudes/IDAN/2016/595358/IPOL_IDA(2016)595358_EN.pdf
16. Pobi, L. (2018). Ekonomija dijeljenja. Croatia Faculty of Economics in Osijek. Retrived 03.08.2020 from: https://urn.nsk.hr/urn:nbn:hr:145:753543.
17. Puschmann, T, Alt, R. (2016) Sharing Economy. Business & Information Systems Engineering, 58, 93-99. Retrived 16.08.2020 from: https://www.researchgate.net/publication/289367044_Sharing_Economy/link/5efc8b72a6fdcc4ca440acc5/download
18. Sajter, D. (2014). Ekonomija dijeljenja. Croatia: Faculty of Economcs in Osijek. Retrived 04.08.2020 from: https://bib.irb.hr/datoteka/722791.Ekonomija_dijeljenja.pdf.
19. Stojković, M. (2019). Utjecaj ekonomije dijeljenja na promjene u transportnom ponašanju starije populacije. Croatia: Faculty of Economcs & Business Zagreb Retrieved 08.08.2020. from: https://zir.nsk.hr/islandora/object/efzg%3A4123/datastream/PDF/view.
20. Tabcum Jr. (04.03. 2019). The Sharing Economy Is Still Growing, And Businesses Should Take Note. Los Angeles: Forbes. Retrieved 09.08.2020. from: https://www.forbes.com/sites/forbeslacouncil/2019/03/04/the-sharing-economy-is-still-growing-and-businesses-should-take-note/#3422461a4c33.
21. U.S. Department of Commerce (2016). Digital matching firms: A new definition in the „sharing economy“ space. Washington: U.S. Department of Commerce. Retrieved 09.08.2020. from: https://www.commerce.gov/sites/default/files/migrated/reports/digital-matching-firms-new-definition-sharing-economy-space.pdf

# INTERNATIONAL REPRODUCTION OF CAPITAL AND INTEGRATION OF SMES INTO GVC

**Anar Rzayev**
*Azerbaijan State University of Economics (UNEC), Azerbaijan*
*Baku, Istiqlaliyyat str.6, AZ1001, Azerbaijan*
*a.rzayev@list.ru*

**Ganira Ibrahimova**
*Siegen University, Germany*
*Unteres Schloß 3, 57072 Siegen, Germany*
*ibr.ganira@gmail.com*

***ABSTRACT***

*The world economy will soon enter a post-pandemic period, never expiriences in such scales before. There are already many opinions and forecasts about what the world economy will look like in the nearest future. Although the reality shows that the whole world will face a social and economic crisis unprecedented in the past. Indeed, the COVID-19 pandemic has become a serious trigger for changing the current system of global production. And the emerging gap in existing connections within global value chains has become a huge challenge for all actors of the world economy. Being the main drivers of the global production and financial system, large corporations faced the need to improve, but it is still difficult to say how much time it will take. Although, it is become more and more obvious within quarantine recession, that SME are getting increasing impact not only within the national economies of countries but also in the scale of the world economy as a whole. At the moment SME sector is receiving huge institutional and financial aid support from governments which willl eventually lead to the improvement of the International Capital Reproduction System. The main objective of this study is to reveal and assess the existing factors for integrating SMEs into global value chains and also to identify prospects for internationalization and improvement of production relations between suppliers and buyers. The article analyzes the situation of one-way integration of the regime and information flow and outlines the solution of problems in the SME management approach. The article refers to the key attributes of factors directly related to SMEs and integration and focuses on how SMEs can influence the sustainable economic growth of the world economy.*

***Keywords:*** *internationalization, integration, pandemia, reproduction of capital, value chain, SMEs, information exchange*

## 1. INTRODUCTION

The great importance of GVC as an economic and political tool in the formation of a new global economy system requires a serious study of this system effectiveness, especially during the post-pandemic period. It is clear that the inclusion of countries in global chains allows them to pursue planned economic policies in the aspect of attracting foreign investment and subsequently increasing export and transit potential. We observe on the one hand, the existence of unequal dynamics among GVC countries leads to the dependence of developing countries on developed countries, and on the other hand, excluding such ties leads to economic and political isolation. As our research shows, the institutionalization of the GVC approach has in fact revealed new mechanisms for the integration process based on the close interconnection of countries' production systems within regional and global networks. Such networks, managed by transnational capital, basically deploy reproductive processes both within individual countries and globally, ultimately leading to economic growth in the world economy.

This situation allows economic actors from developing countries to achieve strategic positions in the world economy. In addition, the situation associated with COVID-19 has further increased this prospect, since almost 90% of all existing chains have either been frozen for the quarantine period or have ceased to exist. It became clear that the GVCs that existed during the before-pandemic period would differ significantly during the post-pandemic period. The question is, how exacty the image of GVC and its participants will be changed? Many nations have invested huge amounts of money in supporting small and medium businesses during the pandemic disaster. This approach is fair, as it is this part of the national economies that has suffered the most. Negative social and economic consequences and the search for new ways to develop entrepreneurship can have a positive impact on the economic development of countries during the post-pandemic era of the world economy. Our research is based on the following hypothesis:

- First of all, to determine the importance of the GVC's contribution from its inception within the framework of World Systems Theory (WST) to its final association within the network paradigm. The impact of globalization on economic and institutional functioning needs to be analysed here.
- Secondly, on the basis of key elements, it is necessary to critically assess the GVC approach, to consider the existing limitations in its theoretical structure related to the increased role of the State; to consider national and regional trajectories (as well as socio-economic and political factors and elements); to analyze the reproduction in the context of unequal country dynamics generated by global transnational actors.
- Thirdly, conduct a comparative analysis of institutional factors impact on entrepreneurship development in developing and developed countries and assess the prospects for their inclusion in the new GVC system.

## 2. THEORETICAL AND METHODOLOGICAL BACKGROUND OF GVC

GVC is not only a theoretical and methodological basis for global reproductive processes, but also a practical system of interaction and assimilation within a global political network. But it should be noted that it is in this situation that certain problems are discovered that nascent antagonism between large capital and the global bureaucracy. Perhaps that is why the Davos World Economic Forum is such a huge success, as it creates a "Platform" for the resolution of certain controversial situations and creates new and effective "Rules of the Game" of relationships between representatives of large business and political elite. The main goal is to create a system of "Common Interests" within the developed and existing GVC. In other words, as part of our research, we consider the need to develop a new approach capable of overcoming the limitations imposed by the political conditions of GVC as a condition for creating global alternatives based on the laws of neoliberal doctrine that dominates the global world. Over the past decade and a half, the global value chain (GVC) approach has become one of the most stimulating tools for analyzing the geo-economic dynamics of globalization. While a group of researchers used this concept rather vaguely in advising governments and organizations on the competitiveness of regions and firms, another group of scientists based on a more systematic and complex theoretical tradition used it to explain the principles of various industrial global networks (Gereffi 1996; Gereffi and Kaplinsky 2001). From the institutional point of view, inclusion in the GVC allows many developing countries, especially those in transit, to bring their institutions closer to the neoliberal mode of the "Western World" under the influence of global political and supranational institutions. Since the 1990s, the concept of the Global Commodity Chain (GCC) was first introduced by Gary Jereffy, and today the issue is very relevant, particularly in the study of applications and methodological aspects. Since 2000, there has been a rapid development of globalization and this has led to the concept of GVC's global value chain replacing that of GCC's global product chain.

At this time, there has been a change in attitude towards the essence of the commodity in the international trade system. Indeed, the emergence of certain problems in commodity-rich countries has led to complex problems with the uneven development of the world economy, manifested by the decline in exports of high value-added goods, which are derived from the innovation component. It was therefore necessary to revisit the very notion of commodities and the nature of the problems that arose in the nature of value addition from raw materials to finished products. This led to the need to introduce new forms of chain management (Bair 2005). Both the concepts of GCC and GVC have led to a gradual change in meaning with respect to GCC (Gereffi et al. 2005), which is an attempt to use this approach as a new tool for understanding the specifics of current globalization processes. In this sense, the concept of GVC and its empirical application were different from the method provided by WTS (World System Theories) for product chains. The specificity of this process is based on a new form of economic reproduction, which takes place on the functional integration of dispersed activities, on the international arena, which has a significant difference with internationalization. In other words, this approach is less focused on the activities of a single State as well as on the criterion based on international trade or FDI. Instead, qualitative elements have been identified as a result of changes in the industrial organization of TNCs in various sectors of the world economy. This has led to a re-prioritization of national economies of domestic scale through vertical integration with external economies, mainly through outsourcing (Gibbon; Ponte 2005). Spatially, this has created space for highly fragmented and geographically dispersed value chains, where TNCs break down production processes and place them on a global scale. GVC's approach assumes that the holistic perspective has not been retained to understand the capitalist system as a whole, but to analyze a particular network of enterprises that do business globally in certain activities that transcend national and regional boundaries. In this sense, the GVC approach is assumed to be "an international structure for the production, trade and consumption of goods that is broken down into stages, included in a network of activities controlled by firms". The new scenario of global reproductive formation is based on the concept of management and modernization of world production, which directly affects not only the size of world consumption and the qualitative change of the world product. Competitive struggle on the world stage changes the entire face of global politics, which naturally alienates many countries from the system of world economic relations. We see this by the example of growing alienation of many integration groups from the rest of the world or the increase of political power of some countries over others within the same regional integration associations. GVC in this process is a powerful tool for understanding how political and economic activities interact and develop in different directions in the global world. The stages of production corresponding to each global economic network and the way in which value is produced and distributed in these activities (Gereffi et al. 2005) not only focus on productive activities, but also include expanding markets and deepening the global division of labour (Giuliani et al. 2005).

Based on different approaches, it is possible to group the existing shortcomings into three interrelated groups:

1) The concept of subordination and its implications in networks and circuits;
2) Underestimation of national trajectories and dynamics - their specific matrix of socio-economic power, as well as the role and capabilities of the historically established state - as a result of analytical excessive centralization of firms;

Insufficient attention to the process of financing and financial capital in global networks, as well as their role in relationships with participation in different chains.

According to researchers, GVC provides an opportunity to learn "how authority is distributed and used among member firms in a chain", and the distribution of authority in the area of responsibility allows us to identify the following issues:

1) Which actors control the chain?
2) Where do the sources of authority come from and what is the nature of the sources of authority?
3) Based on what conditions is the distribution of income or flow of value among the different actors in the chain?

In other words, GVC makes it possible to identify who is responsible for generating and maintaining dynamic functions - in terms of value management - i.e. to determine how the total power of chain actors is distributed in a network and node management system (Gereffi et al. 2005). The management concept, which, as already shown, classifies GVC as being managed by the manufacturer, as well as by the buyer. In the case of manufacturer-oriented GVC with intensive use of capital and technology, management is a key productive activity. In the case of GVC, which is buyer-oriented, we are talking directly about labour-intensive products and labour-intensive production (clothing, footwear and agri-food products). A geographical feature is, of course, of great importance and has exceptional benefits from transit potential. Although it can be said that this factor may not be the main one of the total value added if the country is not in the geopolitical interests of the main GVC member countries. In addition, during the pandemic, companies with a huge portfolio of online products were able to quickly become GVC leaders. Based on the fact that the GVC management system operates in the form of vertically integrated networks where information, production costs, product design, advertising and modern supply chain management systems create barriers to entry, the main factor of inclusion will be the availability and ability to invest capital... In these chains, production functions are usually outsourced and key players focus on branding, design and marketing functions.

## 3. NEW GLOBAL REPRODUCTIVE SCENARIO

The new scenario of global reproductive formation is based on the concept of management and modernization of world production, which directly affects not only the size of world consumption, but also the qualitative change in the world product. Competitive struggle on the world arena changes the entire face of global politics, which naturally alienates many countries from the system of world economic relations. We see this by the example of growing alienation of many integration groups from the rest of the world or the increase of political power of some countries over others within the same regional integration associations. GVC in this process is a powerful tool for understanding how political and economic activities interact and develop in different directions in the global world. The stages of production corresponding to each global economic network and the way in which value is produced and distributed in these activities (Gereffi et al. 2005) not only focus on productive activities, but also include expanding markets and deepening the global division of labour. Taking into account national trajectories and characteristics of socio-economic and political structures and their dynamics means analyzing not only the activities of firms, but also those of the state. In a certain sense, the issue of global reproduction involves integration factors with several other qualities different from those we are used to considering within existing integration associations. These factors are related to the specifics of the existing actors, which are expressed by different shares of capital, labor and the level of political influence. At the same time, it is necessary to accept the fact that even in such a situation the interrelation of subjects, being consistent, is still of scalar nature, i.e. top-down control. As far as the state is concerned, it is considered not simply as an institution, but as a specific subject with varying degrees of power in its configuration, interacting with the power

of social coalition classes involved in the historical creation of state capabilities. Recognition of the strengths and weaknesses that shape these state capabilities is important for understanding the capabilities from which regional, national, and labor force representatives contribute to modernization in GVCs.

## 4. THE PROBLEM OF INTERACTION OF ENTREPRENEURSHIP SYSTEMS IN GVC INSTITUTIONAL INDICES ANALYSIS

During the pandemic, many countries felt that the socio-economic development of the national economy was seriously threatened. States have invested huge amounts of money to support SME. In the new formation in the post-Pandemic period of GVC development, it is possible that not only the participating countries will change, but also the share of SME will increase. In this regard, based on previous studies, it is necessary to identify how the institutional systems of developed and developing countries match each other. For this purpose, we built an econometric analysis model in GRETL 1-7-1. Indexes calculated by the World Bank and GEM for 2016-2017 were used to build the econometric analysis model. Analysis for developing countries by World Governance indicators (World Bank. Kaufmann) such as Rule of Law (RL), Control of corruption (CC), Total Early-Stage Entrepreneurial Activity (TEA) and Established Business Ownership Rate (EBOR). Developed-country analysis by International Property Right Index (IPRI), Total Early-Stage Entrepreneurial Activity (TEA) and Established Business Ownership Rate (EBOR). In the model for developing countries, we see that, despite the low statistical significance of the business rate, the control of corruption has an impact. The Total Early-Stage Entrepreneurial Activity indicator is heavily influenced by the rule of law.

*Table 1: Model for Developing Countries OLS estimates using the 11 observations 1-11*
*Dependent variable: TEA*

| *Variable* | *Coefficient* | *Std. Error* | *t-statistic* | *p-value* | |
|---|---|---|---|---|---|
| const | -25,357 | 8,3129 | -3,0503 | 0,01857 | ** |
| CC | 0,171938 | 0,130757 | 1,3149 | 0,22997 | |
| EBOR | 0,193003 | 0,64346 | 0,2999 | 0,77293 | |
| RL | 0,327818 | 0,160704 | 2,0399 | 0,08073 | * |

*Mean of dependent variable = 10,3636*
*Standard deviation of dep. var. = 5,55919*
*Sum of squared residuals = 77,4317*
*Standard error of residuals = 3,32591*
*Unadjusted $R^2$ = 0,749449*
*Adjusted $R^2$ = 0,64207*
*F-statistic (3, 7) = 6,97946 (p-value = 0,0164)*
*Log-likelihood = -26,3416*
*Akaike information criterion = 60,6832*
*Schwarz Bayesian criterion = 62,2747*
*Hannan-Quinn criterion = 59,6799*

*Table following on the next page*

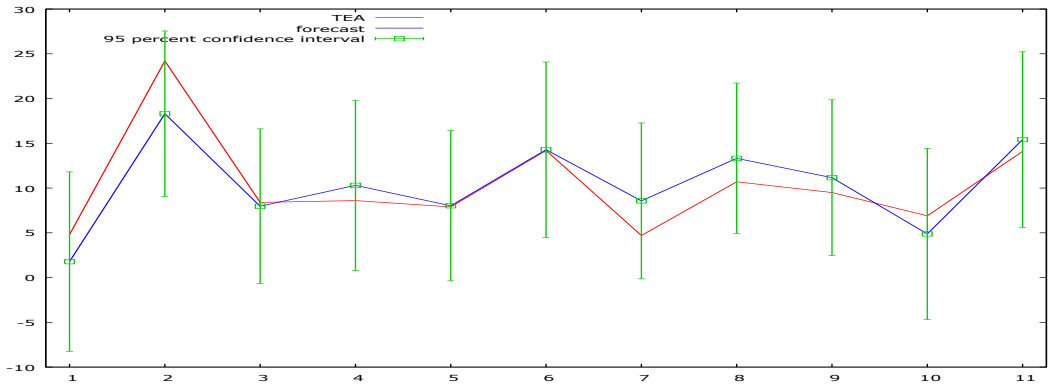
*Table 2: Correlation coefficients, using the observations 1 - 11*
*5% critical value (two-tailed) = 0,6021 for n = 11*

| CC | TEA | RL | EBOR | |
|---|---|---|---|---|
| 1,0000 | 0,7488 | 0,6655 | 0,5356 | CC |
| | 1,0000 | 0,8199 | 0,5697 | TEA |
| | | 1,0000 | 0,5705 | RL |
| | | | 1,0000 | EBR |

*For 95% confidence intervals, t(7, .025) = 2,365*

| **Countries** | **TEA** | **Prediction** | **std. error** | **95% confidence interval** |
|---|---|---|---|---|
| Bulgaria | 4,80000 | 1,77927 | 4,24217 | (-8,25186, 11,8104) |
| Chile | 24,2000 | 18,3036 | 3,91023 | (9,05742, 27,5499) |
| Croatia | 8,40000 | 7,96689 | 3,65758 | (-0,681912, 16,6157) |
| Georgia | 8,60000 | 10,3017 | 4,02228 | (0,790461, 19,8128) |
| Hungary | 7,90000 | 8,02224 | 3,54898 | (-0,369777, 16,4142) |
| Latvia | 14,2000 | 14,2858 | 4,14499 | (4,48446, 24,0872) |
| Malaysia | 4,70000 | 8,56863 | 3,68209 | (-0,138123, 17,2754) |
| Poland | 10,7000 | 13,3220 | 3,55544 | (4,91470, 21,7293) |
| Slovakia | 9,50000 | 11,1609 | 3,67920 | (2,46094, 19,8608) |
| South Africa | 6,90000 | 4,87387 | 4,04682 | (-4,69533, 14,4431) |
| Uruguay | 14,1000 | 15,4152 | 4,14660 | (5,61002, 25,2203) |

*Figure 1: The forecast*




The forecast shows that countries such as Georgia, Hungary, Malaysia, Poland, Slovakia and Uruguay can significantly increase their early-stage entrepreneurial activity by further developing existing institutions. This suggests that the new formation of GVC has a great opportunity to actively include entrepreneurial structures of these countries. For the rest of the countries, it makes sense to improve the qualitative characteristics of the institutions and their impact on entrepreneurship development.

*Table following on the next page*

*Table 3: Model for Developed Countries: OLS estimates using the 10 observations 1-10*
*Dependent variable: TEA*

| *Variable* | *Coefficient* | *Std. Error* | *t-statistic* | *p-value* | |
|---|---|---|---|---|---|
| const | -5,41723 | 6,02018 | -0,8998 | 0,39810 | |
| IPRI | 0,00124323 | 0,000789596 | 1,5745 | 0,15937 | |
| EBOR | 0,584934 | 0,354272 | 1,6511 | 0,14270 | |

*Mean of dependent variable = 7,48*
*Standard deviation of dep. var. = 2,79754*
*Sum of squared residuals = 38,1427*
*Standard error of residuals = 2,3343*
*Unadjusted $R^2$ = 0,458477*
*Adjusted $R^2$ = 0,303756*
*F-statistic (2, 7) = 2,96325 (p-value = 0,117)*
*Log-likelihood = -20,8831*
*Akaike information criterion = 47,7663*
*Schwarz Bayesian criterion = 48,674*
*Hannan-Quinn criterion = 46,7705*

*Table 4: Correlation coefficients, using the observations 1 - 10*
*5% critical value (two-tailed) = 0,6319 for n = 10*

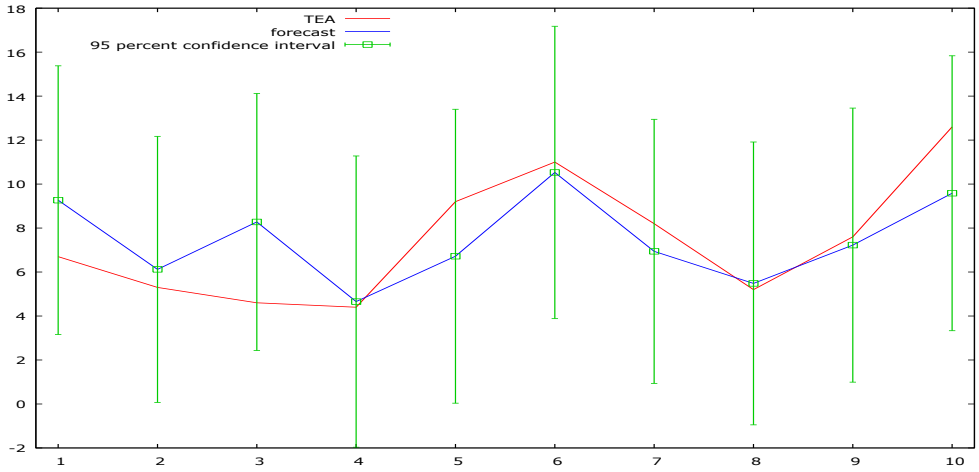
| IPRI | EBR | TEA | |
|---|---|---|---|
| 1,0000 | 0,1218 | 0,4976 | IPRI |
| | 1,0000 | 0,5164 | EBR |
| | | 1,0000 | TEA |

For 95% confidence intervals, t(7, .025) = 2,365

| **Countries** | **TEA** | **prediction** | **std. error** | **95% confidence interval** |
|---|---|---|---|---|
| Finland | 6,70000 | 9,26732 | 2,58432 | (3,15637, 15,3783) |
| France | 5,30000 | 6,12134 | 2,55822 | (0,0721143, 12,1706) |
| Germany | 4,60000 | 8,27752 | 2,47093 | (2,43471, 14,1203) |
| Italy | 4,40000 | 4,65613 | 2,80063 | (-1,96630, 11,2786) |
| Luxembourg | 9,20000 | 6,71866 | 2,82599 | (0,0362616, 13,4011) |
| Netherlands | 11,0000 | 10,5285 | 2,81120 | (3,88106, 17,1759) |
| Portugal | 8,20000 | 6,94111 | 2,53921 | (0,936840, 12,9454) |
| Spain | 5,20000 | 5,48225 | 2,71952 | (-0,948392, 11,9129) |
| Sweden | 7,60000 | 7,22415 | 2,63507 | (0,993195, 13,4551) |
| USA | 12,6000 | 9,58302 | 2,64354 | (3,33205, 15,8340) |

*Figure following on the next page*

*Figure 2: The impact of the established business rate (EBR) on Total Early-Stage Entrepreneurial Activity (TEA)*




For developed countries, the impact of the established business rate (EBR) on Total Early-Stage Entrepreneurial Activity (TEA) is of great importance. Based on the analysis, it can be concluded that in the new formation of GVC, developing countries will increasingly be included in global networks, provided a significant change in the institutional framework, which directly affects the development of SME. On the other hand, financial and economic support to small and medium-sized businesses during the pandemic will not give a tangible impact. The consideration of the role of finance in GVC leads to an important aspect of identifying difficulties in accessing credit resources. The privileged access that leading - non-financial - firms have to financial resources enhances the dynamics of financing and their relationship with both financial investors and banks. Weak access to finance by economic actors from developing countries, mainly SMEs, leads to their involvement in localized and subordinate functions of GVC. In this situation, global holdings are created, consisting of economic entities included in GVC (Hessels, J., & Van Stel, A. 2011). The financing process in GVC (in principle it is a global financial system) tends to complicate asymmetrical control over powers and sets barriers to entry for small entities. In order to improve their functions and position in GVC through new financial investments, these participants rely on assistance offered by either lead firms or national and international programs of international development and financial assistance institutions. As structured and coordinated national financial systems in developing countries tend to be underdeveloped, regional SMEs become increasingly dependent either on their own revenues or on international financial programmes, most of which are implemented through national and regional governments.

## 5. CONCLUSION

Ironically, the GVC approach has been strengthened by its increasing assimilation with international organizations. Exploring this relationship may allow us to better understand how and why GVC's main constraints are related to ideas and interests that unite economic and institutional global networks. Indeed, even in spite of GVC's political, economic, and geographic development, the institutional framework plays an enormous role. Therefore, in the period of post-Pandemic development of the world economy, international institutions will be of great importance. In this regard, we should talk about the need to improve the global institutional system. Then it is possible to solve such issues as identification of reasons and ways to include GVC in the strategy of international institutions, which will form global political networks. To solve the problems of increasing the role of GVC in global political networks, with the exception of the problems of asymmetric logic and interests of the global

economic networks. The next issue is related to conducting "fast" towards SME. Creating a neoliberal device that makes it possible to activate the continuity of inclusion or exclusion and the system of subordination of subjects from the fragmentation process. The international organizations of the UN system and other global financial institutions are conducting serious studies on how the processes and dynamics of development in national economies of developing countries (mainly the concepts of cluster development or regional innovation systems are analyzed) can be integrated into global chains. In the study of the relationship between local clusters and GVC, and in the presence of the above mentioned management and modernization categories, for international organizations, this was the main objective to achieve the overall goal of increasing SME competitiveness and, consequently, reducing poverty in these countries. The organisation of SMEs in the form of local clusters is necessary in order to enter the GVC (supported by supranational institutions), seems to be involved in this environment of a micro-disciplinary and coherent "quick policy"; to encourage local governments and community organisations to accept the scenario of a global network as inevitable, and to recognise that their characteristics can be adapted and extended to include them in global value chains of quality. Strengthening SME clusters through the development of productive activities and their inclusion in GVC, with a focus on UN organizations, is the main mechanism not only for the development of national SMEs, but also with the participation of global capital for their inclusion in the global reproductive process. This is, in principle, the essence of the design of new development programs implemented by supranational economic organizations.

**LITERATURE:**

1. Carter, S., & Jones-Evans, D. (2006). Enterprise and Small Business. Essex: Pearson Education Limited.
2. Bair, J. and Gereffi, G. (2001) Local clusters in global chains: the causes and consequences of exportdynamism in Torreon's blue jeans industry, World Development, 29(11), pp. 1885–1903
3. Gereffi, G. and Korzeniewicz, M. (eds) (1994) Commodity Chains and Global Capital-ism,Westport: Praeger.
4. Gereffi, G. and Memodovic, O. (2003) 'The Global Apparel Value Chain: WhatProspects for Upgrading by Developing Countries?' United Nations Indus-trial Development Organization (UNIDO), Sectoral Studies Series, availablefor downloading at http://www.unido.org/doc/12218
5. Gary Gereffi, John Humphrey, Raphael Kaplinsky, Timothy J. Sturgeon, Gibbon, P. (2001) Introduction: Globalisation, Value Chains and Development Upgrading primary production: a global commodity chain approach, WorldDevelopment, 29(2), pp. 345–363
6. Gibbon, P. and S. Ponte (in press) Trading Down? Africa, Value Chains and the Global Economy Philadelphia: Temple University Press.
7. Krajewski, L. J., Ritzman, L.P., & Malhotra, M. K. (2007). Operations Management. Processes and Value Chains. New Jersey: Pearson. Kristensen, P.H., & Lilja, K. (2011). Nordic Capitalisms and Globalization. New forms of economic organizations and welfare institutions. Oxford: University Press. http://dx.doi.org/10.1093/acprof:oso/ 9780199594535.001.0001
8. Perry, M. (2012). Small firms and network economies. London and New York: Routledge. Porter, M. (2008). On competition. Boston: Harvard Business Review.
9. Ponte, S. (2002b) 'The 'Latte Revolution'? Regulation, Markets and Consumption in the Global Coffee Chain', World Development 30(7): 1099-1122
10. Todeva, E. (2006). Business Networks. Strategy and Structure. London and New York: Routledge.

11. Hessels, J., & Van Stel, A. (2011). Entrepreneurship, export orientation, and economic growth. Small Business Economics, 37(2), 255–268. https://doi.org/10.1007/s11187-009-9233-3.
12. Hessels, J., van Gelderen, M., & Thurik, R. (2008). Drivers of entrepreneurial aspirations at the country level: the role of start-up motivations and social security. International Entrepreneurship and Management Journal, 4(4), 401–417. https://doi.org/10.1007/s11365-008-0083-2.
13. WGI https://info.worldbank.org/governance/wgi/
14. IPRI https://www.internationalpropertyrightsindex.org/
15. GEM https://www.gemconsortium.org/

# THE IMPACT OF TECHNOLOGICAL EVOLUTION IN THE AUTOMOTIVE INDUSTRY ON HOW TO MANIFEST THE REBOUND EFFECT

**Giani Gradinaru**
*The Bucharest University of Economic Studies,*
*Institute of National Economy – Romanian Academy, Romania*
*giani.gradinaru@csie.ase.ro*

**Erika Marin**
*The Bucharest University of Economic Studies, Romania*
*erika.marin@csie.ase.ro*

**Iulia Neagoe**
*The Bucharest University of Economic Studies, Romania*
*iuliaeneagoe@gmail.com*

**Catalin Rotaru**
*The Bucharest University of Economic Studies, Romania*
*rotarucstalin@gmail.com*

***ABSTRACT***
*In economics, the rebound effect is the reduction of expected gains from new technologies that increase resource efficiency due to behavioral or other systemic responses. These responses usually tend to offset the beneficial effects of new technology or other measures taken. Currently, the car market is undergoing the most important change since the mass production of internal combustion engines, because with the advent of the electric motor, most car companies are trying to gain interest and conquer the market with exorbitant amounts invested in research and development. Critics of energy efficiency programs in public policy debates cite the rebound effect as the reason why hybrid cars and plug-in electric vehicles, for example, do not really save energy in the long run. If a technology is cheaper, people may use it more. Else, they can use the savings to buy other things that require energy. This theory also applies to the car industry. The paper presents an analysis and forecast of electric vehicle sales and the impact that the development of this market will have on energy consumption.*
***Keywords:*** *automotive, rebound effect, energy consumption*

## 1. INTRODUCTION

In 1908, in America, a new era began - that of the industrial revolution, a certain steam engine. It is about the moment when Henry Ford leaves the first model of series car, respectively, Model T, a car powered by an engine powered by ethanol. Since then, today, the automotive industry has crossed borders to be a luxury good, and has become a commodity, which is present in any family. But as the industry grew, so did the concerns about pollution, so mankind began to question the use of fossil fuels. Therefore, electric cars appear on the market, one of the revolutionary elements of Industry 4.0, and along with them, a lot of scientific studies, which have introduced among them, statistical demonstrations regarding the fact that this type of car is much more beneficial than the conventional. There are also studies in the literature, which use the name of rebound effect in their content. In economics, the rebound effect (or withdrawal effect) is the reduction of expected gains from new technologies that increase resource efficiency, due to behavioral or systemic responses. These responses usually tend to offset the beneficial effects of new technology or other measures taken.

## 2. CHANGES IN THE CAR MARKET

Currently, the car market is undergoing the most important change since the mass production of internal combustion engines, because with the advent of the electric motor, most car companies are trying to gain interest and conquer the market with exorbitant amounts invested in research and development. The new rules imposed by the European Union play an important role in changes in the transport sector, aimed at reducing carbon dioxide emissions. Subsidies have been granted and bills on CO2 emissions have been implemented, and it is expected that by 2040, more than half of active cars will use electricity to the detriment of fossil fuels. If we refer to the social benefits brought by the technological evolution of the automotive industry, we can certainly say that the population will learn how to invest in sustainable means and equipment, which use renewable energy and contain reusable materials. Moreover, the emergence of new trends in the car market, bring with them new business models and new ways of adapting to the business environment. An electric vehicle charging equipment business can be created. In the near future, the installation of electric car charging equipment will become one of the successful businesses. Electrification of transportation and charging technologies for electric cars are expected to come to life and become one of the most successful businesses. It all depends on the timing and coverage of the market offer. Competitive advantage is very important in a healthy economic market, and innovation offers the opportunity to gain the attention and sympathy of consumers. The electric car market brings with it new business opportunities, and the most convenient is represented by the infrastructure, i.e. recharging stations and authorized workshops for hybrid and electric motors. Existing strategies present initiatives to develop charging services for drivers who own fully electric cars or hybrid cars with the possibility of charging, allowing drivers to find available charging stations according to geographical location. Through location systems interconnected with applications, social networks and search engines, drivers will be able to book a charging station, charge as soon as possible and pay by all existing methods. There is also the idea of sharing your own stations with strangers who are in the area where other stations are not already installed, if they are registered on an international website. The article "Electric cars: EU trade surplus of EUR 3 billion" presents aspects of the electric car market such as sales of car companies in the EU, but also imports from other parts of the world, amounts invested in developing and increasing the value of specialized businesses. In 2018, the European Union (EU) exported electric cars and hybrid electric cars worth EUR 4.7 billion, which included both petrol and diesel engines. All-electric and hybrid electric cars from imports were worth EUR 1.6 billion, with a trade surplus of EUR 3.0 billion.

*Figure following on the next page*

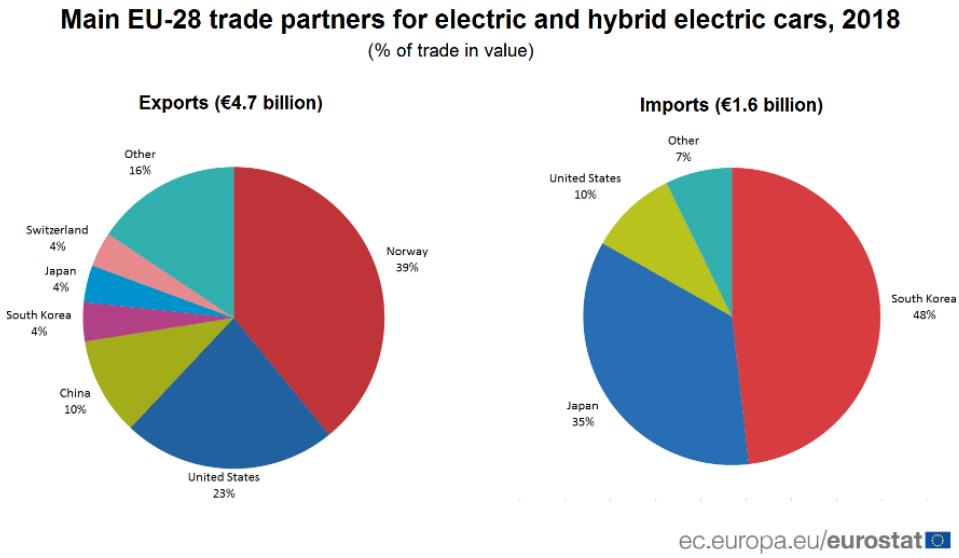



*Figure 1: Representation of countries' share in import and export (Source: Eurostat)*

According to Eurostat (2019) EU exports in 2018 went to the following destinations: Norway (39%), United States (23%) and China (10%). According to Eurostat (2019) EU exports in 2018 went to the following destinations: Norway (39%), United States (23%) and China (10%). Among EU Member States, the leader in exports of electric and hybrid cars to non-EU countries in 2018 was Germany (64%), followed by Sweden (13%) and the United Kingdom (10%). The three countries were also among the Member States with the largest imports of electric and hybrid cars from outside the EU: Germany (26%), Belgium and Sweden (both with 16%) and the United Kingdom (15%). Overall, trade in electric and hybrid cars was dominated by hybrid petrol cars, with 67% of EU imports and 60% of EU exports, while fully electric cars accounted for 32% of imports and 39% of exports. The EV volumes has published the article “Global sales BEV & PHEV for 2019”, which includes worldwide sales of types of electric vehicles. Global sales of plug-in vehicles in 2019 reached 2,264,400 units, 9% higher than in 2018. This is a clear deviation from the growth rates of the last 6 years, which were between 46% and 69%. The reasons are the developments in the two largest markets, China and the US, where sales stagnated in the second half of 2019 and remained significantly below the sales boom in 2018. And in the US, sales of plug-in models fell in compared to the boom of 2018. In China, the further reduction in subsidies, associated with stricter technical regulations, has caused a collapse in the demand and supply of classic cars, starting July. Europe has become the lighthouse of EV sales in 2019, with an increase of 44%, accelerating towards the end of the year. The WLTP introduction, along with changes in vehicle taxation has created greater awareness and demand for EVs. The industry aimed to reach the target of 95 gCO2 / km for 2020/2021. More than 30 new and improved BEV / PHEV models were introduced in 2019, most in the latter part of the year, which will push EV sales this year and next. According to the mentioned article, the global share of BEV & PHEV for 2019 was 2.5%, and the smaller car markets continue to lead to the adoption of EV. The leader of the actions is Norway, as usual, where 56% of new car sales were plug-ins in 2019. Iceland ranked 2nd with 24.5% and the Netherlands ranked 3rd with 15%. Among the larger economies, China leads with a share of 5.2%, the United Kingdom registered 3.2%, Germany 2.9%, France 2.8%, and Canada 2.7%. All other car markets with over 1 million total sales were 2% or less for 2019. At the end of 2019, the global fleet of plug-ins was 7.5 million, counting light vehicles. Medium and heavy commercial vehicles add another 700,000 units to the global stock of plug-ins. Their global deliveries were 100,000 units in 2019, of which 95% in China and mostly large buses.

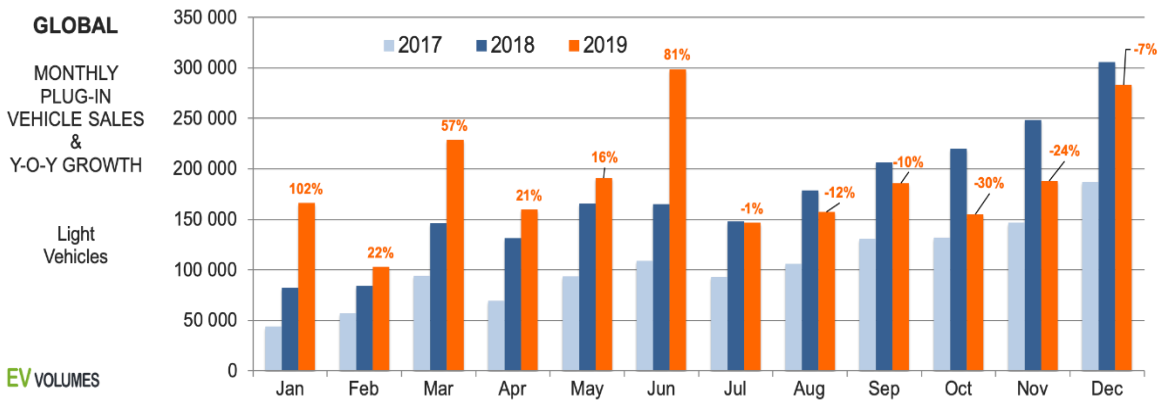



*Figure 2: The increase in EV sales represented monthly 2017-2018-2019 (Source: EV Volumes)*

The chart above compares US quarterly sales in 2019 compared to 2018. The 12% decline, from 359k to 318k, was caused by a number of factors: Tesla Model-3 sales in the second half of 2019 compare to the period from 2018, when Tesla delivered all pre-orders from 2016. Tesla also skipped the 75 kWh battery version for the S&X Model in Q1, raising the starting price for the remaining 100 kWh batteries by $ 3,000 per S and $ 6,000 for X in exchange for an improved range. The market did not buy them all, and S&X fell by 35% (by 17,600 units) for this year. US sales of Model-3 increased from 140k in 2018 to 145k in 2019 (EV volumes, 2020).

## 3. FORECASTING SALES OF ELECTRIC VEHICLES IN THE EUROPEAN AREA

The analyzed data series includes the monthly values of sales of EVs (electric vehicles), starting from 2013, until the end of 2019. Following the data processing in Tableau, a map was generated, showing the percentage of cars in each country, compared to the total share at the end of 2019. The darkest values are close to 29 percentage points, and the following graph can be mentioned from the following graph: Netherlands (23,060 - 28.94%), Germany (11,547 - 14.5%), United Kingdom (10,078 - 12.65%) and France (7,871 - 9.88%).


*Figure 3: Representation of the number of EVs in the states of the geographical area of Europe*

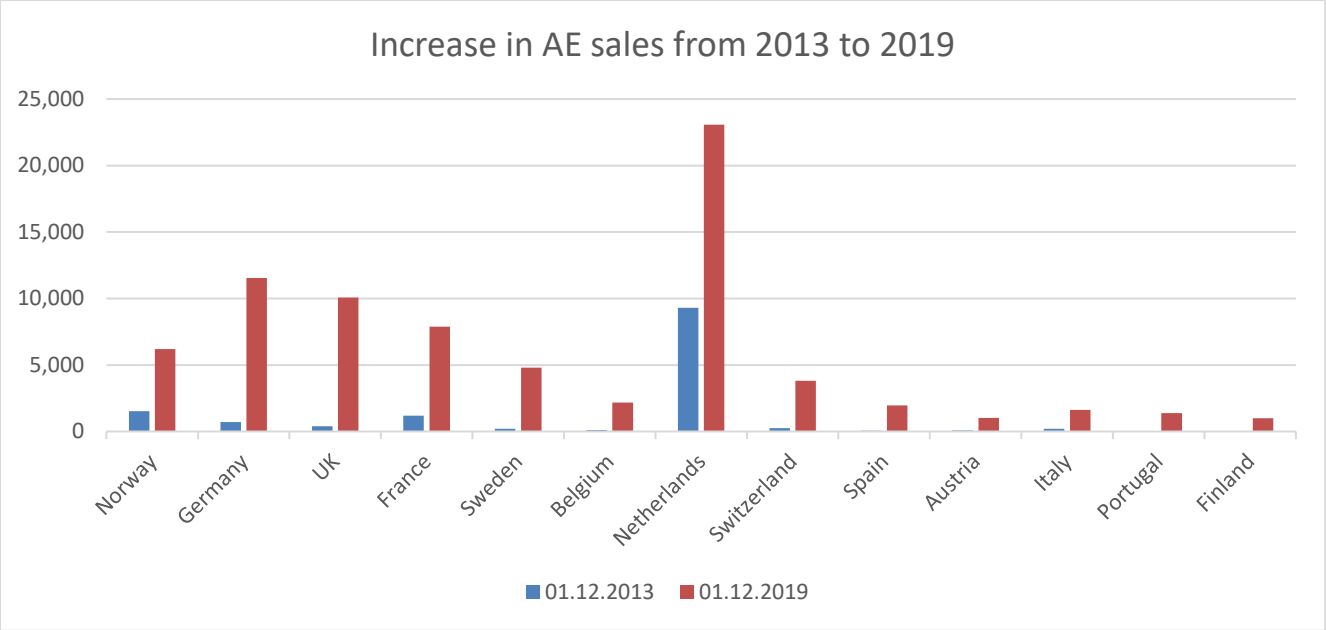



*Figure 4: Increase in AE sales from 2013 to 2019*

The data series was introduced into the Crystal Ball program to forecast sales for the next 24 months. The values obtained are presented in table 1.

| Date | Lower: 2,5% | Forecast | Upper: 97,5% |
|---|---|---|---|
| 01.01.2020 | 48.529 | 56.878 | 65.227 |
| 01.02.2020 | 49.743 | 59.170 | 68.598 |
| 01.03.2020 | 71.763 | 82.109 | 92.455 |
| 01.04.2020 | 50.858 | 61.125 | 71.391 |
| 01.05.2020 | 53.162 | 63.481 | 73.799 |
| 01.06.2020 | 76.930 | 87.949 | 98.967 |
| 01.07.2020 | 54.525 | 65.371 | 76.217 |
| 01.08.2020 | 56.717 | 67.791 | 78.865 |
| 01.09.2020 | 82.272 | 93.788 | 105.304 |
| 01.10.2020 | 57.546 | 69.618 | 81.689 |
| 01.11.2020 | 60.118 | 72.101 | 84.085 |
| 01.12.2020 | 86.946 | 99.628 | 112.309 |
| 01.01.2021 | 60.089 | 73.864 | 87.639 |
| 01.02.2021 | 61.629 | 76.412 | 91.194 |
| 01.03.2021 | 89.896 | 105.467 | 121.038 |
| 01.04.2021 | 63.292 | 78.110 | 92.929 |
| 01.05.2021 | 65.887 | 80.722 | 95.556 |
| 01.06.2021 | 95.614 | 111.307 | 126.999 |
| 01.07.2021 | 65.853 | 82.357 | 98.861 |
| 01.08.2021 | 67.850 | 85.032 | 102.215 |
| 01.09.2021 | 98.772 | 117.146 | 135.520 |
| 01.10.2021 | 68.223 | 86.603 | 104.984 |
| 01.11.2021 | 71.626 | 89.342 | 107.059 |
| 01.12.2021 | 104.437 | 122.986 | 141.534 |

*Table 1: The forecast output obtained in Oracle Crystal Ball (1)*

After processing the data, the system chose between several different forecasting methods, and finally the Holt-Winters' Multiplicative method was used. Currently, the total value of sales in the geographical area and in the analyzed time period is 1,896,468 vehicles. Following the forecast, the number will increase to approximately 1,988,356 vehicles in 2 years. In other words, the increase will be about 4.8 percentage points.

| Method | Rank | RMSE |
|---|---|---|
| **Holt-Winters' Multiplicative** | **Best** | **4.260** |
| Damped Trend Seasonal Multiplicative | 2nd | 4.262 |
| Seasonal Multiplicative | 3rd | 4.439 |

| Method | Theil's U | Durbin-Watson |
|---|---|---|
| Holt-Winters' Multiplicative | 0,6359 | 1,82 |
| Damped Trend Seasonal Multiplicative | 0,6360 | 1,82 |
| Seasonal Multiplicative | 0,6339 | 1,96 |

*Table 2: The forecast output obtained in Oracle Crystal Ball (2)*

We keep in mind that there are seasonal influences, so expectations are that most sales will be made in September and December.

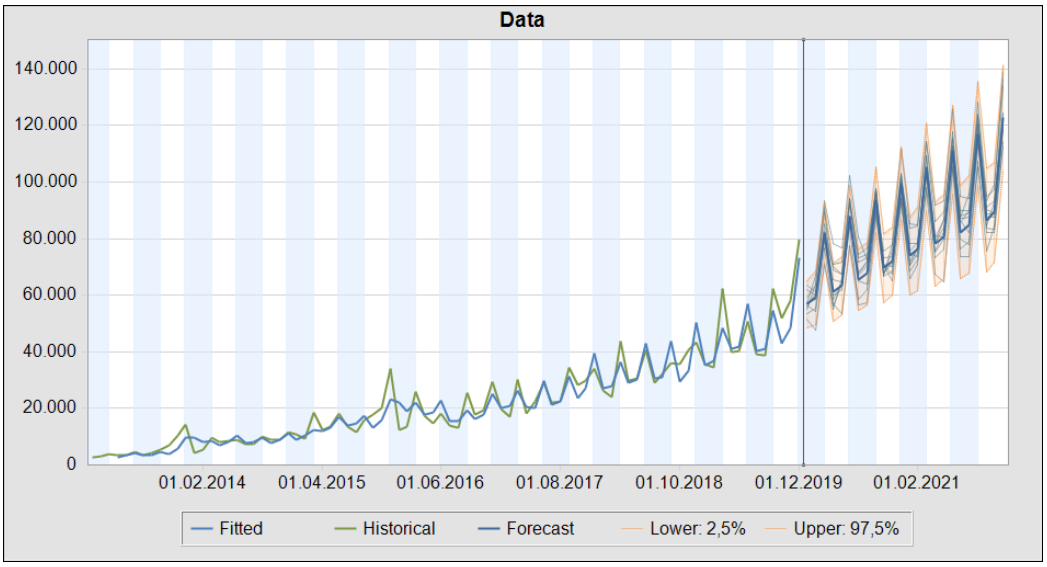



*Figure 5: Evolution of sales in 2021 - Oracle Crystal Ball forecast*

## 4. CONCLUSIONS

Drivers make their own decisions about how much to drive each year. Therefore, the rebound effect largely depends on the type of driver. People who buy hybrid vehicles are generally looking to either save costs or show determination to do good for the environment. Intuitively, people who care about the environment will be less likely to drive more even if they have more fuel-efficient cars. However, people who are motivated by cost savings will drive more. Due to the diversity of consumers, it is difficult to speculate on the rebound effect of electric cars. We are concerned about both the magnitude of the rebound effect and its change over time. The mix of buyers of different electric cars could change gradually, given that electric vehicles are relatively new compared to conventional cars. When electric cars first appeared, those who adopted early were those who cared about the environment or those who were enthusiastic about new technologies. Instead, those who were economically sensitive could have been more cautious about this new type of car. One reason is that hybrid vehicles were much more expensive than other comparable conventional cars. The second reason is its ability to reduce energy costs, which has not been fully proven. The development of electric vehicles could have changed the component of different types of buyers and could have led to a change in the rebound effect. Critics of energy efficiency programs in public policy debates cite the rebound effect as a reason why hybrid cars and plug-in electric vehicles, for example, do not really save energy in the long run. If a technology is cheaper, people may use it more. If not, I can use the savings to buy other things that require energy. This theory also applies to the car industry.

The rebound effect occurs in four ways - one direct, one indirect and two through macroeconomic changes. The direct way is when consumers use their car more after purchasing one that is more energy efficient. The indirect way is if consumers, given that they have more money at hand due to energy savings, use that money to purchase other energy-consuming products. A macroeconomic rebound effect can occur when a country reduces the consumption of a resource, oil, causing its price to fall. This, in turn, causes people in other countries to use it more. According to EiA Annua Energy Outlook, this conversion is beneficial both financially and as a way to slow down the damage caused to the planet, even if it can cause a revival of consumption by as much as 50%.

- In 2025, it would reduce energy consumption by almost 7% in the absence of behavioral changes.
- A pessimistic estimate of the rebound effects is generated by the increase in driving time and the time to purchase additional goods that limit energy reductions to about 5%.

**LITERATURE:**

1. Barker, T., Dagoumas, A., & Rubin, J. (2009). *The macroeconomic rebound effect and the world economy, Energy Efficiency*.
2. Electric Car Home (2020). BEV, PHEV, HEV, ICE. Available at https://electriccarhome.co.uk/electric-cars/bev-phev-hev-ice/
3. Enerdata. (2020). *Global Energy Statistical Yearbook 2019.*
4. EiA Annual ENERGY OUTLOOK Eurostat. (2019). *Electric cars: EU trade surplus of € 3 billion.* Available at https://ec.europa.eu/eurostat/web/products-eurostat-news/-/DDN-20190510-1
5. EV volumes. (2020). *Global BEV & PHEV Sales for 2019.*
6. Gillingham, K. (2013). *The rebound effect is overplayed, Nature.*
7. Greensoft. (2019, iulie). *INDUSTRIA 4.0, Nu este o revoluție, este o evoluție!* Available at https://www.greensoft.ro/industria-4-0
8. Herring, H., & Roy, R. (2007). *Technological innovation, energy efficient design and the rebound effect, Technovation.*
9. Iceberg. (2018). *Industria 4.0.* Available at ICEBERG.RO: https://www.iceberg.ro/industria-4-0/
10. International Federation of Robotics. (2018). *International Federation of Robotics.* Available at International Federation of Robotics: https://ifr.org/img/uploads/2018-FEB-07-IFR-Press_Release_Robot_density_EN.pdf
11. Ministerul mediului, apelor si padurilor. (2020). *ACORDUL DE LA PARIS.* Available at http://www.mmediu.ro/categorie/acordul-de-la-paris/178
12. Nordhaus, W. D., Bresnahan, T. F., & Gordon, R. J. (1996). *The Economics of New Goods.* University of Chicago Press.
13. Owen, D. (2010). *The Efficiency Dilemma – If our machines use less energy, will we just use them more.* The New York.
14. Virta. (2020). *15 EV charging industry trends.* Available at https://www.virta.global/
15. WLTP Facts. (2020). *What is WLTP and how does it work?* Available at WLTP Facts.EU.US. Department of Energy, Alternative Fuels data center
16. https://cleantechnica.com/2012/03/28/prius-rebound-effect-wrong/06 04 2020

# ECONOMIC EVALUATION OF OLD BARRACKS BROWNFIELD REVITALIZATION TO SUPPORT SOCIALLY DISADVANTAGED PEOPLE

**Jakub Sabo**
*Brno University of Technology, Faculty of Civil Engineering,*
*Brno, 602 00, Czech Republic*
*158012@vutbr.cz; jakub.sabo93@gmail.com*

**Vit Hromadka**
*Brno University of Technology, Faculty of Civil Engineering*
*Brno, 602 00, Czech Republic*
*hromadka.v@fce.vutbr.cz*

***ABSTRACT***
*The paper is focused on the issue of the economic evaluation of brownfield revitalization, which served as a former Russian army barracks, but today is primarily intended for rental housing for the socially disadvantaged. It is complex of buildings situated in city Nové Mesto and Váhom in western Slovakia, which was built in 1968. In 2016 the revitalisation of buildings was started. Buildings is owned by city, and they can provide value of costs. Against this value of costs, the value of profit benefit and socio-economic benefits associated with revitalization can be compared. After comparing the value of all these benefits with the value of costs, we can determine whether this project was profitable and whether it could serve as a template for other similar revitalizations of similar buildings, because they are almost in every city. Revitalizations like this could bring socio-economic benefits to society for housing of the socially disadvantaged and if the city will not be interested, also private company could invest and revitalise for the financial profit.*
***Keywords:*** *Economic evaluation, brownfield, revitalization, CBA analysis*

## 1. INTRODUCTION

The revitalization of brownfields is very important today and more and more towns and villages are beginning to address this topic. In most European cities, you can find similar brownfields in several places. They often carry an environmental or economic burden and it is to the benefit of society to revitalize these facilities and areas. However, this issue is often very complex and, as a result, sometimes rejected in advance. Nevertheless, the brownfield topic has been a very popular for several decades, and more and more investors are interested in rebuilding and revitalizing these buildings due to its popularity. At the same time, there is a trend towards revitalization of brownfields for public purposes. In order to evaluate whether a public project will be economically efficient, the method of CBA analysis is often used, which compares the costs of revitalization and the benefits of revitalization associated with it. These benefits do not have to be just financial gains and revenues. The case study of this paper is revitalized building - old abandoned barracks. This type of brownfield is very widespread in Slovakia and the Czech Republic. Revitalization can effectively restore their function. As this is a public project, it is not expected to make profit, or at least that is not the main purpose of the project. The benefits of a public project can also be benefits for society and the population, benefits for nature and the ecosystem and many other benefits. We can assign all these changes to socio-economic value using certain methodologies and consider them as a benefit in the CBA analysis. Since we usually do this analysis ahead of time and before the revitalization itself, in order to determine whether it can be effective, it is necessary to use discounting over time to all investment costs, variable costs and also all benefits, both financial and socio-economic.

## 2. PRESENT STATE REFERENCES

Today, Brownfields are often a problem for the development of municipalities due to their negatives such as complex property relations, mostly devastated buildings and last but not least, as already mentioned, often the environmental burden caused by toxic substances used during their original operation that could also contaminate groundwater and surface water and surroundings. They are often used as illegal landfills, and on many of them were stored hazardous waste that has often remained there to this day. Due to these circumstances, the surroundings of brownfields are often harmful to health, and because of that, this problem seems even worse. It is therefore in the interest of the general public that brownfields should be revitalized and thus stop threatening society or if they begin to be some sort of benefit for society [1] [2] [5] [9]. Revitalization of the old barracks into residential objects seems to be an ideal case of brownfield revitalization for society, but it is questionable whether it is also economically efficient. There is a lot of papers and literature on the topic of brownfield and its revitalization, as the topic is quite popular nowadays. The basic theoretical information in this paper is based on the book by Božena Kadeřábková and Marian Piecha "Brownfields - how they arise and what about them." In this book it is possible to find theoretical information about the origin and dividing of brownfield types, as well as the possibilities of dealing with them. Further information can be found in the book "Contemporary Forms of Use of Industrial Historical Buildings" by Martina Peřinková [5] [9]. Directly on this topic is an paper entitled "Military brownfields in the Czech Republic and the potential of their revitalization focused on their residential function" by Jan Hercik, Petr Šimáček, Zdeněk Szczyrba and Irena Smolová from Masaryk University in Brno and Palacký University in Olomouc [4].

## 3. METHODOLOGY

The article will look to a case study of the already performed revitalization of the brownfield of the old barracks in city Novo Mesto nad Váhom in Slovakia. The former Russian barracks have been converted into residential buildings and the city offers them as rental apartments. As this is a public project, I will use the Cost-Benefit analysis method, where I will compare the revitalization investment costs, which I gathered from the investor, which was the city itself, and the benefits of revitalization, financial, as rent for rented residential space but also non-financial benefits, called socio-economic benefits which have socio-economic value. These benefits will be quantified mainly using the eCBA tool, the calculation of which was most created by it's authors by combining some empirical results and factors. As this will be a time-spread analysis, discounting will be used to take into account the time value of money. The value of costs provided by the investor, the city of Nové Mesto nad Váhom, will be used and the benefits that were identified during the revitalization of this type of building for the purpose of residential use will be quantified. It is almost certain that the revitalization has also brought benefits that will not be quantified, because either not all information is known or the these benefits are minor. We will therefore consider the following key benefits:

- ICPS - Improving the condition of public spaces
- ICPPG - Improving the condition of parks and public greenery
- PTS - Parking time savings
- TTSPV - Traffic time savings of personal vehicles
- VCSPV - Variable costs savings of personal vehicles
- EDIR - Employment development in the region
- RRS - Rental of residential space

For better understanding of the article, there will be briefly explained some theoretical concepts such as brownfield, Cost-Benefit Analysis (CBA), discounting and Net Present Value (NPV).

### 3.1. Brownfield

The issue of brownfields and their revitalization has been an important topic in the world since about the 1960s. This topic is closely related to changes in the socio-economic structure of individual regions, strategic, territorial and landscape planning. Brownfields are a major problem and obstacle to the sustainable development of municipalities, cities and regions. Addressing these issues is often a priority of many public authorities' policies and strategies at national, regional and local levels. In our territory, the issue of brownfields is very much related to the Ministry of the Environment. It often relates to issues of environmental protection, prevention and elimination of environmental burdens, water purity, protection of the rock environment and soil. The Ministry of the Environment is, of course, interested in revitalizing disturbed areas, either to strengthen ecological functions in segments of the disturbed landscape or to improve the environment in municipalities and cities [1] [2] [5]. Brownfields are most often old abandoned factories and quarry or mining areas. But we also know other types of brownfields, such as old abandoned barracks or power plants or even abandoned residential buildings. However, brownfields are most often divided as follows [5]:

- unused industrial zones in the urbanised territory
- unused administrative objects in inner zones of cities
- unused objects of railways
- unused objects of armed forces
- unused agricultural objects
- remains of finished mining activity

We can also divide brownfields according to the possibility of the economy to solve these projects with the help of private investors or the state as a market regulator. So they can be also divided as follows [5]:

- project with zero balance
- projects with moderate support
- non-commercial projects
- dangerous projects
- other projects

### 3.2. Cost-Benefit analysis (CBA)

The Cost-Benefit analysis, or CBA method, is an analytical tool used to assess the economic advantages or disadvantages of investment decisions in order to assess their contribution to changing welfare levels and also whether they contribute to EU policy objectives. The aim of the Cost-Benefit analysis is not to find possible alternatives, but to allow a more efficient allocation of resources while demonstrating the benefits of the intervention to society [8]. This method tracks costs and benefits throughout the project whole lifecycle. The final goal of the CBA method is to allow the evaluation of non-profit investments using standard evaluation methods, due to the fact that this is the method that is most often used in the evaluation of construction investments [7]. The most often used analytical framework of CBA refers to a list of underlying concepts which is as follows (only briefly for simplicity) [8]:

- Opportunity cost
- Long-term perspective
- Calculation of economic performance indicators expressed in monetary terms
- Microeconomic approach
- Incremental approach.

### 3.3. Discounting

Benefits and costs of the project take place in individual years of the evaluated period. Economic efficiency indicators are based on the time value of money, which is represented in the calculations by the discount rate. To evaluate the project, it is appropriate to distinguish between the social discount rate and the financial discount rate. The financial discount rate is usually equal to the cost of the opportunity to raise capital. If we use a certain amount of funds for the implementation of a certain project, it is not possible to use this amount for the implementation of another project. This second, unrealized project will then show the opportunity cost, ie the loss of income. In the case of a private project, the amount of the discount rate is determined by the business entity itself, in the case of public projects, a discount rate of 5% is most often used, and this value will also be calculated in the CBA analysis of this particular economic evaluation [6] [8].

### 3.4. Net Present Value

The Net Present Value represents the increase in the company's resources caused by investing. The Net Present Value of the investment is based on the basic assumption that the funds are effectively invested only if the return on investment is equal to or higher than the initial investment cost [6]. NPV allows the evaluation of the economic efficiency of projects over a longer period of time. In consideration of that the value of cash changes over time, it is necessary to establish a mechanism that can convert all projected future returns to their present value. These time shifts are made possible by a mechanism that is based on a mathematical method of discounting and is called Present Value (PV) in economic calculations [6].

## 4. RESULTS

The case study "Brownfield Barracks Nové Mesto nad Váhom" is based on the project of the revitalization of the old abandoned barracks. The barracks were built in 1968 and the beginning of the revitalization was in 2016. The total investment costs for the revitalization of this building are more than € 2,230,000. These barracks were revitalized and converted into residential housing units. Since the building is owned by the city, the housing units in it serve as city rental apartments and are provided mainly to socially disadvantaged families. The building has a total area of the sum of all housing units of almost 2500 m2. There are 1-room, 2-room and 3-room apartments, of which there are a total of 49. Suppose that there are from 1 to 2 adults (+ possible children) in one apartment, we can average it to 1.5 adults per apartment. Therefore, the number of adults in the building is approximately 74.

| Object | Project | Morgage | Grant | Own Resources | **Total investment costs** |
|---|---|---|---|---|---|
| I. BD | 30 000 € | 1 321 887 € | 881 250 € | 7 € | **2 233 144 €** |

*Table 1: Divided investment costs by resources*
*(Source: City of Nové Mesto nad Váhom [10])*

For economic evaluation using CBA analysis, the total costs and total benefits of the project have to be quantified and then discounted to create a Net Present Value. These benefits are described in the "Methodology" chapter.

### 4.1. Improving the condition of public spaces (ICPS)

The revitalization of the old barracks also changed the condition of the public spaces, as the old abandoned building became a newly reconstructed building with inhabited apartments, surrounding infrastructure and people in the streets. We can assign socio-economic value to this benefit using the eCBA tool [3].

As the benefit is calculated on the number of people passing by, it has been estimated that about 1,000 people pass by the building every day, as the city has about 20,000 inhabitants and as the building is located close to the city's main road. Thus, the number of people affected per year is 365,000. As can be seen in Table 2, the resulting socio-economic value of the benefit is therefore € 10,842 per year.

| Number of people affected per year | Unit price of impact | **Total benefit value per year** |
|---|---|---|
| 365 000 | 0,000 297 04 € | **10 842 €** |

*Table 2: Improving the condition of public spaces benefit value*
*(Source: Own calculation, eCBA [3])*

### 4.2. Improving the condition of parks and public greenery (ICPPG)

Like the previous benefit, the surrounding public greenery, parks and park benches were restored during the revitalization, which also has its quantifiable socio-economic value. This value was again determined using the eCBA tool. [3] As the greenery and parks around the building again affect the surrounding people, the number was again set at 1000 people per day for the same reasons as the previous benefit, so the annual number of people affected is 365,000. This benefit will have a socio-economic value of € 21,684 per year.

| Number of people affected per year | Unit price of impact | **Total benefit value per year** |
|---|---|---|
| 365 000 | 0,000 594 08 € | **21 684 €** |

*Table 3: Improving the condition of parks and public greenery benefit value*
*(Source: Own calculation, eCBA [3])*

### 4.3. Parking time savings (PTS)

Because the parking spaces assigned to the apartments were also built during the revitalization, it is possible to assume, that the inhabitants of the apartments will no longer have to look for a parking space, thus they will save time. As mentioned above, we can assume that either an individual or a couple (or a family) lives in each apartment, and thus at least one car will belong to each apartment. Based on this, the number of cars will be 49. We will assume 3 minutes time savings per day, as the parking lot is located right next to the building and therefore saves walking time, especially during working days, so we will count 5 days a week. That is 720 minutes per car per year (3 minutes * 5 days * 4 weeks * 12 months). The unit price of the impact will come from the eCBA. [3] This benefit therefore amounts to a socio-economic value of € 6968 per year.

| Number of minutes saved per year per car | Number of cars | Unit price of impact | **Total benefit value per year** |
|---|---|---|---|
| 720 | 49 | 0,197 5 € | **6 968 €** |

*Table 4: Parking time savings benefit value*
*(Source: Own calculation, eCBA [3])*

### 4.4. Traffic time savings of personal vehicles (TTSPV)

We can assume that people will want to live in that building also because of a more advantageous position, because the building is located on the main road and in the city center. It is probable that people from the surrounding villages also moved into the house. Furthermore, we can assume that at least about half of the cars in the house, which is 25 cars, will save 10 minutes a day.

If we use the same formula as in the previous benefit, it is 2400 minutes per car per year (10 minutes * 5 days * 4 weeks * 12 months). The unit price of impact will again come from the eCBA. [3] With this calculation we get the socio-economic value of the benefit of € 11,850 per year.

| Number of minutes saved per year per car | Number of cars | Unit price of impact | **Total benefit value per year** |
|---|---|---|---|
| 2 400 | 25 | 0,197 5 € | **11 850 €** |

*Table 5: Traffic time savings of personal vehicles benefit value*
*(Source: Own calculation, eCBA [3])*

### 4.5. Variable costs savings of personal vehicles (VCSPV)

Due to identical reasons as the benefit above, we can assume that the inhabitants of the apartment building also have their points of interest closer not only in time, but in distance manner. Since the building is located in the city center, we can assume that half the population will save 10 kilometers per day. Again, this is 2400 kilometers per car per year (10 kilometers * 5 days * 4 weeks * 12 months). For the unit price of impact, the eCBA tool was again used. [3] So the socio-economic value will be € 14,220 per year.

| Number of kilometers saved per year per car | Number of cars | Unit price of impact | **Total benefit value per year** |
|---|---|---|---|
| 2 400 | 25 | 0,237 € | **14 220 €** |

*Table 6: Variable costs savings of personal vehicles benefit value*
*(Source: Own calculation, eCBA [3])*

### 4.6. Employment development in the region (EDIR)

As there is big demand for employees in the region, we can assume that people, who lived far away and moved into the apartment building, found a job. Assume that half of the population had already a job, and since there are approximately 74 adults in the building, 37 will get a job and partially fill the demand for employees. Every single job position creates a certain socio-economic value benefit and the eCBA tool has been used for this again [3]. The annual socio-economic value of the benefit is therefore € 432,122.

| Number of newly employed people | Unit price of impact | **Total benefit value per year** |
|---|---|---|
| 37 | 11 435,724 | **423 122 €** |

*Table 7: Employment development in the region benefit value*
*(Source: Own calculation, eCBA [3])*

### 4.7. Rental of residential space (RRS)

Data of the amount of rents were obtained from the city and thus the total annual rent for the whole building was calculated. As the rent is paid directly to the city, this benefit is not socio-economic, but financial. The rent varies for each housing unit according to its size, so for simplicity, only the value of the total rental income for the whole building is needed. This value is approximately € 5400 per month, which is € 64,800 per year.

### 4.8. Discussion

Since we have all the benefits listed, we can calculate them and therefore the total undiscounted benefits are € 553,480 per year. The total undiscounted investment costs are € 2,233,144. We also have to take into account variable costs, but since we do not know their exact value, it will

be calculated as 2% of the investment costs per year. We will discount the benefits and costs over time and use them in the CBA analysis. After recalculation, we can see how the net cash flow and accumulated net cash flow will develop. As the table with CBA analysis with all discounted costs and all discounted benefits is too large, only the results will be summarized here. As with most public projects, the discount factor was set at 5%. Inflation will also be included, at 3% per year. The annual rate of the beginning of the CBA analysis begins in the year of the beginning of the revitalization and thus in 2016. Since the revitalization lasted 2 years, housing units will not be inhabited until 2018.

## 5. CONCLUSION

Due to the large value of the benefits, the accumulated cash flow will get out of red numbers in 2022, and thus the discounted pay off period is 6 years. This form of revitalization can therefore generally be considered very cost-effective. As old abandoned barracks are very widespread in our area, it is appropriate to consider these revitalizations. It is questionable whether the revitalization would be sufficiently effective if the project were of the private type and not as a public project. For a private investor, financial benefits are more important than socio-economic benefits and the results may therefore be diametrically opposed. However, it is clear that if the revitalization is financed by the city or the state, or by the European Union and is therefore intended for the public, projects of a similar type have a good chance to turn out similarly well in the CBA analysis.

***ACKNOWLEDGEMENT:*** *This paper has been worked out under the project of the specific research at Brno University of Technology no. FAST-J-20-6428 Procedure of economic evaluation of brownfields revitalization.*

## LITERATURE:

1. Atkinson G., Doick K.J., Burningham K. & France C. Brownfield regeneration to greenspace: Delivery of project objectives for social and environmental gain. Urban Forestry & Urban Greening. 2014, 13(3), 586-594
2. Brownfields regeneration. PLANETA. 2007, XV(3), 21.
3. ECBA - evaluation of investment projects [online]. Brno, 2020 [cit. 2020-10-01]. Available from: www.ecba.cz
4. Hercik, Jan, Petr Šimáček, Zdeněk Szczyrba a Irena Smolová. Military brownfields in the Czech Republic and the potential for their revitalisation, focused on their residential function. Quaestiones geographicae. 2014, 2014(2), 12.
5. Kadeřábková B. & Piecha M. Brownfields, how do they arise and what to do with them. 1st edition. Prague: C. H. BECK, 2009, ISBN 978-80-7400-123-9
6. Korytárová, Jana. Investment Economics. Study script. Brno : BUT,. FCE,2006.
7. Korytárová, Jana a Vít Hromádka. Public Construction Investment I. Study script. Brno: BUT,.FCE, 2007.
8. Laissy, Ana-Paula. Guide to Cost-Benefit Analysis of Investment Projects. 1160 Brussels Belgium: European Union, 2015. ISBN 978-92-79-34796-2.
9. Peřinková, Martina. Current forms of use of industrial historical objects. Ostrava ; Prague: Gasset; Techné Ostrava, 2012. ISBN 978-80-87079-25-6.
10. Serdahelyová, Mária. Conversion of the barracks complex into a city district with housing. Dobre Mesto [online]. 2020 [cit. 2020-10-01]. Available from: https://dobremesto.gov.sk/obnova-uzemi/skusenosti-miest/nove-mesto-nad-vahom-areal-kasarni/

# TRENDS IN THE LOGISTICS MARKET AND WAREHOUSES FOR LOGISTICS SERVICE PROVIDERS - EXPERIENCES FROM POLAND

**Joanna Miklinska**
*Gdynia Maritime University, Poland*
*j.miklinska@wpit.umg.edu.pl*

***ABSTRACT***

*The Polish logistics market is part of the European logistics services market, ranking seventh in terms of share in the accumulated European logistics expenditures. Among the largest Logistics Service Providers (LSPs) in Poland, the majority are global entities. Also through their presence, processes and trends with an international outreach have made their way into the Polish market. Rapidly changing needs, and attempts to satisfy them, in a very competitive market make it easier to observe emerging logistics trends, such as: development of e-commerce and omnichannel logistics, sustainable logistics, automation and robotization, etc. This also prompts LSPs to have varied requirements for warehouse space. The main goal of the paper is twofold: 1) present the specificity of the Polish logistics market, 2) indicate the effects of selected trends in logistics on warehouses used by LSPs in the Polish market. Despite referring to a broader background, the article focuses on selected trends and issues that relate to the development of: e-commerce, sustainable (green) logistics, and combined transport services and their links with different areas of warehouse requirements. To this end, analysis of the following was carried out: reference literature; statistical data published by the Polish Central Statistical Office; reports published by: Fraunhofer Institute, DHL, GS1 Poland, Gemius, the Office of Rail Transport (rail market regulator in Poland), consulting companies, as well as data derived from LSPs operating in the Polish logistics market and from developers active on Poland's warehouse commercial market.*

***Keywords:*** *Logistics trends, Logistics Service Providers, Warehouse facilities, E-commerce, Sustainable logistics*

## 1. INTRODUCTION

The Polish logistics market is well embedded into the EU logistics market. Poland's accession to the European Union in 2004 and the transfer of logistics operations to Poland from Western Europe following the 2008-2009 financial crisis provided strong impetus for its growth (Zysińska, 2019, p. 143). Lower need-fulfillment costs, improved linear infrastructure of various modes of transport - over 19,398 km of railways (CSO, 2020a, p. 317) and a total of 4,146.5 km of expressways and motorways (GDDKiA, 2020) and central location on the map of Europe were all factors that significantly helped propel Poland's logistics sector and warehousing market forward. The total area of warehouses in Poland has increased over the years to over 95 million $m^2$ (estimates based on: Fechner, 2016, p.113), of which approx. 20 million $m^2$ is commercial space (that is, warehouses for lease) (AxiImmo, 2020). This segment of the warehouse space market is growing particularly fast, most notably in: Warsaw, Central Poland, Upper Silesia, Wrocław and Poznań (Cushman & Wakefield, 2020a), while the developers with the largest share of the market are: Panattoni, Prologis, Segro, Logiscor (Miklińska, 2017b). In search of flexibility, so indispensable in a market marked by constant changes, LSPs are particularly attracted to the idea of warehouses for lease. The advantages of this solution include: a relatively quick process of getting space, convenient location, ever-higher standards of newly built warehouses, the possibility of changing the place of service provision along with the changing needs and specificity of logistics operations. Because of all that, LSPs now account for approx. 30-40% of the demand for commercial warehouse space (Miklińska, 2017b).

It is worth noting that, despite the increased availability of warehouse space over time, this percentage share has remained stable since the late 1990s (which is when the logistics market in Poland properly took off). Industry-specific fluctuations and diversified needs of LSP clients overlap with the changes having place within logistics processes themselves. In response to this, new locations, dimensions, technical standards or warehouse equipment are being developed. The ongoing quest for maximum efficiency among LSPs can also force new trends in the area of ownership of warehouse facilities. Own warehouses are nowadays being sold and abandoned for modern leased facilities situated in more convenient locations. The main goal of this paper is twofold: 1) present the specificity of the Polish logistics market, 2) indicate the effects of selected trends in logistics on warehouses used by LSPs in the Polish market.

## 2. TRENDS IN THE LOGISTICS MARKET

In the context of location, international importance and active players, the Polish logistics market is very much susceptible to global trends. Such trends are ongoingly updated and discussed in the literature and reports of various organizations (e.g. Infosys, Penn State, Penske, C. John Langley Jr, 2020, p. 4-7). A number of scientific and advisory institutions debate over perceptible trends. Particularly noteworthy are findings from two such think tanks. The first is the report by researchers from the Fraunhofer Center for Applied Research on Supply Chain Services SCS, which identifies ten logistics trends, including external trends (which affect the demand for logistics services) and internal trends (which can be influenced by logistics actors) (Schwemmer, 2019) (Table 1).

*Table 1: Logistics trends*

| | |
|---|---|
| External trends | |
| 1. | Globalization Volatility in goods flows |
| 2. | Demographic change. Aging societies, immigration and urbanization |
| 3. | New lifestyles. High demand for convenience in business and consumer markets |
| 4. | Servitization |
| 5. | Sustainability |
| 6. | Rising risks and threats. Political and economic instability, climate change, natural catastrophes, terrorism and cybercrimes |
| Internal trends | |
| 7. | Innovative technologies and digital transformation |
| 8. | New challengers. Innovative approaches from outside |
| 9. | Professionalization and effective logistics. Efficiency of logistic operations |
| 10. | Shareholder value objectives in logistics. Effectiveness of logistics operations |

*Source: M. Schwemmer (2019), p. 8.*

The second example is the report prepared biannually by DHL, whose latest version – already accounting for the toll of the global pandemic - was published in September 2020. Similarly to previous editions, the report splits trends into two groups: Social Trends and Business Trends on one hand (e.g. Mass Personalization, Multi-sourcing, Omnichannel Logistics, Sharing Economy, Sustainable Logistics), and Technology Trends on the other hand (e.g. 3D Printing, Artificial Intelligence, Big Data Analytics, Blockchain, the Internet of Things, Robotics & Automation, Self-Driving Vehicles, Unmanned Aerial Vehicles) (Toy et al, DHL Trend Research, 2020). In Polish publications, the following are indicated as particularly relevant for Poland's logistics market: growth of e-commerce, development of linear and point transport infrastructure, further growth of consumption and process automation (Zysińska, 2019, p. 143). In studies that already take into account the pandemic, the following tendencies have been identified as important for the near future and strongly determining LSPs' strategy: shortening of supply chains, diversification of supply sources, transfer of sales to the online channel, as

well as automation and robotization. It should be noted that, owing to changes in the supply chains, shifts in the directions of the flow of cargo are also expected (Brdulak, 2020a, p. E16). Each of these trends is conditioned by a number of factors differing in strength, direction, and potential effects. For example, it can be indicated that, in connection with the development of e-commerce, particular challenges will concern not only the increase in the number of parcels or new methods of their delivery, but also support in the functioning of online stores. Therefore, various forms of new services such as out-of-home delivery (ODH) and one-stop e-commerce (including, e.g. additional warehouse services) are projected to gain traction (GS1Polska, 2019, pp. 14-17). Due to the above, as well as taking into account the specificity of the Polish logistics market, the article focuses on three selected trends: e-commerce, sustainable (green) logistics, and the development of services in combined transport in connection with various aspects of the use of warehouses by LSPs.

## 3. THE SPECIFICITY OF THE POLISH LOGISTICS MARKET ON THE BACKGROUND OF EUROPEAN CIRCUMSTANCES

To better illustrate the size and specificity of the Polish logistics market, it will be set against the European and local markets. Compared to Europe, Poland was in 2018 the seventh largest such market in Europe in terms of accumulated European logistics expenditures, with a share of 4% (Schwemmer, p. 10). The European logistics industry's worth is estimated at EUR 1,120 billion, of which 50% goes to LSPs while the remaining part goes to proprietary logistics operations of manufacturing and trading companies (Schwemmer, p. 7). In 2018, the value of the entire logistics sector in Poland was estimated at approx. PLN 81.5 billion (EUR 18.5 billion). The largest in terms of revenues are those segments that relate to road transport - a total of approx. PLN 54 billion, or EUR 12 billion. A large share is also held by CEPs (Courirer, Express and Parcel Services) - PLN 6.8 billion, or EUR 1.5 billion, and by contract logistics - PLN 6.2 billion, or EUR 1.4 billion (Zysińska, p. 153). For years, the share of transport and logistics activities in the structure of Polish GDP has gradually increased. The "Transport and Warehouse Management" industry accounted for 6.3% in 2018 and for 6.6% in 2019 of Poland's GDP (CSO, 2019, 2020b). Based on the surveys published in Poland annually over the period of 25 years (Brdulak, 2017-2020a) and covering about 60 significant companies (excluding the main CEP operators), it can be observed that the dynamics of revenue growth for this group in 2019 greatly exceeded the growth rate of Polish GDP, standing at 11.8% (Brdulak, 2020b, p. E 16). Referring to (GS1 Polska, 2019, p. 2-4), it should also be noted that CEP is the fastest growing segment of the Polish logistics market, whose growth rate is almost three times higher than that of Poland's GDP. This industry is driven mostly by seven operators: three global service providers (DHL, UPS and FedEx (TNT)), two subsidiaries of European postal services: DPD (French mail) and GLS (British mail); one foreign-invested domestic service provider - InPost (Advent International), and one national postal operator: Poczta Polska (GS1 Polska, 2019, p. 7). Others key LSP players in the Polish market (after Brdulak 2017-2020a) offer for the most part a broad portfolio of services. Aggregated data on operators and their activities does not suffice for a detailed analysis of how trends affect individual changes in LSP services. Table 2 shows data collected between 2016 and 2019 (Brdulak 2017-2020a). On this basis, it can be observed that a large percentage (from 74% to 82%) of the key LSPs in the Polish market offer warehousing services. An increasing number of operators also provide e-commerce logistics services, and notable progress can also be seen in the number of LSPs providing services in the B2C model (more on this in Chapter 4). As a result of increased consumer expectations and the sustainable development policy pursued at EU level, sustainable-logistics solutions are becoming an important trend also in the logistics market. It is for that reason that service providers in Poland have been engaged in the preparation and publication of CSR reports for several years now.

Unfortunately, the number of LSPs doing that decreased in 2019 (Brdulak, 2020b). It seems nonetheless that reporting on sustainable solutions does not necessarily signal reduced interest among operators to incorporate such changes into their logistics services. Notably, the number of operators providing services for combined transport is on the rise, which is just one example of the application of this concept in practice. Further deliberations in this paper were devoted to the correlation of these issues with the warehousing problems faced by logistics operators.

*Table 2: Selected data on the operators active in the Polish TSL market in 2016-2019*

| | 2016 | 2017 | 2018 | 2019 |
|---|---|---|---|---|
| % of LSPs providing warehousing services | 74% | 82% | 80% | 74% |
| % of LSPs providing e-commerce logistics services | 33% | 39% | 40% | 45% |
| | data unavailable | B2B 35% | B2B 35% | B2B 36% |
| | data unavailable | B2C 15% | B2C 7% | B2C 21% |
| % of LSPs providing services in combined transport | 44% | 49% | 48% | 52% |
| % of LSPs preparing CSR reports | data unavailable | 28% | 37% | 34% |
| % of LSPs publishing CSR reports | data unavailable | 20% | 27% | 19% |

*Source: own elaboration based on: Brdulak, 2017-2020a.*

## 4. DEVELOPMENT OF E-COMMERCE AND LOGISTICS FACILITIES IN LSPS

E-commerce in Poland has seen a rapid growth in the past several years. In 2018, the share of e-commerce in total retail was 6%. About 476 million parcels were delivered to customers, containing mainly: consumer electronics (sales value PLN 8.6 billion), construction products, furniture and interior furnishings (PLN 6.1 billion), clothing, footwear, and accessories (PLN 5.7 billion) (GS1, 2020, p. 14; M. Gawryluk after GS1, 2019, p. 4). Although the market share of e-commerce in Poland is still lower than in other European countries, a significant increase is expected due to the growing interest in this form of shopping. In 2019, out of 38 million Polish residents, over 28 million used the Internet and 73% of those made purchases online. 72% of all online shoppers placed orders in Polish online stores, 30% - in foreign stores (Gemius, IGE, 2020). Another catalyst for this trend was the Covid-19 pandemic. Social distancing and closed shopping malls quickly changed the shopping habits of many consumers and gave further impetus to online commerce. The largest clothing and footwear retailers have reported online sales increases of several hundred percent. With this staggering dynamics, more and more logistics companies are jumping on the e-commerce bandwagon. These services provided by specialized providers are collectively referred to as "fulfillment". The scope of fulfillment usually includes goods receipt, storage, completion, packaging and shipment to recipients (GS1, 2020, p. 4-5). Let us note that fulfillment is just one of the methods of organizing logistics in e-commerce, with others being own logistics of an online seller and drop-shipping (shipment of goods to the customer directly from the manufacturer, distributor). Recently, fulfillment services have been gaining traction and there are now various specialized fulfillment service providers, more than 60 in Poland alone (GS1, 2020, p. 4). There are currently four basic fulfillment service models in use (Table 3). It should be noted that one of these models is LSP fulfillment, including CEP and other LSP companies, totaling a dozen or so logistics service providers (GS1 Polska, 2020).

*Table 3: Fulfillment models in Poland*

| Fulfillment model | Examples of service providers in Poland |
|---|---|
| Fulfilment offered as a core service | Omnipack, Ingram Micro CFS Fulfilment, eCommerce Connections |
| Fulfilment offered by an LSP | Fiege, Rhenus Logistics, Raben, DHL Supply Chain, Rohling Suus, No Limit, Schenker and CEP operators: UPS, InPost |
| Fulfilment offered by sales platforms | Amazon |
| Fulfilment offered as an additional service | Point of View, Traffica, Arvato, Azymut |

*Source: own elaboration based on: (GS1, 2020, p. 16-19)*

E-commerce undoubtedly drives the accelerated development of the Polish logistics market, especially in the segment represented by CEP companies. Recently, other LSPs have emerged providing such logistics services. In 2016, 33% of LSPs provided such services, and in 2019 - already 45% (Brdulak, 2017-2020a). However, logistics operators need appropriate logistics facilities for that. To have the full picture of the kind of challenges faced by LSPs in relation to fulfillment services, we may need to review the e-business models. Subjectively, logistics services for e-commerce are mainly provided by CEP operators. In recent years, the share of parcels in the B2C model in Polish e-commerce has clearly increased while the share of B2B has decreased. In 2018, B2B accounted for 50% and B2C for 43% (including 35% B2C (e-commerce) and only 8% B2C excluding e-commerce) of the CEP market in value terms. Last but not least, the C2X model accounts for 7% of the market (M. Gawryluk after GS1 Polska, 2019, p. 5). Other types of LSPs also provide e-commerce logistics services. Based on the ranking (Brdulak, 2017-2020a), it should be noted that since 2017 the share of operators providing services within the B2B model has remained relatively stable (approx. 35%). It is a model that requires less adjustment by the LSP and is less cumbersome to implement. Changes can be seen in the LSP's handling of the B2C model. In 2017, services in this area were provided by 15% of operators, and in 2019 - by 21% of operators (Brdulak, 2017-2020a). To efficiently implement logistics services for e-commerce, LSPs use various types of warehouse facilities. These are mainly: sorting centers and courier hubs, online-order processing centers, warehouses of food products sold online, returns handling centers, and various types of City Logistics facilities (Prologis, JLL, 2015, p. 6). The type of facility used by an LSP is influenced among other factors by: the scope of fulfillment services provides, the type of clientele (from which industries), and the size (scale) of operations. The indicated facilities can be used as either standalone or combined solutions, also functioning in the spoke-hub paradigm in the case of a large scale of operations. CEP operators provide services mainly in reloading and storage facilities, having at their disposal branches and sorting hubs/centers. Table 4 shows basic data on the facilities used by CEP operators in the Polish market.

*Table following on the next page*

*Table 4: CEP logistics facilities in Poland (2019)*

| Firma | Sorting hubs/centers | Branches | Pick-up and drop-off points |
|---|---|---|---|
| DHL Parcel | 6 national sorting centers | 41 | 7000 |
| DPD | 3 central sorting hubs, 4 sorting centers | 50 national branches and 30 city branches | 2500 |
| FedEx | 4 sorting hubs | 43 | 600 |
| GLS | 1 central sorting hub | 38 | 1600 |
| InPost | 1 central sorting hub, 3 sorting centers | 52 | 6000 parcel machines, 1500 customer-service points offering pick-up and drop-off of parcels |
| Poczta Polska | 14 forwarding-distribution nodes | 7500 branches | 12000 |
| UPS | 3 sorting hubs | 33 | 1200 |

*Source: GS1, 2019, p. 12.*

It should be noted that servicing of e-commerce often requires flexibility (Infosys, Penn State, Penske, C. John Langley Jr, 2020, p. 38) in the use of warehouses, even greater than in the case of brick-and-mortar purchases. Space lease, despite owning certain facilities, may provide the expected flexibility in increasing or reducing the space at LSPs' disposal (Prologis, JLL, 2015). When discussing warehousing in the context of e-commerce, attention should be paid to the size of warehouse space, location aspects and the equipment enabling the proper implementation of services. It is estimated that implementation of e-commerce services requires three times more warehouse space than in traditional trade. The reason for this is the large assortment structure of goods and their varying dimensions. This, in turn, only strengthens the need to maintain greater inventory and to handle returns (Prologis, 2014, p. 4). Goods returned to warehouses are normally tampered with and must be restored to a salable condition. Such processes also often require separate rooms. More space is also required due to the number of employees who complete shipments in the B2C model. In addition to all this, health-and-safety and social measures must be observed at all times (Prologis, 2014, p. 6; Prologis, JLL 2015). Other requirements of e-commerce warehousing include the need for a larger number of transshipment docks (especially in cross-dock facilities), which is associated with faster goods rotation in the warehouse. Here, the dock index is assumed at 1 dock per 500 $m^2$. Furthermore, e-commerce warehouses require more efficient HVAC power systems and mezzanines that can be used as additional storage or picking areas (Prologis, JLL 2015, p. 7). Location-wise, when the scale of operations in e-commerce is significant, more dedicated warehouse facilities must be introduced to support e-commerce. For the implementation of dispersed orders, it is important to use warehouses located closer to final customers, and therefore closer to cities and to urban centers (Prologis, 2014, p. 6). Warehouses of this type are referred to as City Logistics or last-mile fulfillment centers, and according to international data, they accounted for 73% of the industrial real estate market in 2017 (Infosys, Penn State, Penske, C. John Langley Jr, 2020, p. 38). The demand for this type of warehouse lease has been growing in the Polish market for several years. In various cities, several City Logistics facilities have been delivered by Panattoni, among others, and it was mainly LSP companies who leased that space (Panattoni, 2020a).

## 5. LSPS AND GREEN SOLUTIONS FOR WAREHOUSES

Until just a few years ago, the "greening" of warehouses was considered a secondary problem in the development of the warehouse market. Fast forward to today, it has attained the status of one of this market's crucial pivots. Research shows that 82% of all lessees of warehouse space in the commercial space market are currently interested in pro-environmental solutions and

inquire about such initiatives when looking for space to let. Additionally, it should be noted that 37% of these potential tenants interested in green solutions are LSPs (Cushman & Wakefield, 2020b, p. 7). A number of green solutions adopted by LSPs is influenced by new legislation, the growing environmental awareness and the desire to cap costs (Infosys, Penn State, Penske, C. John Langley Jr, 2020, p. 26). The aim is therefore to use more energy-efficient devices, increase the use of renewable energy sources, and implement solutions that will reduce carbon dioxide emissions to the atmosphere. The "green" initiatives currently used by warehouses in the Polish market include: LED lighting, photovoltaic panels mounted on rooftops or in the form of farms located next to warehouse buildings, heat pumps, insulation of roofs and walls, air destratificators, rainwater and gray-water recovery systems, or the use of $CO_2$ for cooling. Lessees are particularly interested in photovoltaic solutions and heat recovery (Cushman & Wakefield, 2020b, p. 3). Some developers have also normalized the following solutions: charging stations for electric cars, planting trees and shrubs, or homes for insects or birds. If requested by the client, apiaries with bees or green chill zones for employees can be offered (Panattoni, 2020b). Ecological certification systems serve to attest the pro-environmental solutions used in the warehouse facilities. Several certification systems are used in Poland, most notably: BREEAM (British), LEED (American), DGNB (German) and the recently introduced in Poland WELL (PLGBC, 2020, p. 6.). The first certified warehouse in Poland was put into use in 2012 (PLGBC, 2020, p. 13); in 2016, there were 25 warehouses with ecological certificates (18 - BREEAM and 7 - LEED) (Colliers International, 2016). The recent popularization of this concept has been so staggering that only between March 2019 and March 2020 as many as 55 such certified facilities were added to the Polish market, bringing the total to 141 (108 - BREEAM, 21 – LEED, and 12 - DGNB). Let us note that, apart from newly built warehouses with the highest ecological standards, certificates are also granted to modernized facilities that have been present in the market for several years (BREEAM In-use) (PLGBC, 2020, p. 13). One developer brand with extensive experience in building sustainable warehouse spaces is Panattoni. In Europe alone, Panattoni has already delivered 2 million $m^2$ of certified warehouses to the market – over 20 buildings in Poland and another 30 currently pending the certification process (Panattoni, 2020b). Warehouses with eco certificates are also delivered to the Polish market by (Segro 2017) and P3 (PropertyNews.pl, 2020a). There is a wealth of examples of existing "green" warehouses for LSPs, among them DB Schenker facilities (DB Schenker, 2014) or those built for the logistics service provider No Limit by the developer 7R in Gliwice. This last facility is intended to be fully powered by renewable energy sources, and thanks to other pro-ecological solutions applied, it will hold BREEAM certification (PropertNews.pl, 2020b).

## 6. LSPS AND WAREHOUSES FOR COMBINED TRANSPORT SERVICES

Along with the rise of combined (intermodal) rail-road transport in Poland, the role of LSPs and their services became more important. LSPs are now a crucial group of entities that in many cases constitute an intermediate link in the relationship between the client and the intermodal operator. The number of operators offering combined transport services has been systematically growing in the Polish logistics market as well. In 2016, they accounted for 44% of the key companies, and already 52% in 2019 (Brdulak, 2020b). The development of services in combined transport corresponds to the aforementioned implementation of environmental protection goals, being one of the solutions for introducing the principles of sustainable development to logistics services. Combined transport in Poland is aptly described as rail container transport (Miklińska, 2017a). The development of the intermodal transport market in Poland is evidenced by the increase in the transported cargo weight (from 4,403 thousand tons in 2010 to 19,509 thousand tons in 2019), the number of intermodal units (from 569 640 TEU in 2010 to 2 137 122 in 2019), and the increasing number of railway carriers (from 6 in 2010

to 20 in 2019). Combined transport in Poland revolves around 39 intermodal terminals (ORT, 2020), which are used to handle domestic and international transport. What further encourages LSPs to opt for intermodal transport loads is the paving of the New Silk Road and the fact that Poland is envisaged to be part of this route. As part of their combined transport services, logistics operators carry out operations on full container loads or consolidate collective containers, which requires access to storage facilities. In this context, attention should be paid to the correlation existing between the location of warehouse space and the location of intermodal terminals in Poland. Unfortunately, due to the uneven distribution of terminals across the country, many warehouses are located far away from the terminals, thus making the provision of logistics services in combined technology either difficult or financially inviable. Relevant research findings were shared by the Office of Rail Transport (ORT, 2020). The reason for this is that, while the warehouse space market was growing in Poland, that growth was not accompanied by coordinated planning so as to link the location of warehouses with the proximity of rail transport infrastructure, as was the case for example in Germany and its 1990s *Masterplans*. This is why only few warehouses in Poland have nowadays direct access to railroad tracks or intermodal terminals, a shortcoming that is becoming increasingly troublesome for businesses. Customers are more and more inclined to ask about the possibility of combined-transport services, making it all the more important to logistics operators. Let us note that even intermediaries in the commercial warehousing market have introduced, as part of their IT platforms (warehouse space search engines), a feature calculating the distance between the warehouse and the nearest intermodal terminal (see e.g. Cushman & Wakefield, 2020c). Finally, it should be stressed that, in several locations across Poland, clusters of warehouses - also operated by LSPs – do indeed have access to intermodal terminals. Examples include the Clip Group warehouses near Poznań (Clip Group, 2020), and warehouses near Mszczonów or Gdynia.

## 7. CONCLUSION

Each of the discussed trends influencing the services provided in the Polish logistics market forces certain changes in terms of how warehouse facilities are used. These changes include: transformations in the location of warehouses, dispersion of the facility base, approximation to the final recipients of shipments, or last but not least, having warehouses located near intermodal terminals. Requirements for the location of facilities are also related to changes in the legal basis for managing a warehouse base, where ownership no longer implies a competitive advantage. Changes in the expectations of service users, in particular environmental protection requirements, are having an impact on the building and/or modernization of facilities, where those which follow CSR protocols are preferred. The challenges of modern logistics - trends in the logistics market – put a lot of pressure on logistics operators, whose warehouse properties are now expected to become "flexibly" responsive to changes in the environment.

## LITERATURE:

1. AxiImmo. (2020). Polski rynek magazynowy w III kwartale 2020, Retrieved 02.11.2020 from https://www.axiimmo.com/raporty-i-publikacje/raport-polski-rynek-magazynowy-3-kwartal-2020-r.
2. Brdulak H., (2017). Ranking firm TSL 2016, *Dziennik Gazeta Prawna*, nr 118, 21.06.2017, Retrieved 01.11.2020 from https://p.infor.pl/promocja-infor/adnet/tsl.pdf.
3. Brdulak H., (2018). Ranking firm TSL 2017, *Dziennik Gazeta Prawna*, nr 118, 20.06.2018 Retrieved 01.11.2020 from http://g0.gazetaprawna.pl/p/_wspolne/pliki/3367000/3367586-tsl-dodatek-2018.pdf.

4. Brdulak H., (2019). Ranking firm TSL 2018, *Dziennik Gazeta Prawna*, nr 115, 14-16.06.2019, Retrieved 01.11.2020 from https://g.gazetaprawna.pl/p/_wspolne/pliki/4244000/4244602-24-edycja-rankingu-firm-tsl-wydanie-115-5017-14-czerwca-2019.pdf.
5. Brdulak H., (2020a). Ranking firm TSL 2019, *Dziennik Gazeta Prawna*, nr 117, 18.06.2020, Retrieved 01.11.2020 from https://g.gazetaprawna.pl/p/_wspolne/pliki/4552000/4552528-ranking-firm-tsl-wydanie-117-5270-18-czerwca-2020.pdf.
6. Brdulak H., (2020b). Sytaucja gospodarcza w okresie pandemii. Zmiany architektury łańcucha dostaw, *Dziennik Gazeta Prawna*, nr 117, 18. 06.2020 Retrieved 02.11.2020 from https://g.gazetaprawna.pl/p/_wspolne/pliki/4552000/4552528-ranking-firm-tsl-wydanie-117-5270-18-czerwca-2020.pdf.
7. Clip Group. (2020), Retrieved 01.11.2020 from http://clip-group.com/.
8. Colliers International. (2016). *Zielone budynki w Polsce*, Warszawa, Retrieved 01.11.2020 from http://www.colliers.com/pl-pl/poland/research/premium-reports/zielone-budynki-2016.
9. CSO. (2020a). Central Statistical Office, *Concise Statistical Yearbook of Poland*, Warsaw, July, pp. 1-546.
10. CSO. (2020b). (Central Statistical Office), Główny Urząd Statystyczny, Polska w liczbach, Warszawa, Retrieved 03.11.2020 from https://stat.gov.pl.,
11. CSO. (2019). (Central Statistical Office), Główny Urząd Statystyczny, Polska w liczbach, Warszawa, Retrieved 03.11.2020 from https://stat.gov.pl.
12. Cushman & Wakefield. (2020a). *Marketbeat. Rynek magazynowy. Podsumowanie 2019*, Retrieved 01.11.2020 from https://www.logistyka.net.pl/bank-wiedzy/item/90884-raport-cushman-wakefield-marketbeat-polska-podsumowanie-2019-roku.
13. Cushman & Wakefield. (2020b). *Industrial Goes Green. Zielone rozwiązania najczęściej stosowane w Polsce*, Retrieved 02.11.2020 from https://www.logistyka.net.pl/bank-wiedzy/item/91364-raport-cushman-wakefield-industrial-goes-green.
14. Cushman & Wakefield. (2020c). See the Poland's warehouse and logistics properties map, Retrieved 01.11.2020 from https://industrial.pl/en.
15. DB Schenker. (2014). *Coroporate Responsibility Report*, Retrieved 02.11.2020 from http://2014.dbschenker-csr.pl/en/environment/terminals-and-warehouses.
16. Fechner I. (2016). Rynek powierzchni magazynowych [In:] I. Fechner, G. Szyszka(ed.), *Logistyka w Polsce. Raport 2015*, Instytut Logistyki i Magazynowania, Poznań.
17. GDDKiA. (2020). General Directorate for National Roads and Motorways, *Motorways*, Retrieved 01.11.2020 from https://www.gddkia.gov.pl/pl/926/autostrady.
18. Gemius, IGE. (2020). Gemius, Izba Gospodarki Elektronicznej, *E-commerce w Polsce 2020. Gemius dla e-Commerce Polska*, Retrieved 01.11.2020 from https://eizba.pl/wp-content/uploads/2020/06/Raport-e-commerce-2020.pdf.
19. GS1 Polska (2019). *Rynek KEP w Polsce. W obliczu trendów i nowych wyzwań*, Retrieved 03.11.2020 from https://www.gs1pl.org/strona-szukaj?searchword=rynek%20kep%20%20w%20polsce&searchphrase=all.
20. GS1 Polska. (2020). Fulfillment w e-commerce. Wykorzystanie standardów GS1 w obszarze działalności operatorów fulfillment, Report prepared by: Sieć Badawcza Łukasiewicz – Instytut Logistyki i Magazynowania, A. Kawa; Retrived 02.11.2020 from https://www.gs1pl.org/fulfilment-w-e-commerce-wykorzystanie-standardow-gs1-w-obszarze-dzialalnosci-operatorow-fulfilment.
21. Infosys, Penn State, Penske, C. John Langley Jr. (2020). *Third – Party Logistics Study. The State of Logistics Outsourcing. Results and Findings of the 24th Annual Study*, Retrieved 01.11.2020 from https://www.3plstudy.com/ic3pl/ic3pl.ic3pl.home.

22. Miklińska J. (2017a). *Development of the Intermodal Market in Poland from the Perspective of Cargo Handling Operations in International Supply Chains – Selected Issues.* BUSINESS LOGISTICS in Modern Management Proceedings of the 17th International Scientific Conference, 2017, Osijek, pp. 233-249.
23. Miklińska J. (2017b). *Development of the Market for Modern, Commercial Warehouse Spaces as the Logistics Infrastructure Facilities of the Region – Experiences from Poland* In *6th International Scientific Symposium ECONOMY of EASTERN CROATIA – VISION and GROWTH*, Anka Mašek Tonković (ed.), Sveučilište Josipa Jurja Strossmayera u Osijeku, Ekonomski fakultet u Osijeku Osijek, pp. 880-889.
24. ORT. (2020). Office of Rail Transport. UTK, Sprawozdanie z funkcjonowania rynku transport kolejowego, Warszawa, Retrieved 01.11.2020 from https://www.utk.gov.pl/pl/raporty-i-analizy/analizy-i-monitoring/sprawozdania/16190,Sprawozdanie-z-funkcjonowania-rynku-transportu-kolejowego-w-2019-r.html.
25. Panattoni. (2020a), *City Logistics*, Retrieved 02.11.2020 from http://www.panattonieurope.com/pl/kraj/polska/portfolio-projektow/city-logistics/
26. Panattoni (2020b), *Sustainable. See our earthwise solutions!*.
27. PLGBC. (2020). Polskie Stowarzyszenie Budownictwa Ekologicznego, *Certyfikacja zielonych budynków w liczbach*, Gliwice. Retrieved 02.11.2020 from https://plgbc.org.pl/wp-content/uploads/2020/04/Certyfikacja-zielonych-budynkow-2020.pdf
28. Prologis. (2014). *E-Commerce and a New Demand Model for Logistics Real Estate*, July, Retrieved 02.11.2020 from https://www.prologis.com/about/logistics-industry-research/e-commerce-and-new-demand-model-logistics-real-estate.
29. Prologis, JLL. (2015). *Logistyka e-commerce w Polsce. Przetarte szlaki dla rozwoju sektora*, Retrieved 04.11.2020 from https://magazyny.pl/media/plugins/report_file/Logistyka_e-commerce_w_Polsce_-_Przetarte_szlaki_dla_rozwoju_sektora.pdf.
30. PropertyNews.pl. (2020a). Sortownia dla InPost w P3 Mszczonów z certyfikatem BREEAM Retrieved 01.11.2020 from https://www.propertynews.pl/forum/artykuly,86111,10.html
31. PropertNews.pl. (2020b). *7R buduje „zielony" magazyn dla No Limit*, Retrieved 01.11.2020 from https://www.propertynews.pl/magazyny/7r-buduje-zielony-magazyn-dla-no-limit,82673.html.
32. Schwemmer M. (2019). *Top 100 in European Transport and Logistics Services 2019/2020. Executive Summary,* A. Pflaum (ed.), Fraunhofer Center for Applied Research on Supply Chain Services SCS, October, Retrieved 03.11.2020 from https://www.scs.fraunhofer.de/content/dam/scs/DE/publikationen/studien/maerkte-standorte-logistik/TOP100_2019_ExecutiveSummary_english.pdf.
33. Segro. (2017). Magazyn Segro najbardziej ekologiczny w Polsce według certyfikacji BREEAM, Retrieved 01.11.2020 from https://www.segro.com/media/press-releases/2017/18-05-2017-po?sc_lang=en?lang=en.
34. Toy J., Gesing B., Ward J., Noronha J., Bodenbenner P, DHL Trend Research, (2020). *The Logistics Trend Radar 5th Edition*, Retrieved 02.11.2020 from https://www.dhl.com/global-en/home/insights-and-innovation/insights/logistics-trend-radar.html.
35. Zysińska M. (2019). Ocena przedsiębiorstw TSL działających w Polsce – dylematy metodyczne badań, *Studia i Prace Kolegium Zarzadzania i Finansów*, 173, pp. 141-162.

# THE REVENUE RECOVERY OF THE MUSIC INDUSTRY AS A RESULT OF REVENUE GROWTH FROM STREAMING

**Josko Lozic**
*University North, Croatia*
*josko.lozic@unin.hr*

***ABSTRACT***

*The global music industry is going through a period of transformation. The turn of the century marked the beginning of a decline in the music industry's revenue. Digitization and convergence of production and distribution systems have enabled illegal loading and sharing of music content between users. Global music corporations have been forced to completely change the way they do business and generate revenue. The aim of this paper is to point out the changes in the management practice of global music corporations as well as the change in the structure of revenues. The research and analysis are aimed at comparing the change in the revenue structure of global music corporations in relation to the structure of total revenues. The survey includes the three largest music corporations that generate the bulk of the revenue of the overall music industry. In the last five years, the revenues of the music industry have been growing exponentially, which indicates the recovery of the music industry on completely new development models.*

***Keywords:*** *music corporations, music industry, revenue, streaming*

## 1. INTRODUCTION

The beginning of the 20th century marked a turning point in the development of global music industry. After 1999, revenues began to fall and this decline stopped only with the development of the streaming industry. The revenue recovery of the music industry is often associated with the term digitization, although this is not a precise definition. Digitized forms of music content, ie revenues generated by music corporations from this form of revenue, appeared for the first time in 2004. The highest revenue from the sale of digital content was realized in 2012. Revenue from the sale of digital content amounted to $ 4.4 billion, which was 29.5% of total revenue (Lozić 2019). At the same time, digital technology enabled various forms of piracy, which directly affected the continuous decline in total revenues until 2015. The first streaming revenue was generated in 2006. The sharp rise in streaming revenue began in 2013, marking the end of digital content revenue growth. Revenues from streaming grew from year to year, while revenues from the sale of digital content continued to fall. In 2019, streaming revenue accounted for 55.9% of the global music industry's total revenue. At the turn of the century, there was no revenue structure for the music industry because all revenue came from the sale of physical. The new era and postmodern society have brought significant changes in all social spheres, including the music industry. The biggest contribution to such a change in habits was made by Generation Z (Seemiller, Grace 2019), but the change in habits very quickly affected most users of the music industry services. The music industry emerged as part of the old media industry and used management tools and practices used by all the old industries. The decline in music industry revenues has caused the classic contractions known in all the old industries. Music corporations, faced with declining revenues and profits, sought to maintain market share and profits lost by declining total revenues in the industry through acquisitions. On the one hand, revenues were threatened by digital technology and piracy, and on the other hand, shopping and ownership habits began to change abruptly. Through the M&A process, global music corporations dominated the market, but more importantly, they adapted to postmodern society and new habits of consuming music.

## 2. LITERARY REVIEW

The new century has brought very dramatic changes to the old media industry. Her fate was followed by the music industry, as a segment of the old media industry. Hesmondhalgh and Meier (2018) point out that the beginning of the 21st century marked a turning point in the use of electronic platforms for listening to music. The desktop computer has been somewhat neglected, and mobile digital playback devices such as the Apple iPod are coming into the spotlight, and this way of consuming music is beginning to prevail. Ryan (2019) notes that the new century has been marked by the development of technology. With the start of the 21st century, the digital transformations that have affected the music industry have been very dramatic, and completely new and technologically diverse competitors such as Napster, iTune, Pandora, Spotify and YouTube have emerged. In the music industry, the transition from the "old music industry" to the "new music industry" took place in several developmental stages. Changes in the way music content is consumed in the twentieth century have been shaped by a series of related interactions between social change and the strategy of capitalist organizations, especially those in the computing and electronics sectors (Hesmondhalgh, Meier 2018). The end of the twentieth century was marked by the digitization and distribution of music content in a new form. The transformation took place in several different but related phases: gramophone records were replaced by CDs; CD audio carriers were slowly replaced by MP3 digital tracks, after which streaming platforms took over the dominance in the distribution and consumption of music content (Simon 2019; Fuentes et al. 2019). Each of these phases meant the reorganization of the socio-economic infrastructure in the music industry, the construction of new models of production and consumption of music content, and changes in the use of music technology (Fuentes et al. 2019). Changes in social and music infrastructure referred to a change in technology that began with the invention of the radio, followed by gramophone records, cassettes, CDs, desktops, and finally streaming services (Simon 2019). With the development of smartphones, MP3 audio players, PDAs, laptops and other technologically advanced devices, users have easy access to music and other media content. What marked the fundamental change was the ability for users to access music while on the go. Such a change in habits, based on the development of music infrastructure, marked a complete change in listening habits (Denegri-Knott 2015). The digitized form of the music content provided some advantages over the classic analog recording in terms of its quality and the length of the recording that could be stored on some analog audio carrier. However, what was once a sociological / cultural aspect of listening to music has been challenged by accessing large databases of music content on demand (Arditi 2017). Werner (2020), in his research, seeks to prove the connection between gender and the type of music recommended as a “list” by users of the platform. The development of music technology has directly affected the increase of mobility and availability of music content and has gradually increased user control over music content. A large number of changes that have occurred in the music industry have preceded changes in other industries (Irene 2014; Dholakia et al. 2015). Listening to music, turned from an activity in which the user listened to music himself, into a daily activity that accompanied all the daily events (Hagberg, Kjellberg 2017). Digitized music and streaming service allow you to listen to music during all activities, especially free activities outside the home (Kerrigan et al. 2014). Choosing and listening to music (“soundtracking”) was made possible in everyday activities such as traveling to work, work, socializing and driving vehicles (Fuentes et al. 2019). Consumption of music becomes a personalized activity, and the construction of individual musical tastes is separated from the connection with class affiliation (Wright 2015). The development of music streaming services marked the final end of the old music industry. Streaming services Spotify, Deezer and Apple Music have influenced the complete transformation of listening and enabled listening to music on the go (Sinclair, Tinson 2017).

The technological solution of real-time streaming was used in the processing of a large number of data, and found its first application in online bookmakers, data on stock exchanges, processing of sports results, weather forecasts and the like (Maheshwari 2019). Streaming services have changed the way we consume music or music content. Access to the content that is broadcast is not permanent and ends when the subscription to the music service expires (Hiller, Walter 2017).

## 3. METHODOLOGIES AND HYPOTHESIS

The survey will be conducted based on publicly released data on the financial performance of music corporations: Sony Music, Warner Music Group and Universal Music Group. Financial results are taken from publicly available *Form-10K* forms. The financial results downloaded for Sony Music were converted from Yen to $ at an approximate exchange rate in 2019. The results are indicative to analyse the revenue structure for labour purposes. The global financial results of the music industry are taken from the specialized agency IFPI, which monitors the trends of the global music industry. The results were published in the document *Global Music Report: The Industry in 2019*. For the purposes of the analysis, only individual items of the corporate income statement will be processed. Trend and revenue structure analysis will be analysed by regression models to compare results based on the same methodology. The research is aimed at proving or dismissing two basic hypotheses:

- H1 – revenues of the three largest music corporations are continuously growing due to the growth of revenues from the sale of copyrights, ie revenues from streaming.
- H2 – global music industry revenues are growing due to the exponential growth of streaming revenues.

Research and proof of hypotheses continues on earlier research. Kask and Oberg (2019) explore music market trends and business strategies of three global music corporations. Guichardaz et.al. (2019) explore the music oligopoly of three global corporations in a model of transitioning the structure of revenue from dominant sales revenue in the "brick-and-mortar" model to revenue from streaming and copyright sales. Im et.al. (2019) investigate the revenue generation of different models of monetization of music content. Hiller and Walter (2017) analyze market changes under the influence of rising streaming revenue.

## 4. DATA ANALYSIS

The research is divided into four basic parts, and consists of a financial analysis of the operations of the three largest global corporations and an analysis of the revenue trend of the global music industry. For each analysed economic entity, as well as for the global music industry, revenues in the analysed period were analysed and a regression analysis of individual parts of the revenue structure was made.

### 4.1. Sony Music

According to Sony's 2019 Consolidated Financial Results released on May 13 for its fiscal year ended March 31, the estimated of the disease on 2019 fiscal year consolidated operating income from music was maybe a loss of 1% (Zarczynski 2020a). Selected results of the Sony music financial report are shown in Table 1. For research purposes, we selected total sales and operating income over a period of eight years, from 2013 to 2020. The fiscal year ends in March. As Carter (2020) points out by 2014, with digital singles decimating album sales, coupled with the rise of illegal file sharing, revenues hit an all-time low. The future of labels looked bleak. But around that same time, streaming was beginning to pick up steam, and the industry was plotting a new future for itself. It was a future built on data.

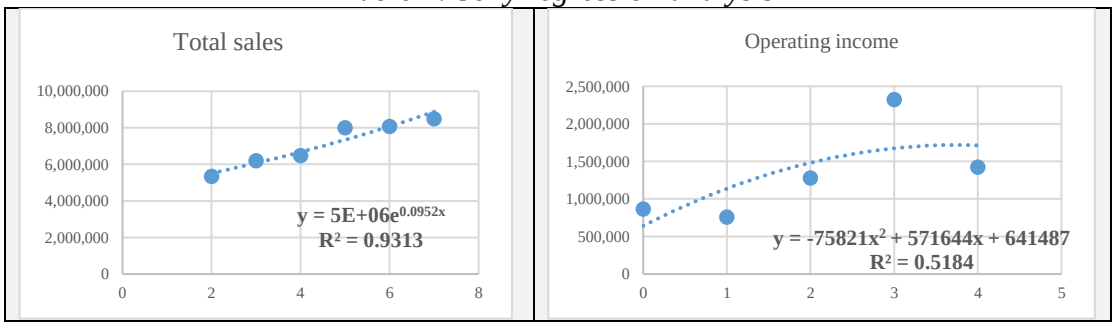
*Table 1: Sony Music financial items (000 $)*

| | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 |
|---|---|---|---|---|---|---|---|---|
| Total sales | 4.317.190 | 4.920.580 | 5.339.860 | 6.192.390 | 6.476.580 | 7.999.950 | 8.074.890 | 8.499.090 |
| Operating income | n/a | n/a | n/a | 865.090 | 757.980 | 1.277.860 | 2.324.870 | 1.423.450 |
| Total sales % | | 14,0% | 8,5% | 16,0% | 4,6% | 23,5% | 0,9% | 5,3% |
| Operating income % | | n/a | n/a | n/a | -12,4% | 68,6% | 81,9% | -38,8% |

*Source: Own illustration*

Sony Music's total revenue rose from $ 4,317 billion in 2013 to $ 8,499 billion in 2020. That's an increase of 96.67%. In the period from 2016 to 2020, operating income increased by 65.64%. The increase in total revenues was not accompanied by an increase in operating income due to an increase in the cost of sales and other operating expenses. At the corporate level, Sony has entered a restructuring process that has also taken place in the music segment. Total revenues grew continuously, so that in 2019 revenue growth would be less than 1%. Operating income has fluctuated, indicating volatile operating costs and changes in the global music market. All of this has prompted Sony's management to restructure and reorganize operations similar to what major competitors in the WMG and Universal Music Group industries have already done (Kelly 2019).

*Table 2: Sony regression analysis*




*Source: Own illustration*

The Covid-19 global pandemic refers to the business results for 2020 (ended fiscal year March 31). Despite expectations of high revenue growth due to the lock-down model, total revenue grew by 5.3% while operating income fell by 38.8% compared to the same period in 2019. Operating costs in the pandemic grew faster than total revenue growth. Zarczynski (2020b) warns of a report by the Sony administration that points to a problem with the pandemic. Projects with the production of new content were late. Restrictions on movement and the problem of maintaining social distance directly affected the decline in sales of physical carriers. Revenues from ticket sales and concerts were completely absent. The results of the analysis of revenue trends by statistical regression models are shown in Table 2. The average growth of total revenues in the analysed period was 9.9% per year (s = 9.98) with a significance coefficient of 93.13%. The largest annual increase in revenue of 23.5% was recorded in 2018, and the following year the increase was the lowest 0.9%. Business instability significantly affected the movement of operating income and the direction curve has a negative coefficient and an insufficient coefficient of significance (R2 <0.8). The indexation model by years showed an average increase in operating income of 24% and should be careful with the interpretation because the regression curve has a negative coefficient. Despite a rough start to the internet era, the music industry is now rebuilding itself. Sony Music — and indeed, recording as a whole — is riding on four years of healthy growth. Below, five innovative ways the music industry is using data to serve artists and grow business today, at Sony and beyond (Carter 2020).

### 4.2. Warner Music Group

Warner Music Group is home to some of the most iconic record labels, including Atlantic Records, Warner Records, and Parlophone Records, featuring recording artists such as Ed Sheeran, Bruno Mars, and Cardi B. (Sanchez 2020). The financial indicators of the Warner Music Group are shown in the table. For the purposes of the research, data on revenue, cost of revenue, total costs and operating income were taken. The financial indicators cover a period of six years. In the analysed period, from 2014 to 2019, WMG's total revenue grew from $ 3.027 billion to $ 4.475 billion, an increase of 47.83%.

*Table 3: WMG financial items (million $)*

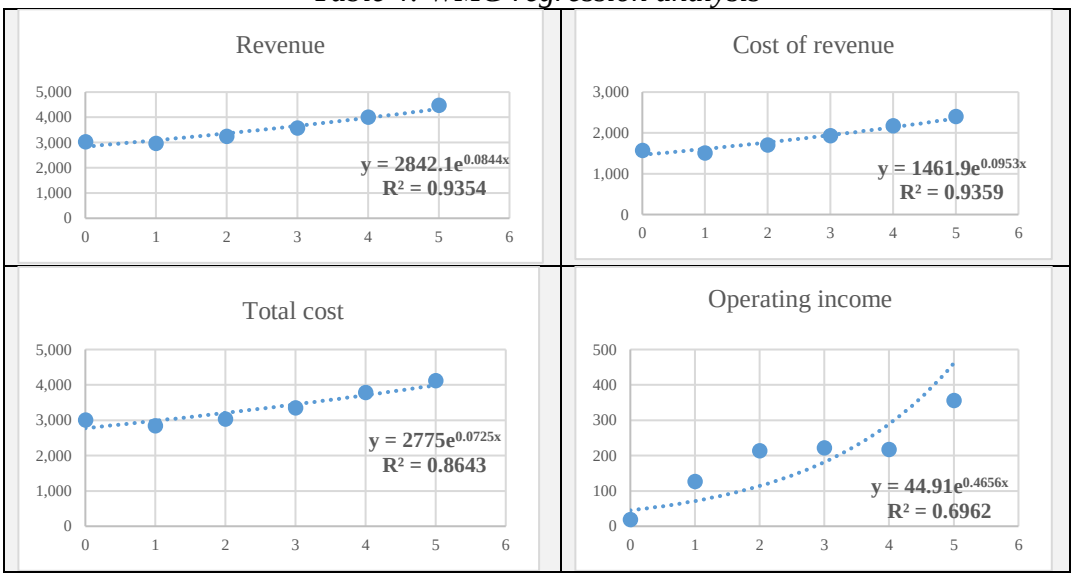
| | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 |
|---|---|---|---|---|---|---|
| Revenue | 3.027 | 2.966 | 3.246 | 3.576 | 4.005 | 4.475 |
| % | - | -2,0% | 9,4% | 10,2% | 12,0% | 11,7% |
| Cost of revenue | 1.570 | 1.511 | 1.707 | 1.931 | 2.171 | 2.401 |
| % | | -3,8% | 13,0% | 13,1% | 12,4% | 10,6% |
| Total costs | 3.008 | 2.839 | 3.032 | 3.354 | 3.788 | 4.119 |
| % | - | -5,6% | 6,8% | 10,6% | 12,9% | 8,7% |
| Operating income | 19 | 127 | 214 | 222 | 217 | 356 |
| % | - | 568% | 69% | 4% | -2% | 64% |

*Source: Own illustration*

In the same period, the cost of revenue increased by 52.93%. Total expenses increased by 36.93%, while operating income increased by 89.47%. Total costs grew continuously, while the cost of revenue had a digressive increase. The reason for such behaviour of financial indicators is found in the continuous change in the structure of income. In the last few years, copyright revenues charged by music corporations from streaming platforms have grown exponentially, which has a direct impact on the decline in the cost of revenue. Total revenues fell until 2015, after which they began to grow continuously. The cost of revenue and total cost had the same trend. Operating income fell in 2018 by 2% compared to the previous period and increased by as much as 64% the following year. In the analysed period, revenues grew on average 8.81% (s = 8.8%) per year with a significance coefficient of 93.54%. Cost of revenue grew at an average rate of 10% (s = 10%), but in the last analysed period they fell by 1.8%. Total costs have the smallest average increase; ie they grew on average 7.52% (s = 7.52) with a significance coefficient of 86.43%. Operating income grew digressively and then grew exponentially. The change in the growth trend is related to the copyright revenues that the corporation charges from the streaming platform. The coefficient of significance is 69.62%, which is not sufficient for the certainty of estimating the average increase. The average growth rate, with 69.62% significance, would be approximately 59% of the average annual growth of operating income. The results of the regression analysis of the financial result of WMG are shown in Table 4.

*Table following on the next page*

*Table 4: WMG regression analysis*




*Source: Own illustration*

### 4.3. Universal Music Group

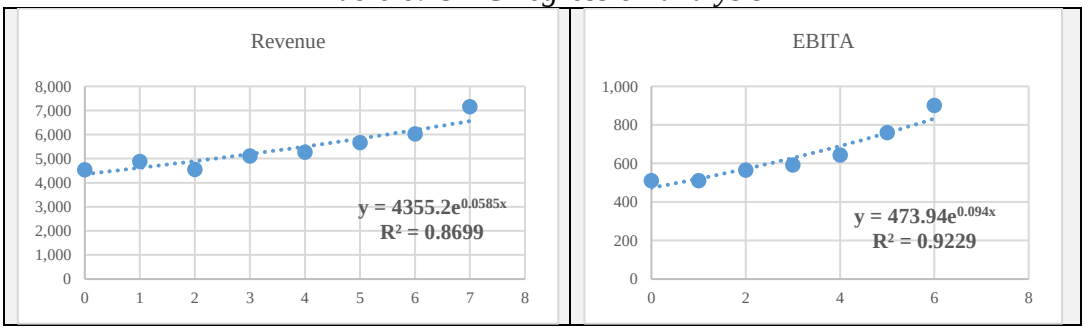
Universal Music Group is unstoppably taking a leading position in the global music industry. In doing so, we do not only target financial indicators, but also qualitative indicators of positive management practices. Universal Music Group's leading artists are the driving force behind Paris-based Vivendi SA's latest growth. Successful new releases by artists including Justin Bieber, Eminem and The Weekend supported growth in streaming and recorded music, which helped the company remain largely unaffected by entertainment industry declines caused by the COVID-19 pandemic (Zarczynski 2020b). The world's largest music publisher Universal Music Group (UMG) has revived the record label and its valuation thanks to Chinese owned Tencent's 10% stake in the company. UMG's parent company Vivendi has already been pushing into emerging markets like Africa where global music consumers are poised to triple (Hale 2020). Spotify and one of its earliest adopters, Universal Music Group (UMG), announced a new, multi-year global license agreement that deepens the companies' joint effort to create added value for music artists and more engaging features for fans. The new deal will support music discovery experiences and collaboration on new, state-of-the-art marketing campaigns across Spotify's platform (Zarczynski 2020c). UMG integrates D&I into the core of its culture and as a central tenet of its business strategy (Kruse 2020). UMG announced that it entered into a joint venture with with Dakia U-Ventures to launch UMUSIC Hotels. The first of three hotels named UMUSIC Broadwater is to begin construction on a 266-acre property that will include "virtual reality, augmented reality, artificial intelligence, and holograms," as well as a 12,000 capacity music venue (Owsinski 2020). LEGO Group and Universal Music Group announced an exclusive global partnership to launch a new suite of music-based LEGO products in 2021 (Mandell 2020). The analysis of UMG's financial indicators covers a period of eight years, from 2012 to 2019. In the analysed period, UMG's revenues increased from $ 4.545 billion to $ 7.159 billion, an increase of 57.51%. Revenues fell 6.7% in 2014 compared to the previous period, after which they grew continuously. The largest increase in revenue was realized in 2019, and it amounted to 18.9% growth compared to the previous year. EBITA increased from $ 511 million to $ 1.124 billion over the period under review, an increase of 119.96%. Since 2015, EBITA has been growing continuously and achieved the largest increase in the last analysed period, as it was with the increase in total revenue. The increase was 24.6% compared to 2018. The results of the analysis are shown in Table 5.

*Table 5: Universal financial items (million $)*

| | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 |
|---|---|---|---|---|---|---|---|---|
| **Revenue** | 4.545 | 4.886 | 4.557 | 5.108 | 5.267 | 5.673 | 6.023 | 7.159 |
| **%** | | 7,5% | -6,7% | 12,1% | 3,1% | 7,7% | 6,2% | 18,9% |
| **EBITA** | 511 | 511 | 565 | 593 | 644 | 761 | 902 | 1.124 |
| **%** | | 0,0% | 10,6% | 5,0% | 8,6% | 18,2% | 18,5% | 24,6% |

*Source: Own illustration*

*Table 6: UMG regression analysis*




*Source: Own illustration*

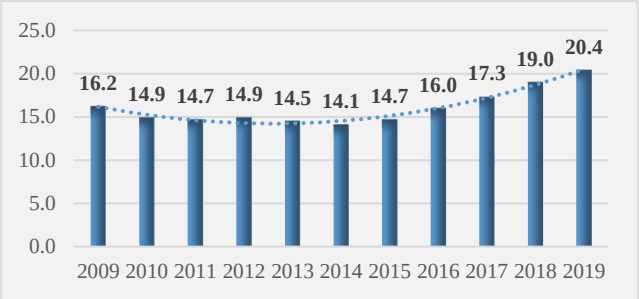
The results of the regression analysis showed that UMG revenue grew on average annually at a rate of 6% (s = 6.02%), with a significance coefficient of 86.99%. The average annual increase in EBITA was 9.9% (s = 9.86%), with a coefficient of 92.29%. The significance coefficient is higher in the EBITA assessment due to the higher growth of the indicator in the last two analysed periods. EBITA growth in the last three analysed periods is much higher than the percentage of revenue growth, which indicates a change in management practices and a new revenue structure. The revenue from the sale of copyrights is growing, which affects the decrease in costs for sales and the growth of operating income.

### 4.4. Global music industry

Global music industry revenues have been falling steadily since the end of the last century until 2014. In 1999, the revenues of the global music industry were $ 25.2 billion (IFPI; Lozić 2019). According to the revenue structure, the total revenue was realized from the sale of physical sound carriers. The drop in revenue lasted until 2014, when the lowest revenue of the global music industry of 14.1 billion dollars was achieved. The new century brought changes in the revenue structure, and in 2001, revenue of $ 0.6 billion was generated from performance right. In 2005, the first streaming revenues were generated, after which the streaming revenues grew exponentially. The trends in total revenues of the global music industry are shown in Figure 1. Revenues declined until 2014 and then began to grow exponentially. For the purposes of the analysis, data on the revenue trends of the global music industry in the last ten years were taken. In 2009, most of the revenue came from psychical, followed by revenue from the sale of digital content. Such a revenue structure was maintained until 2014, and in 2015 and 2016 the sum of digital and streaming revenues surpassed psychical revenues. Since 2017, most of the revenue of the global music industry comes from streaming (Lozić 2020a). 2019 streaming revenue is $ 11.4 billion, which is about 50% of total revenue. Revenue trends and trend lines are shown in Figure 1.

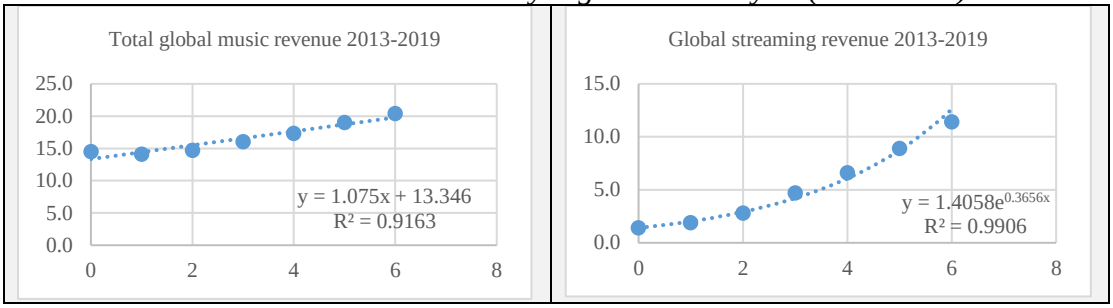
*Picture following on the next page*

*Picture 1: Global music industry revenue 2009-2019 (bill. $)*




*Source: Own illustration*

*Table 7: Global music industry regression analysis (2013-2019)*




***Source: Own illustration***

*Table 8: Correlation between subjects*

| | Global | Sony | WMG | Universal |
|---|---|---|---|---|
| Global | 1 | 0,98646 | 0,98624 | 0,96022 |
| Sony | | 1 | 0,95558 | 0,91633 |
| WMG | | | 1 | 0,96598 |
| Universal | | | | 1 |

*Source: Own illustration*

The results of the regression analysis are shown in Table 7. For easier comparison with the financial indicators of global corporations, the survey covers a period of seven years, from 2013 to 2019. The analysis is divided into two parts. The first part of the analysis presents the results of the research of the trend of total revenues. Total revenues grew on average 6.5% per year (s = 6.49%). Total revenues refer to all categories in the revenue structure of the global music industry. In the second part, the results of the analysis of the trend of streaming income are presented. The results of the analysis showed that streaming revenues grew by an average of 44% per year (s = 44.14%). The revenue structure changed significantly as streaming revenue became higher than physical revenue. Postmodern society has brought changes, on the one hand, in the way music is consumed, and on the other hand, in the model of revenue generation. From exclusive physical income, corporations generate income from various sources of income. In managerial practice, the situation is known as *blurred borders* (Lozić 2020b). The research covers revenues in the period from 2014 to 2019. The results of the research showed a very strong link between the entities in the global music industry, as well as a strong correlation between the revenue trend of the global music industry and the revenue trend of the three largest global corporations. The revenue trend of the global music industry has the strongest connection with the revenue trend of Sony Music Group (r = 0.98646), and the weakest with Universal (r = 0.96022). The revenue growth trend of the global music industry and Sony Music Group revenue, in the analysed period of 6 years, has a linear trend.

Universal's revenues are growing by 18%, in the last analysed period, and are approaching an exponential growth trend. The weakest correlation in the analysis is between Universal and Sony (r = 0.91633). The results of the correlation research of the analysed subjects of the music industry are shown in Table 8.

## 5. DISCUSSION

The results of the research can be summarized in five basic points that prove the set research hypotheses:

- All three corporations had operating profit growth above total revenue growth in 2019. An increase in the share of streaming revenue reduced the cost of revenue.
- The average revenue growth of Sony (s = 9.9%) and WMG (S = 8.8) is above the industry average of 6.5%, but the operating costs of corporations are volatile. Both corporations have entered a restructuring process. Universal has lower average revenue growth (s = 6%) than average revenue growth in the industry, but operating costs have stabilized and operating profit has started to grow exponentially. The share of streaming revenue has a significant effect on the overall revenue structure.
- The total revenues of the music industry have been growing continuously since 2014. The average annual revenue growth is 6.5%. In the same period, streaming revenue grew at an average rate of 44.14% per annum and is now at 50% of total music industry revenue.
- The total revenues of the global music industry show a very strong correlation with the revenue trend of all three corporations. The link is strongest with Sony (0.98646) and then with WMG (0.98624) due to fluctuations in revenue growth as in the global music industry.
- The exponential growth of streaming revenue directly affects the revenue growth of global music corporations that are taking an increasing share of the global music market.

The results of the analysis presented in the five basic points of the discussion confirm both hypotheses. All three corporations achieved revenue growth, but also operating profit growth. In the last analysed period (2019), the growth of operating profit was higher than the growth of revenue. This confirms the first hypothesis as streaming revenue grows, which directly affects the cost of revenue. The second hypothesis is confirmed by the results of research on the revenue trend of the global music industry. Total revenue grew at an average annual rate of 6.5% while total streaming revenue grew at an average rate of 44.14%. Exponential revenue growth directly affects, not only the change in revenue structure, but also the continuous growth of total revenue of the global music industry.

## 6. CONCLUSION

The total revenue of the global music industry has been growing for five years in a row. After the oscillation of revenues that started in 2011, with the sharp growth of streaming revenues, total revenue is growing exponentially. Confirming the first hypothesis, which refers to the increase in revenue that is directly related to the growth of revenue from the sale of copyrights, ie the increase in revenue from streaming, it is necessary to point out two important factors. First, revenue growth is directly related to the development of technology, ie streaming platforms. The second factor refers to a change in consumer behaviour. Postmodern society, and especially Generation Z, has developed a subscription and streaming model instead of owning physical ones. The habit of buying and listening to music indoors has been replaced by listening to music on the go as well as during various daily activities. The changing model of music consumption significantly affected the profits of global music corporations at the turn of the century. Digitization of music content and piracy have particularly affected the music industry and legal and other efforts have been needed to regulate and abolish it. Streaming technology has made it possible to consume without the possibility of piracy.

The revenues of the music industry are growing, but they have not yet returned to the levels from the beginning of the century. Future research should focus on the revenue trend in the Covid-19 pandemic and the analysis of the revenue structure.

**LITERATURE:**

1. Arditi, D. (2017). "Digital Subscriptions: The Unending Consumption of Music in the Digital Era". *Popular Music and Society*. Volume 41, (3), pp. 302-318. doi.org/10.1080/03007766.2016.1264101.
2. Carter, C. (2020). "How Sony Music Use Data to Connect Artist with Fans". *Forbes*. https://www.forbes.com/sites/forbescontentmarketing/2020/08/26/how-sony-music-uses-data-to-connect-artists-with-fans/?sh=1cae36a85e1c. [04.11.2020.]
3. Denegri-Knott, J. (2015), "MP3", *Consumption Markets and Culture*, Vol. 18 No. 5, pp. 397-401., doi.org/10.1080/10253866.2015.1048962
4. Dholakia, N., Reyes, I.; Bonoff, J. (2015), "Mobile media: from legato to staccato, isochronal consumptions capes", *Consumption Markets and Culture*, Vol. 18 No. 1, pp. 10-24. doi.org/10.1080/10253866.2014.899216.
5. Fuentes, C.; Hagberg, J.; Kjellberg, H. (2019). „Soundtracking: music listening practices in the digital age". *European Journal of Marketing*., pp. 483-503. DOI 10-1108/EJM-10-2017-0753
6. Guichardaz, R.; Bach, L.; Penin, J. (2019). „Music industry intermediation in the digital era and the resilience of the Majors' oligopoly: the role of transactional capability". *Industry and Innovation*. 26:7, 843-869, DOI: 10.1080/13662716.2018.1561357.
7. Hagberg, J.; Kjellberg, H. (2017). "Digitalized music: entangling consumption practices", (Eds). Cochoy, F.; Hagberg, J.; Peterson McIntyre, M.; Sörum, N. *Digitalizing Consumption: how devices shape consumer culture*, Routledge, pp. 167-189. ISBN 978-1-138-12489-9.
8. Hale, K. (2020). "Universal Music Group's $3 Billion Tencent Deal Ushers In a Golden Vibes Era". *Forbes*. https://www.forbes.com/sites/korihale/2020/01/13/universal-music-groups-3-billion-tencent-deal-ushers-in-a-golden-vibes-era/?sh=404862fc7d53. [04.11.2020.]
9. Hesmondhalgh, D.; Meier, L.M. (2018). „What the digitalisation of music tells us about capitalism, culture and the power of the information technology sector". *Information, Communication & Society*, 21:11, 1555-1570.
10. Hiller, S. R.; Walter, M.J. (2017). The rise of Streaming Music and Implication for Music Production. *Rev Netw Econ*; 16(4): 351–385.
11. Hiller, S. R.; Walter, M.J. (2017). The rise of Streaming Music and Implication for Music Production. *Rev Netw Econ*; 16(4): 351–385. doi.org/10.1515/rne-2017-0064.
12. IFPI - Global music report – The industry in 2019. https://www.ifpi.org/wp-content/uploads/2020/07/Global_Music_Report-the_Industry_in_2019-en.pdf. [06.11.2020.]
13. Im, H.; Song, H.; Jung, J. (2019). „The effect of streaming services on the concentration of digital music consumption". *Information Technology & People*. Vol. 33 No. 1, pp. 160-179. DOI 10.1108/ITP-12-2017-0420.
14. Irene, C.L.Ng. (2014). *Creating New Markets in the Digital Economy*, Cambridge University Press.
15. Kask, J.; Oberg, C. (2019). "Why "majors" surge in the post-disruptive recording industry". *European Journal of Marketing*, Vol. 53 No. 3, pp. 442-462. DOI 10.1108/EJM-11-2017-0841.

16. Kelly, C. (2019). "Sony Consolidates Recorded Music and Publishing Under Sony Music Group". *Forbes*. https://www.forbes.com/sites/caitlinkelley/2019/07/19/sony-consolidates-recorded-music-and-publishing-under-sony-music-group/?sh=18ff0aaf7dbc. [04.11.2020.]
17. Kerrigan, F.; Larsen, G.; Hanratty, S.; Korta, K. (2014). "Gimme shelter': experiencing pleasurable escape through the *musicalisation* of running", *Marketing Theory*, Vol. 14 No. 2, pp. 147-166.
18. Kruse, K. (2020). "How Universal Music Group Engages Millennial Managers and Leverages Diversity". *Forbes*. https://www.forbes.com/sites/kevinkruse/2020/02/05/how-universal-music-group-engages-millennial-managers-and-leverages-diversity/?sh=1be83d4f3db4. [04.11.2020.]
19. Lozić, J. (2020a). „The global music industry is recovering from the crisis: Streaming revenues takes over dominance other revenue segments". *54th International Scientific Conference on Economic and Social Development*. Novosibirsk, pp. 50-59.
20. Lozić, J. (2020b). "Media industry in a post-industrial society: Media industry revenue convergence and blurred boundaries in media sector". *51st International Scientific Conference on Economic and Social Development.* Rabat, pp. 261-269.
21. Lozić. J. (2019). „Digitalization creates a new paradigm of global music industry: The traditional music industry is under pressure of the streaming platforms". *46th International Scientific Conference on Economics and Social Development – „Sustainable Tourist Destinations*. Varazdin, pp. 179-190.
22. Maheshwari, A. (2019) *Digital Transformation: Building Intelligent Enterprises*. Wiley & Sons. ISBN 978-1-119-54083.
23. Mandell, J. (2020). "LEGO and Universal Music Group Announce Exclusive Global Partnership". *Forbes*. https://www.forbes.com/sites/joshmandell/2020/04/27/lego-and-universal-music-group-announce-exclusive-global-partnership/?sh=63087b10676c. [04.11.2020.]
24. Owsinski, B. (2020). „What Destination Hotels Mean For Universal Music". *Forbes*. https://www.forbes.com/sites/bobbyowsinski/2020/10/21/what-destination-hotels-mean-for-universal-music/?sh=3a18583f7b2a. [04.11.2020.]
25. Ryan, D. (2019). "Digital disruption in the music industry: The case of the compact disc". *Creative Industries Journal*, 12:2, 159-166.
26. Sanchez, L. (2020). "Warner Music Group Shows the Music Industry Can Be Profitable Again". *Nasdaq*. https://www.nasdaq.com/articles/warner-music-group-shows-the-music-industry-can-be-profitable-again-2020-08-12. [04.11.2020.]
27. Seemiller, C.; Grace, M. (2019). *Generation Z: A century in a making*. Routledge.
28. Simon, J.P. (2019). „New players in the music industry: lifeboats or killer whales? The role of streaming platforms. *Digital Policy, Regulation and Governance*, pp. 525-549. DOI: 10.1108/DPRG-06-2019-0041.
29. Sinclair, G.; Tinson, J. (2017). "Psychological ownership and music streaming consumption". *Journal of Business Research*, Vol. 71, pp. 1-9.
30. Werner, A. (2020). „Organizing music, organizing gender: algorithmic culture and Spotify recommendations". *Popular Communication*. 18:1, 78-90, DOI: 10.1080/15405702.2020.1715980.
31. Wright, D. (2015). *Understanding cultural taste: Sensation, skill and sensibility*. Basingstoke: Palgrave Macmillan. ISBN 978-1-137-44706-7.
32. Zarczynski, A. (2020a). "Sony Music Braces for Operating Revenue Declines After 40% Bump". *Forbes*. https://www.forbes.com/sites/andreazarczynski/2020/05/15/sony-music-braces-for-operating-revenue-declines-after-40-bump/?sh=357e7bfd728a. [04.11.2020.]

33. Zarczynski, A. (2020b). "Successful Universal Music Group Albums Power Vivendi Profits Amidst Industry Crisis". *Forbes*. https://www.forbes.com/sites/andreazarczynski/2020/04/21/successful-universal-music-group-albums-power-vivendi-profits-amidst-industry-crisis/?sh=46e86f3417df. [04.11.2020.]
34. Zarczynski, A. (2020c). "Spotify's New Universal Music Group Deal Drives Deeper Atrist-Fan Engagement". *Forbes*. https://www.forbes.com/sites/andreazarczynski/2020/07/22/spotifys-new-universal-music-group-deal-drives-deeper-artist-fan-engagement/?sh=4bc833c85dd4. [04.11.2020.]

# APPLICATION OF SPATIAL AUTOCORRELATION TO ANALYZE THE DIFFERENTIATION OF ECONOMIC GROWTH IN SELECTED EUROPEAN UNION COUNTRIES

**Katarzyna Zeug-Zebro**
*University of Economics in Katowice, Poland*
*katarzyna.zeug-zebro@ue.katowice.pl*

***ABSTRACT***

*Economic growth is nothing more than the process of increasing the production of goods and services in a given region at a given time. It includes those elements of the economy that we can measure (e.g. production, income, employment). In view of the significant the socio-economic differences between regions, the economic growth is not homogenous. However, the regions are not independent of each other and changes in one area are spreading to others. Therefore, spatial relationships should be taken into account in research on economic growth. For example, the European regions can assess whether the border regions of different countries show a similarity to each other due to the feature studied. The use of spatial analysis (spatial autocorrelation) to study the regional differentiation in the level of economic growth allows establishing existing relationships between the studied regions in relation to this phenomenon. Thus, the question can be answered whether a given region is surrounded by regions of high or low value, or is it similar/different to its neighboring regions. The main goal of the article is to analyze the regional dependence of the level of economic growth measured by the GDP per capita indicator in selected countries of the European Union using the global and local spatial autocorrelation measures. The data used in the analysis comes from the database of Eurostat. All calculations and presented maps were made in R CRAN program and in MS Excel.*

***Keywords:*** *economic growth, Gross Domestic Product, spatial analysis, global and local statistics*

## 1. INTRODUCTION

There are many different definitions of economic growth in the literature (Begg, Fisher, Dornbusch, 2007; Samuelson, Nordhaus, 2012; Marciniak, 1997). One of them says that economic growth is a measurable economic variable, which is defined in terms of the increase in the value of the annual production of goods and services in a given country (Marciniak, 1997). Economic growth is also a process of increasing the effects of management, the measure of which is the economic growth rate, generally equated with the production growth rate.The diversity of the socio-economic space determines the possibilities of economic growth. Various collections of resources owned by regions (concentration of economic activity, geographic and geopolitical location, climate, deposits, proximity to population centers, as well as the location of industrial plants, research and development units, availability of technical infrastructure, quality of labor resources) largely determine the development opportunities of area (Bogdański, 2010; Nazarczuk, 2015). The application of spatial analysis to investigate the economic growth will allow to establish existing relationships between the studied regions with respect to this phenomenon. It will allow not only general but also individual characteristics of similarities and differences of regions. The main objective of this paper is to study the spatial dependences of the economic growth in selected countries of European Union using measures of global and local spatial autocorrelation. The countries of Central and Eastern Europe (Poland, the Czech Republic, Slovakia, Lithuania) and Germany as the reference country were selected for the study. All calculations and maps were made in the statistical program R CRAN and Microsoft Excel. The data was obtained from the Eurostat (www 1), 2007-2018.

## 2. ASSESSMENT OF ECONOMIC GROWTH MEASURED BY THE GDP PER CAPITA

The most frequently used indicator for estimating the level of economic growth is gross domestic product (GDP). In international comparisons, however, the GDP per capita indicator is used, ie gross domestic product per inhabitant. Economic growth measured by the GDP per capita indicator in the European Union countries is presented in Table 1.

| Area/Year | 2007 | 2018 | $i_{2018/2007}$ | Area/Year | 2007 | 2018 | $i_{2018/2007}$ |
|---|---|---|---|---|---|---|---|
| European Union 28 countries | 26 070 | 31 030 | 119,03% | Latvia | 10 340 | 15 130 | 146,32% |
| | | | | Lithuania | 8 980 | 16 240 | 180,85% |
| Belgium | 32 340 | 40 290 | 124,58% | Luxembourg | 77 340 | 98 640 | 127,54% |
| **Bulgaria** | **4 240** | **7 990** | **188,44%** | Hungary | 10 170 | 13 910 | 136,77% |
| Czechia | 13 470 | 19 850 | 147,36% | Malta | 14 240 | 25 740 | 180,76% |
| Denmark | 42 740 | 52 190 | 122,11% | Netherlands | 37 800 | 44 920 | 118,84% |
| Germany | 30 860 | 40 480 | 131,17% | Austria | 34 230 | 43 600 | 127,37% |
| Estonia | 12 210 | 19 660 | 161,02% | Poland | 8 230 | 12 960 | 157,47% |
| Ireland | 44 800 | 67 270 | 150,16% | Portugal | 16 640 | 19 950 | 119,89% |
| **Greece** | **21 060** | **16 750** | **79,53%** | Romania | 6 110 | 10 500 | 171,85% |
| Spain | 23 780 | 25 770 | 108,37% | Slovenia | 17 370 | 22 130 | 127,40% |
| France | 30 330 | 35 100 | 115,73% | Slovakia | 10 440 | 16 440 | 157,47% |
| Croatia | 10 180 | 12 700 | 124,75% | Finland | 35 370 | 42 360 | 119,76% |
| Italy | 27 470 | 29 290 | 106,63% | Sweden | 39 240 | 46 260 | 117,89% |
| Cyprus | 22 930 | 24 630 | 107,41% | United Kingdom | 36 840 | 36 440 | 98,91% |

*Table 1: GDP per inhabitants in European Union in 2007- 2018*
*(Source: own elaboration)*

Table 1 shows the significant differences in the standard of living of the inhabitants of the European Union. First of all, it should be emphasized that in the analyzed period, economic growth was observed in the vast majority of Member States, the greatest in Bulgaria, Lithuania and Malta. The countries where the index decreased were Greece and the United Kingdom. Luxembourg continues to lead the EU in terms of GDP per capita - despite the high level of this indicator in 2004, it still registered an increase of just over 27%. The Irish and the Danes are next in terms of wealth, although the distance to Luxembourg is still very large. Figure 1 shows the level of GDP per capita in the countries of Central and Eastern Europe (Poland, the Czech Republic, Slovakia, Lithuania) and Germany as the reference country. The countries of Central and Eastern Europe were recognized as developing countries and at the initial stage of economic development in relation to the highly developed economy (Germany). The level of GDP per capita in 2007–2018 shows a growing tendency in each of the countries presented, albeit to a different extent. A large disproportion between GDP per capita in Germany and other countries is visible. The GDP growth in the presented period does not indicate that the distance between Germany and other countries is narrowing.

*Figure following on the next page*

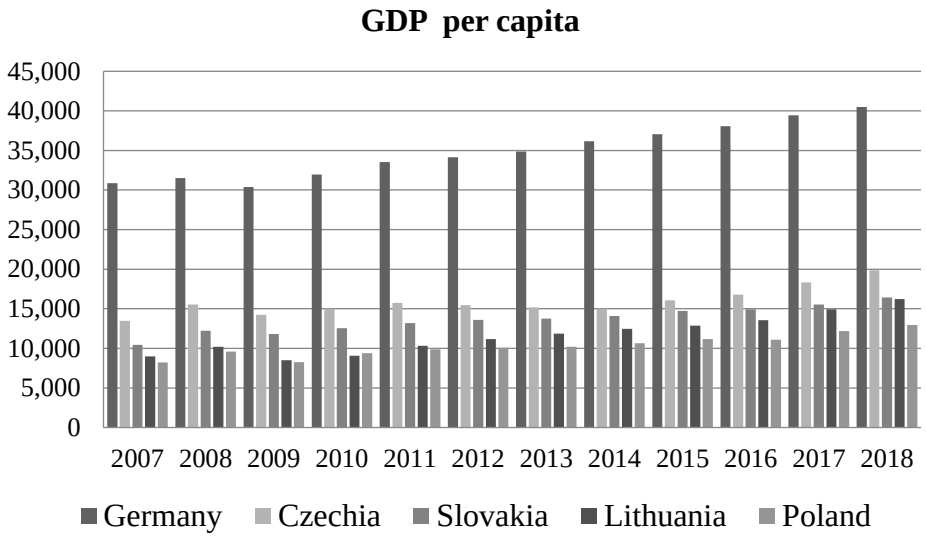



*Figure 1: GDP per capita indicator in selected countries of the European Union in the years 2007- 2018*
*(Source: own elaboration)*

Figure 2 presents the classification of regions (NUTS 2) of selected EU countries due to the the level of economic growth measured by value of the GDP per capita indicator in the years 2007-2018.

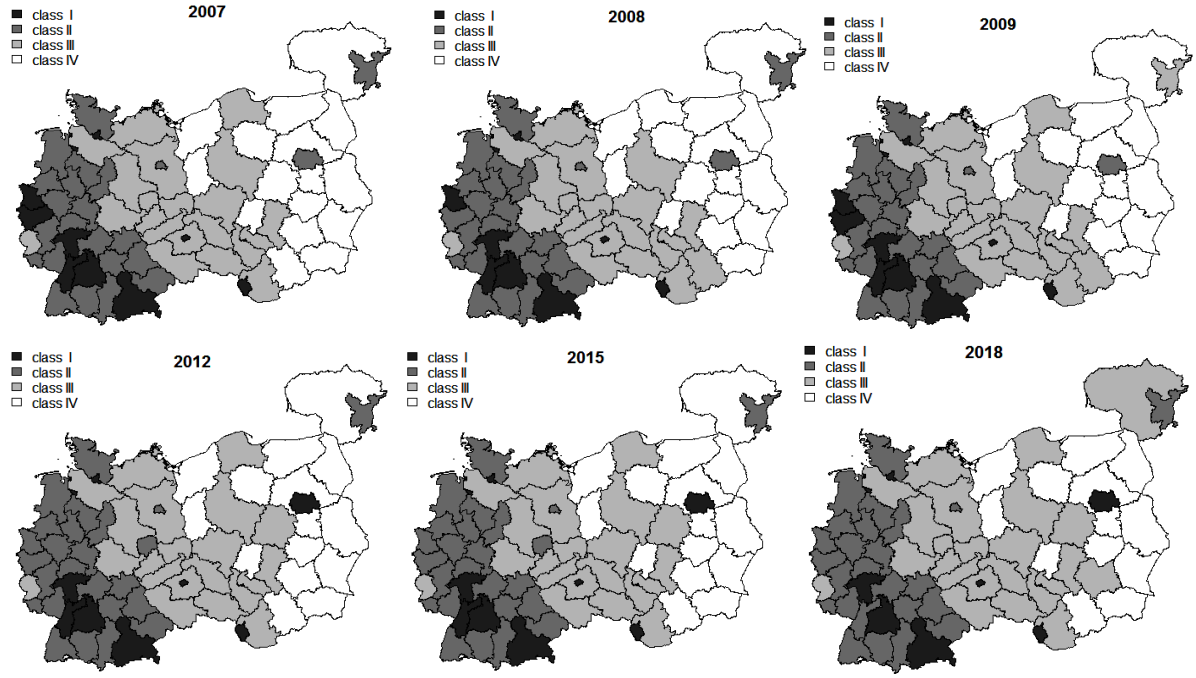



*Figure 2: Classification of regions (NUTS 2) of selected EU countries according to the level of economic growth (GDP per capita) in 2007-2018*
*(Source: own elaboration)*

The GDP per capita indicator *G* were the basis for the classification of these regions, due to homogeneous groups, from the point of view of the degree of the phenomenon studied (ie the level of economic growth).

The total volatility range of measures was divided into four class to which the regions were assigned according to the following rules rules (Kuc, 2012; Zeliaś, 2000):

- class I (high level of the studied phenomenon): $\bar{G} + S_G \leq G_i$
- class II (medium level of the studied phenomenon): $\bar{G} \leq G_i \leq \bar{G} + S_G$
- class III (low level of the studied phenomenon): $\bar{G} - S_G \leq G_i \leq \bar{G}$
- class IV (very low level of the studied phenomenon): $G_i < \bar{G} - S_G$

where:

$$\bar{G} = \frac{1}{n}\sum_{i=1}^{n} G_i,\ S_G = \sqrt{\frac{1}{n}\sum_{i=1}^{n}(G_i - \bar{G})^2}. \qquad (1)$$

The results of the classification presented on the maps (Fig. 2) showed that in the analyzed years most of the regions belonged to class III or IV, which indicates a low and very low level of economic growth. In the analyzed period, 59 regions did not change their place in the classification, 5 regions changed the class in which the studied phenomenon was higher, and in the remaining ones, they changed the class to a lower level of economic growth. The countries with the regions with the lowest values of GDP per capita are Poland, Lithuania and Slovakia. In turn, the highest values of this measure were recorded in the south-western part of Germany, Bratislavský Kraj, Praha and, since 2012 in Warszawski Stoleczny region. It was observed that with the passage of time the number of regions belonging to the second class (previously belonging to third class) increases, i.e. class with an average level of economic growth. Most of these regions are adjacent to Germany, which is a more developed country. Probably the highly developed economy of Germany influences the economic development of its neighbors.

## 3. SPATIAL AUTOCORRELATION

The spatial autocorrelation occurs when a certain phenomenon in a single spatial unit alters the probability of occurrence of this phenomenon in the neighbouring units (Bivand, 1980). In general, a positive spatial autocorrelation occurs when we observe the accumulation, in terms of location, of high or low values of observed variables. In the case of negative autocorrelation, high values are adjacent to low, and low to high, creating a kind of checkerboard (Suchecki, 2010). The lack of spatial autocorrelation means spatial randomness, i.e. high and low values of observed variables are distributed independently. There are two types of indicators of spatial associations (ISA): global and local measures of autocorrelation. Global autocorrelation results from the existence of correlation within the entire studied spatial unit. The local measure shows spatial dependence between the variable and its neighbouring units in a particular location.

### 3.1. Global statistics

The Moran (Moran, 1950) statistics is one of the most widely used measures in the study of spatial autocorrelation. The global Moran's *I* is defined as follows:

$$I = \frac{n\sum_{i=1}^{n}\sum_{j=1}^{n} w_{ij}\left(x_i - \bar{x}\right)\left(x_j - \bar{x}\right)}{\sum_{i=1}^{n}\sum_{j=1}^{n} w_{ij} \cdot \sum_{i=1}^{n}\left(x_i - \bar{x}\right)^2} = \frac{n}{S_0} \cdot \frac{z^{\mathrm{T}} W z}{z^{\mathrm{T}} z}, \qquad (2)$$

where: $x_i$, $x_j$ are the values of variables in the spatial unit *i* and *j*, $\bar{x}$ is the mean of the variable for all units, *n* is the total number of spatial units that are included in the study, $S_0$ is the sum of all elements of a spatial weight matrix, *z* is a column vector of elements $z_i = x_i - \bar{x}$, *W* is the

spatial weight matrix degree *n*, defining the structure of the neighbourhood, $w_{ij}$ is an element of weights matrix *W* (Kopczewska, 2011). This statistic takes values ranging from [–1, 1]: positive, when tested objects are similar, negative, when there is no similarity between them, and approximately equal to 0 for a random distribution of objects. Cliff and Ord (1973) have shown that the distribution of Moran statistics is asymptotically normal. Thus, the statistical significance of spatial autocorrelation can be verified using normalised statistics $I_S \sim N(0,1)$:

$$I^S = \frac{I - \mathrm{E}(I)}{\sqrt{\mathrm{Var}(I)}}, \qquad (3)$$

where: $E(I)$ is the expected value of Moran's and $\mathrm{Var}(I)$ is its variance:

$$\mathrm{E}(I) = -\frac{1}{n-1}, \qquad \mathrm{Var}(I) = \frac{n^2 S_1 - nS_2 + 3S_0^2}{(n^2-1)S_0^2} - \frac{1}{(n-1)^2}, \qquad (4)$$

$$S_0 = \sum_{i=1}^{n}\sum_{j=1}^{n} w_{ij}\ ,\ S_1 = \frac{1}{2}\sum_{i=1}^{n}\sum_{j=1}^{n}\left(w_{ij} + w_{ji}\right)^2\ ,\ S_2 = \sum_{i=1}^{n}\left(\sum_{j=1}^{n} w_{ij} + \sum_{j=1}^{n} w_{ji}\right)^2. \qquad (5)$$

If the Moran statistic has a value $I \approx -(n-1)^{-1}$, $I^S \approx 0$, it indicates a random spatial pattern. However, when $I > -(n-1)^{-1}$, $I^S > 0$, the spatial autocorrelation is positive, and if $I < -(n-1)^{-1}$, $I^S < 0$, the spatial autocorrelation is negative.

Another global measure of spatial autocorrelation is Global Geary's *C*. This statistic, is given by

$$C = \frac{(n-1)\sum_{i=1}^{n}\sum_{j=1}^{n} w_{ij}\left(x_i - x_j\right)^2}{2\sum_{i=1}^{n}\sum_{j=1}^{n} w_{ij} \cdot \sum_{i=1}^{n}\left(x_i - \bar{x}\right)^2} = \frac{n}{(n-1)}\left[\frac{n}{S_0}\cdot\frac{\mathbf{z}^{\mathbf{T}}\mathrm{diag}(w_{i.})\mathbf{z}}{\mathbf{z}^{\mathbf{T}}\mathbf{z}} - I\right], \qquad (6)$$

where all elements of the formula are defined as in statistic *I*. The above formula shows that the Geary measure can be expressed by the Moran statistic (Griffith, 2003). Although Moran and Geary measures give similar results, the Moran statistic is more effective. This is due to greater sensitivity of the variance of the Geary statistic to the distribution of sample. Values of this statistic can be impaired when the matrix of weights is asymmetrical. In order to verify the hypothesis of no spatial correlation, the Geary statistic can be standardized:

$$C^S = \frac{C - \mathrm{E}(C)}{\sqrt{\mathrm{Var}(C)}} \sim N(0,1), \qquad (7)$$

where: $\mathrm{E}(C)$ is the expected value of Geary's and $\mathrm{Var}(C)$ is its variance:

$$\mathrm{E}(C) = 1, \qquad \mathrm{Var}(C) = \frac{(n-1)(2S_1 + S_2) - 4S_0^2}{2(n+1)S_0^2}. \qquad (8)$$

The value of Global Geary's $C$ is always positive and takes values ranging from [0, 2]. In the case, of: $1< C < 2$, $C^S > 0$, the spatial autocorrelation is negative; when $0< C <1$, $C^S < 0$, the spatial autocorrelation is positive; finally, when $C \approx 1$, $C^S \approx 0$, there is no spatial autocorrelation.

### 3.2. Local statistics

The local Moran (Anselin, 1995) determines clusters of spatial units and verifies whether the unit is surrounded by neighbouring units with similar or different values of the variable studied in relation to the random distribution of these values in the studied space (Mastalerz-Kodzis, Pośpiech, 2016; Zeug-Żebro, Wolny-Dominiak, 2012). In the case of non-standardised values of the variable and row-standardised spatial weight matrix (Arbia, 2006) ($\sum_{i=1}^{n}\sum_{j=1}^{n} w_{ij} = n$), the local Moran is given by:

$$I_i = \left[ (x_i - \bar{x}) \sum_{j=1}^{n} w_{ij} (x_j - \bar{x}) \right] \Bigg/ \left[ \sum_{i=1}^{n} \frac{(x_i - \bar{x})^2}{n} \right], \qquad (9)$$

where all the elements of the formula are defined as in the global Moran's $I$. The standardised local Moran's $I_i^S$ is used to test the statistical significance of local spatial autocorrelation (Anselin, 1995):

$$I_i^S = \frac{I_i - \mathrm{E}(I_i)}{\sqrt{\mathrm{Var}(I_i)}} \sim N(0,1), \qquad (10)$$

where $E(I_i)$ is the expected value of the local Moran and $\mathrm{Var}(I_i)$ is its variance

$$\mathrm{E}(I_i) = -\frac{\sum_{j=1}^{n} w_{ij}}{n-1} \quad \text{i} \quad \mathrm{Var}(I_i) = \frac{(n-k)\sum_{i \neq j} w_{ij}^2}{n-1} + \frac{2(2k-n)\sum_{l \neq i}\sum_{hi \neq i} w_{il} w_{ih}}{(n-1)(n-2)} - \left( \frac{-\sum_{i \neq j} w_{ij}}{n-1} \right)^2, \qquad (11)$$

where $k = \left( \frac{1}{n} \sum_i (x_i - \bar{x})^4 \right) \Big/ \left( \frac{1}{n} \sum_i (x_i - \bar{x})^2 \right)^2$.

When $I_i^S$ is negative, the spatial autocorrelation is negative, too, i.e. when the object is surrounded by spatial units with significantly different values of the studied variable. The spatial autocorrelation is positive when $I_i^S > 0$, the object is surrounded by similar neighbouring units.

## 4. ISA FOR GDP PER CAPITA OF SELECTED EU COUNTRIES

The object of the study were regions (NUTS 2) of the selected countries of the European Union in years 2007-2018. For this purpose, annual data obtained from Eurostat databases were used (www 1). In the first stage of the research estimated the spatial autocorrelation of the economic growth (based on the GDP per capita indicator). Calculated values of global Moran and global Geary are presented in Table 2.

| Global statistic: Morana *I* and Geary *C* | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Year | *I* | *p-value* | *C* | *p-value* | Year | *I* | *p-value* | *C* | *p-value* |
| 2007 | 0.4899 | $2.46 \cdot 10^{-10}$ | 0.4243 | $4.25 \cdot 10^{-11}$ | 2013 | 0.4372 | $1.29 \cdot 10^{-8}$ | 0.4648 | $6.81 \cdot 10^{-10}$ |
| 2008 | 0.4692 | $1.17 \cdot 10^{-9}$ | 0.4346 | $1.13 \cdot 10^{-10}$ | 2014 | 0.4567 | $3.29 \cdot 10^{-9}$ | 0.4507 | $1.93 \cdot 10^{-10}$ |
| 2009 | 0.4369 | $1.19 \cdot 10^{-8}$ | 0.4566 | $7.21 \cdot 10^{-10}$ | 2015 | 0.4205 | $4.05 \cdot 10^{-8}$ | 0.4756 | $1.61 \cdot 10^{-9}$ |
| 2010 | 0.4364 | $1.31 \cdot 10^{-8}$ | 0.4615 | $6.82 \cdot 10^{-10}$ | 2016 | 0.4406 | $1.07 \cdot 10^{-8}$ | 0.4665 | $5.49 \cdot 10^{-10}$ |
| 2011 | 0.4546 | $3.78 \cdot 10^{-9}$ | 0.4514 | $2.22 \cdot 10^{-10}$ | 2017 | 0.4300 | $2.22 \cdot 10^{-8}$ | 0.4738 | $1.02 \cdot 10^{-9}$ |
| 2012 | 0.4531 | $4.28 \cdot 10^{-9}$ | 0.4533 | $2.44 \cdot 10^{-10}$ | 2018 | 0.4069 | $1.04 \cdot 10^{-7}$ | 0.4909 | $3.75 \cdot 10^{-9}$ |

*Table 2: Global Moran and Geary in the years 2007- 2018*
*(Source: own elaboration)*

Analyzing the data contained in Table 2 can be concluded that both global statistics are positive and statisti-cally significant. This means the similarity of spatial units (NUTS 2) due to the level of the economic growth. Graphical presentation of Moran statistics in years 2007, 2008, 2009, 2012, 2015 and 2018 is presented in Figure 3. These graphs show regions with outlying GDP values. In all analyzed years, the regions of Bratislavsky Kraj, Hamburg, Praha and Warszawski Stoleczny are located below the regression line. Additionally, in 2007, 2008, 2009 and 2012, the regions of Darmstadt and Oberbayern joined them. The GDP per capita values at these locations outweigh the values in neighborhood regions more than it would result from the overall spatial pattern. Con-versely, the neighbors of the region above the regression line (Shwaben in 2015 and 2018) have higher, than the mean, values of the GDP per capita.

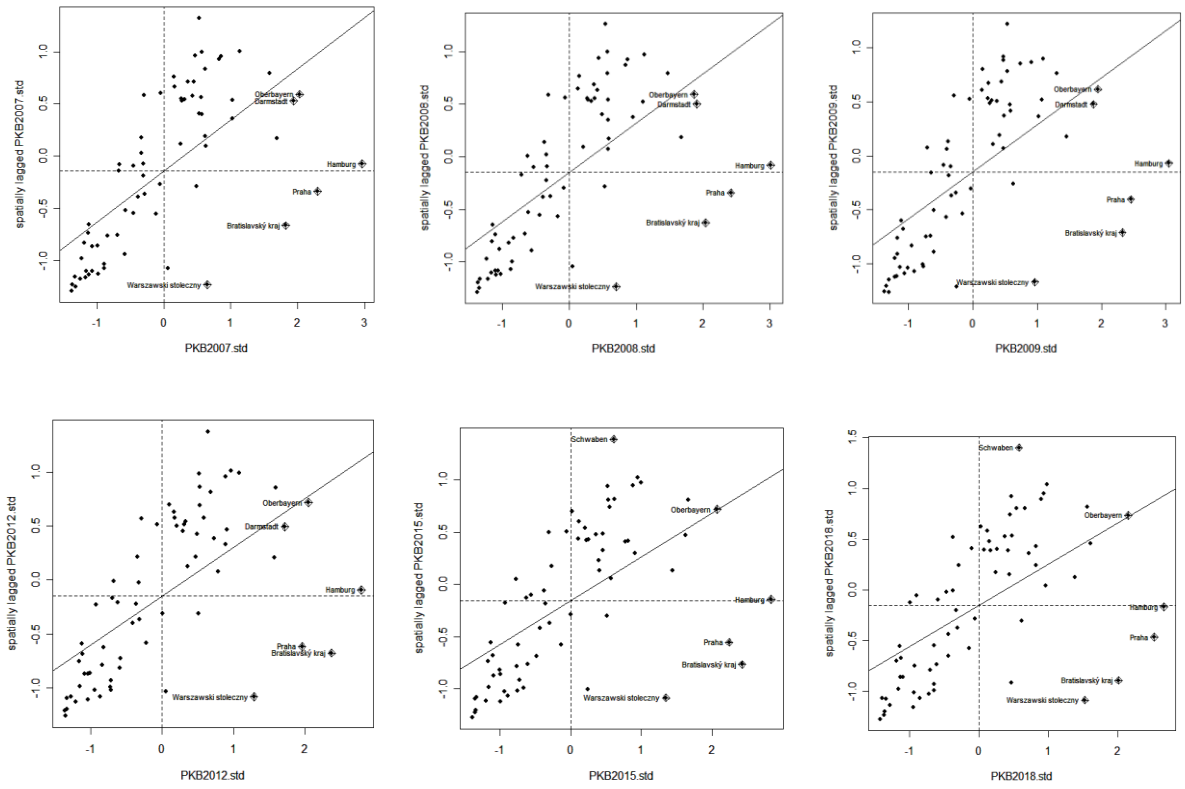



*Figure 3: Scatter plot for the Moran global statistic in selected years*
*(Source: own elaboration)*

The next stage of research was to estimate the local Moran in order to identify the spatial structure. The results of spatial distribution for the regions of selected countries in the years 2007, 2008, 2009, 2012, 2015 and 2018 are shown in Figure 4.

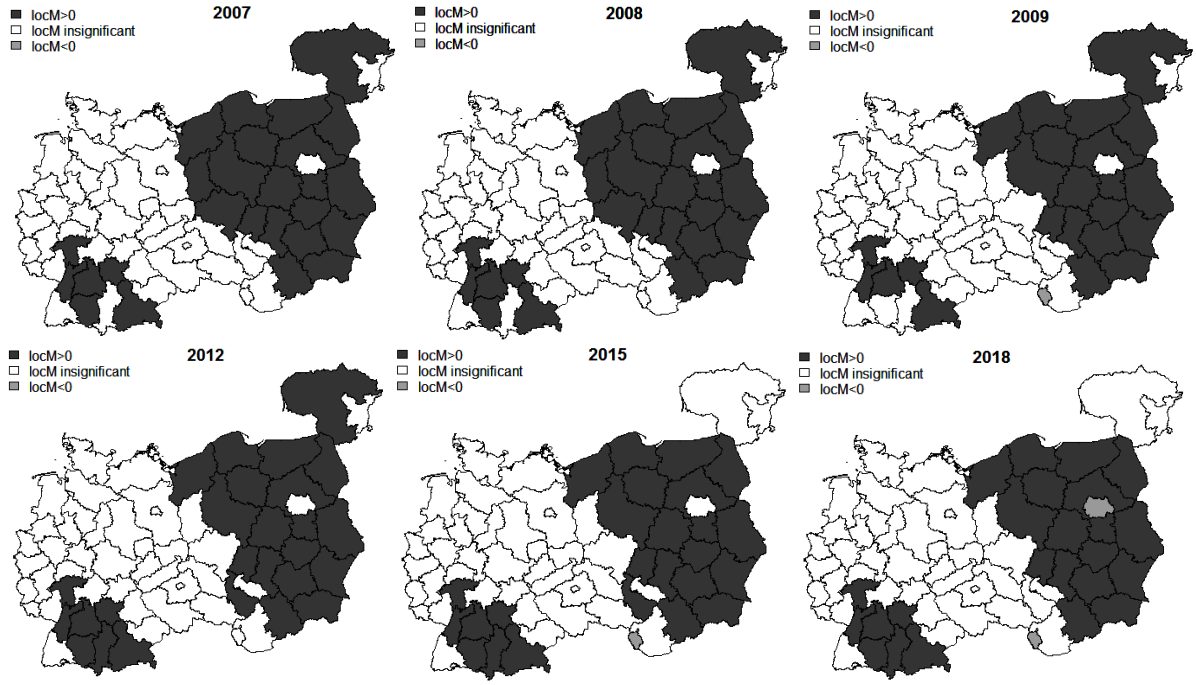



*Figure 4: The classification of regions of the European Union due to the value of the local Moran for the GDP per capita in selected years*
*(Source: own elaboration)*

Based on these maps (Figure 4) it can be seen that only some of the local Moran are statistically significant. In the studied period, significant and positive values of local Moran obtained for the GDP indicator only for 25 regions in 2007, 2008 and 2012; 22 in 2009; 24 in 2015 and 23 in 2018. This means that in chosen years, these regions have been surrounded by units with similar values of the GDP indicator which expressing the level of the economic growth. The phenomenon of clustering can be observed for almost all regions of Poland, several southern regions of Germany, two regions of Slovakia (Východné Slovensko and Stredné Slovensko) and Vidurio ir vakaru Lietuvos regionas. Standardized local statistics of Moran assume significantly negative values only for the Bratislavský kraj (in 2009, 2015 and 2018) and the Warszawski Stoleczny (2018) regions. These regions are outliers, ie they are surrounded by areas with significant different values of the GDP indicator. For other units local Moran's Ii was statistically insignificant.

## 5. CONCLUSION

The research on economic growth showed that in the analyzed period there were no significant shifts in the rankings of the economies of selected EU countries. However, the obtained results should be treated with distance due to the world economic crisis in 2008, which undoubtedly disrupted a number of initiated processes, postponing or even eliminating the expected effects. The spatial analyzes of economic growth showed the existence of global and local spatial autocorrelation. This means the existence of spatial dependencies of the studied variable within the entire area, but also in relation to neighboring locations. The observed autocorrelation was positive, but it was not too strong and was at a similar level throughout the period under consideration. The formation of clusters of similar values observed during the classification of regions according to the level of economic growth (Fig. 2) can be observed again by examining the spatial autocorrelation. The study of local Moran statistics in individual years distinguished clusters of regions and atypical areas adjacent to regions with different values of the GDP per capita indicator.

The analysis of economic growth with the use of spatial statistics can therefore support the identification of areas that are characterized by similar or different values, which enables the monitoring and control of the phenomenon. Moreover, such an analysis may support the implementation of projects aimed at maintaining positive phenomena and counteracting possible undesirable trends.

**LITERATURE:**

1. Anselin, L. (1995). Local Indicators of Spatial Association – LISA. *Geographical Analysis*, Vol. 27, 93–115.
2. Arbia, G. (2005). *Spatial Econometrics: Statistical Foundations and Applications to Regional Growth Convergence*. New York: Springer.
3. Begg, D., Fischer, S., Dornbusch, R. (2007). *Makroekonomia*. Warszawa: PWE.
4. Bivand, R. (1980). Autokorelacja przestrzenna a metody analizy statystycznej w geografii. [in]: Chojnicki, Z. (ed) *Analiza regresji geografii*. Poznań: PWN, 23-38.
5. Bogdański, M. (2010). Urban Determinants of Polarisation of Economic Development in Poland. *Olsztyn Economic Journal*, 5(2), 269-279.
6. Cliff, A., Ord, J.K. (1970). Spatial Autocorrelation: A Review of Existing and New Measures with Applications. *Economic Geography*, Vol. 46, 269-292.
7. Griffith, D.A. (2003). *Spatial Autocorrelations and Spatial Filtering*. Berlin-Heidelberg: Springer.
8. Kopczewska, K. (2011). *Ekonometria i statystyka przestrzenna z wykorzystaniem programu R Cran*. Warszawa: CeDeWu.
9. Kuc, M. (2012). The implementation of synthetic variable for constructing the standard of living measure in European Union countries. *Oeconomia Copernicana*, no. 3, 5-19.
10. Marciniak, S. (1997). *Innowacje i rozwój gospodarczy*. Warszawa: PWN.
11. Mastalerz-Kodzis, A., Pospiech, E.(2016). Dynamic and spatial analysis of economic and labour market characteristics in European countries. [in]: Kocourek, A., Vavrousek, M. (eds.) *Proceedings of 34th International Conference Mathematical Methods in Economics*, Liberec, Czech Republic, 546-551
12. Moran, P. A. P. (1950). Notes on Continuous Stochastic Phenomena. *Biometrika* 37 (1), 17–23.
13. Nazarczuk, J. M. (2015). Zróżnicowania regionalne w Unii Europejskiej. Weryfikacja hipotezy Williamsona. *Optimum. Studia Ekonomiczne* nr 4 (76), 43-53.
14. Samuelson, P., Nordhaus W. (2012). *Ekonomia*.Poznań: Dom Wydawniczy REBIS.
15. Suchecki, B. (ed.) (2010). *Ekonometria przestrzenna. Metody i modele analizy danych przestrzennych*. Warszawa: C.H. Beck.
16. Wolny-Dominiak, A., Zeug-Żebro, K. (2012). Spatial statistics in the analysis of county budget incomes in Poland with the R CRAN, [in]: Ramik J., Stavárek D. (eds.) *Proceedings of 30th International Conference Mathematical Methods in Economics*. Karviná, Czech Republic, 992-998.
17. Zeliaś, A. (ed.) (2000). *Taksonomiczna analiza przestrzennego zróżnicowania poziomu życia w Polsce w ujęciu dynamicznym*. Kraków: Wydawnictwo Akademii Ekonomicznej.
18. [www 1] Eurostat. Retrieved: 02.11.2020 from https://bdl.stat.gov.pl/BDL/dane.

# DEVELOPMENT OF THE SMALL AND MEDIUM- SIZED BUSINESS SECTOR IN RUSSIA THROUGH PARTICIPATION IN PUBLIC-PRIVATE PARTNERSHIP PROJECTS

**Sofia Lyubyashenko**
*Novosibirsk State University of Economics and Management,*
*Russian Federation*
*lubsofia@yandex.ru*

**Gennady Lyaskin**
*Novosibirsk State University of Economics and Management,*
*Russian Federation*
*theory@ngs.ru*

***ABSTRACT***

*The relevance of the research topic is due to the need to attract private capital to the state and municipal sectors of the Russian economy. World experience indicates that public-private partnership (PPP) mechanisms contribute to the development of entrepreneurship and increase the sustainability of economic development in the regions. Involving small and medium-sized businesses in the implementation of PPP projects is especially important for single-industry territories, which are more at risk of deterioration of socio-economic situation than others. In the context of the economic crisis, the issue of increasing the efficiency of interaction between the state and business is becoming extremely urgent for all parties. The article describes the features of single-industry towns, substantiates the importance of implementing PPP projects on their territory, outlines the promising areas for the implementation of PPPs involving small businesses.*

***Keywords:*** *small and medium-sized businesses, public-private partnerships, regional sustainability, government support*

## 1. INTRODUCTION

The involvement of private capital in the state and municipal sectors of the Russian economy is a very urgent issue today. The need to attract small and medium-sized businesses in public-private partnership (PPP) projects has long been ripe. However, in Russia today, only large infrastructure projects are mostly implemented through PPPs, due to their complex format. Successful promotion of a PPP project requires a relatively expensive legal and financial study, close interaction between business and government, which is quite difficult for small and medium-sized enterprises. This sector of the Russian economy has always needed the support of the State. To this end, small business support programs have been developed at all levels of government. They are aimed at increasing the number of such enterprises, exports and developing innovative activities, and reducing unemployment in the regions. Small business development is particularly relevant for single-industry towns. There are 319 single-industry towns in Russia. Such territories, as a rule, have typical problems: lack of a diversified labor market, poorly developed social sphere, low mobility of the population, highly specialized city economy. In the context of the economic crisis, state support measures and the development of the small and medium-sized enterprise sector are becoming extremely relevant. It is necessary to identify the most popular and promising of them. Along with such programs, PPP tools can be considered as a way to support existing enterprises and promote the integrated development of mono-focus areas, which is especially important for the recovery of the regional economy from the epidemic.

## 2. ESSENCE AND CHARACTERISTICS OF SINGLE-INDUSTRY TOWNS IN RUSSIA

The main document defining the status of single-industry towns in Russian Federation is the Resolution of the Russian Government of 29.07.2014 № 709 [10]. It is this text that legislates the criteria for classifying a settlement as single-industry towns, and hence its definition. A single-industry city is a municipality of the Russian Federation that meets all the criteria shown in figure 1 at the same time .

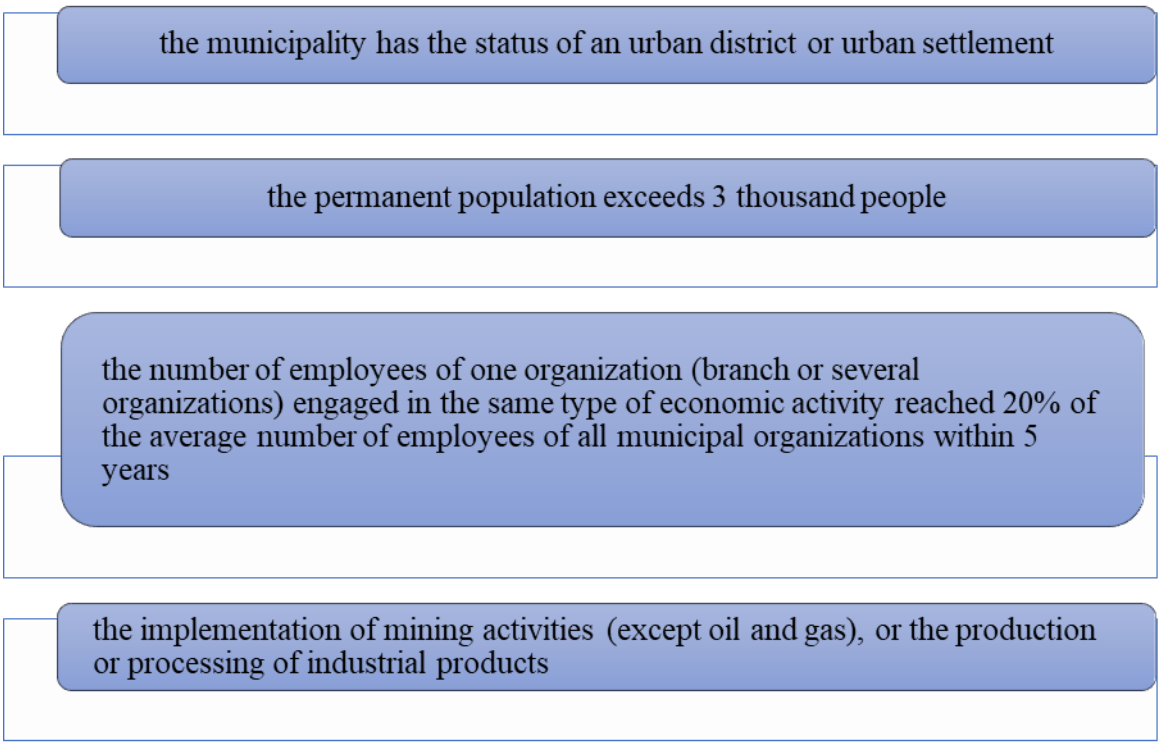



*Figure 1: Criteria for determining single-industry towns in Russia*

In addition, the Government of the Russian Federation annually approves the list of such single-industry towns - Order of the Government of the Russian Federation of 29.07. 2014 N 1398 "On the list of single-industry municipalities of the Russian Federation (single-industry towns)" [10]. They have the following characteristics.

- Poorly diversified economies, as a result of the dominance of one industry. The rest are poorly developed, or the share of the employed population in them is negligible. As a rule, they are represented by the service sector, or by manufacturing small enterprises serving the city-forming enterprise.
- High dependence of budget revenues on the activities of the city-forming enterprise or the development of the industry in which it operates. Other sources of tax revenues to the local budget are not more than 10% -20%.
- Occupational uniformity of the local population. This is due to the narrow specialization of educational institutions located on the territory of the city to teach specific skills related to servicing the dominant industry of the city.
- Infrastructure development in single-industry territories lags far behind other cities.
- High transport costs due to the geographical location of cities - a considerable distance from other settlements - make the municipality an economically closed system and impede the development of local commodity markets.

- The unfavorable climatic conditions of many single-industry territories impede the development of certain sectors of the economy, for example, agriculture.
- The labor market is poorly developed, since the share of small and medium enterprises is insignificant, and the population structure has regressive features. As a result of youth migration, the proportion of the working-age population is declining in many cities.

The Resolution of the Russian Government N 709 contains a classification of single-industry towns - according to the risks of their socio-economic development. They are divided into three categories [10]:

- Category 1 (with the most difficult socio-economic situation).
- This includes cities with the highest risks of socio-economic development, which cannot do without state support. To classify a territory in this category, you must meet two of the several criteria of disadvantage:
  - high probability of stopping the activity of the city-forming enterprise, planned dismissal of more than 10% of its employees.
  - the unemployment rate in the city is 2 times higher than in the country;
  - the industry to which the city-forming enterprise belongs is assessed as unfavorable;
  - the city has an unfavorable socio-economic situation.
- Category 2 (with risks of socio-economic deterioration).
- It includes territories where it is planned to lay off more than 3% of employees of the city-forming enterprise or where the unemployment rate is higher than the average in Russia.
- Category 3 (with stable socio-economic status). These are cities that belong to the category of single-industry, but the socio-economic situation and unemployment rate in them are not lower than the average level. The planned percentage of reduction in the average number of employees is 3% or less.

Thus, the Government of the Russian Federation, when determining single-industry towns of various categories, applies the sustainability criteria of a city-forming enterprise, analyzes the labor market and the level of employment, the risks and the specialization industry of a single-industry city, to identify those that are at the highest risk of decline. In Russia, a new program "Integrated development of single-industry towns" has been developed, the purpose of which is to reduce the dependence of single-industry territories on the city-forming enterprises activities. 57.3 billion budget funds are planned for its implementation. The previous program for the period 2016-2025 was considered ineffective and closed ahead of schedule. It has created 312,000 jobs and increased investment in fixed assets to 1.8 trillion rubles. In 19 single-industry towns, 42 infrastructure facilities were put into operation for a total of 7 billion rubles, and 222 residents registered in 63 established territories of advanced development. However, this is not enough to ensure the sustainability of the economy of single-industry towns. During the economic crisis caused by the pandemic, single-industry towns are at the highest risk, because they are the least adapted to solve problems independently and their entire life is built around a core enterprise. They are usually severely limited in their social and economic development opportunities. Small businesses survival in such conditions is one of the key tasks of the state and local governments, since this sector creates additional jobs and contributes to the employment of the population.

## 3. STATE SUPPORT FOR SMALL AND MEDIUM-SIZED BUSINESSES IN SINGLE-INDUSTRY TOWNS

In recent years, the list of Federal programs for support small and medium-sized enterprises in single-industry towns has increased, but the actual amount of funding from the Federal budget has been steadily decreasing since 2015.

Article 3 of the Federal law "On the development of small and medium-sized businesses in the Russian Federation" of 24.07.2007 N 209 refers to business entities (legal entities and individual entrepreneurs) that are included in the unified state register of legal entities and comply with the conditions indicated in Law N 209. Such enterprises may receive state support. The forms of such support include: consulting, educational, property, financial, informational, infrastructural. Small enterprises operate traditionally in the services and trade sectors. Medium-sized enterprises are more represented in areas with higher added value - in manufacturing, construction, and agriculture. To date, Russia has formed a regulatory and institutional framework for state support of this sector. A Government Commission on Competition and Development of Small and Medium Enterprises has been created. A number of large-scale financial support programs are being implemented, under which entrepreneurs in all regions of the country are able to receive relatively cheap loans, subsidies for reimbursing the costs of doing business, loan guarantees or loans on concessional terms. For small enterprises, the state has provided special tax regimes. The state made attempts to facilitate the access of small businesses to the procurement of goods, work, services for state and municipal needs, as well as for the needs of companies with state participation, setting quotas for the implementation of these purchases. The Law on the contract system in the field of public procurement has been amended to oblige state and municipal unitary enterprises to make purchases from small and medium-sized businesses. A network of organizations has been created in the regions that form the infrastructure of information, consulting and property support for small businesses. In 2015, the State Institute for the Development of Small and Medium Enterprises was established - the joint-stock company Federal Corporation for the Development of Small and Medium Enterprises (hereinafter - the Corporation). Despite this, the contribution of small and medium-sized businesses to the overall economic indicators in the Russian Federation is significantly lower than in most developed and developing countries. In Russia, small businesses are primarily micro-businesses (95.5% of the total number of small and medium-sized firms) [12]. The number of medium-sized enterprises is relatively small. Small and medium-sized enterprises account for only 5-6% of the total volume of fixed assets and 6-7% of investment in fixed assets in the country as a whole [12]. Labor productivity in this sector lags behind the level of developed countries (the United States, Japan, and the European Union) by 2-3 times. Starting in 2014 we are seeing a negative trend of development of small and medium enterprises to such indicators as: turnover in the economy as a whole, the volume of exports (25-35%), the volume of investments, introduction of innovations. In some developing countries, the contribution of small and medium-sized enterprises to the export of products is even higher - in South Korea-about 40%, in China-more than 50% [12]. Statistical data show uneven development of small businesses in the Russian Federation. Low effective demand and a weak level of business infrastructure development in single-industry townsthat are remote from administrative centers significantly hinder the development of this sector of the economy. The list of measures of state support for small businesses is quite wide and universal for all regions of the Russian Federation, but it is not always effective. One of the areas of state support is the development of social entrepreneurship. Programs of financial support for industrial enterprises have a weak legal background, are designed mainly for medium-sized businesses, and therefore were not implemented in the planned volume in many regions before the outbreak of the epidemic. A typical problem in single-industry towns is the inability to receive subsidies due to non-compliance with the program criteria. It can be assumed that the low effectiveness of existing measures of state support for small businesses in single-industry towns is caused by their universality. It is necessary to develop a program for the development of this sector of the economy for such territories, taking into account their specifics, categories and problems. To achieve a sustainable result, it is important to consolidate the efforts of the government, entrepreneurs and public organizations and involve residents in

the development of the local economy and social sphere. Improving the efficiency of small and medium-sized businesses in Russia's industrial sectors is possible through their involvement in PPP projects. Currently, there is no complete system of views and conceptual provisions on the role of public-private partnership in the economy of single-industry territories, its functions and mechanisms of influence on the development of the small and medium-sized business sector are not defined.

## 4. LEGAL FRAMEWORK AND FIELDS OF PPP IMPLEMENTATION IN RUSSIA

The Municipal PPP Institute was first legislated with the Federal Act of 13.07.2015 N 224 "Public-private partnership, municipal-private partnership in the Russian Federation and amendments to individual legislative acts of the Russian Federation" [11]. The Act considers this institution as a legal agreement for a fixed period and based on the pooling of resources, the sharing of risks, cooperation of the public (in this case the municipality) and private partners in order to attract private investment to the economy of municipalities, to ensure that local governments have access to and improve the quality of goods, works, services for solving local issues. The main difference between municipal PPP and PPP is project scale. As a rule, the State participates in the implementation of major PPP projects with the aim of developing branches of the economy or regions. Municipalities, when dealing with local issues, implement smaller projects. These differences do not change the principles of project preparation and execution, but rather the choice of the forms and models. The development of municipal PPPs is based on the provisions of civil law, legislative acts regulating economic relations and the participation of public authorities in economic relations, Fiscal legislation and sectoral legislation. The main legal and institutional forms of PPPs are:

1) Concessions;
2) Public-private partnership based on leases of property in State or municipal ownership, including a "lease with an investment component";
3) Investment treaties (agreements);
4) Participation in capital;
5) Mixed forms.

The first three forms are the most common. The main normative acts regulating the organizational and legal forms of public-private partnerships are presented in figure 2.

*Figure following on the next page*

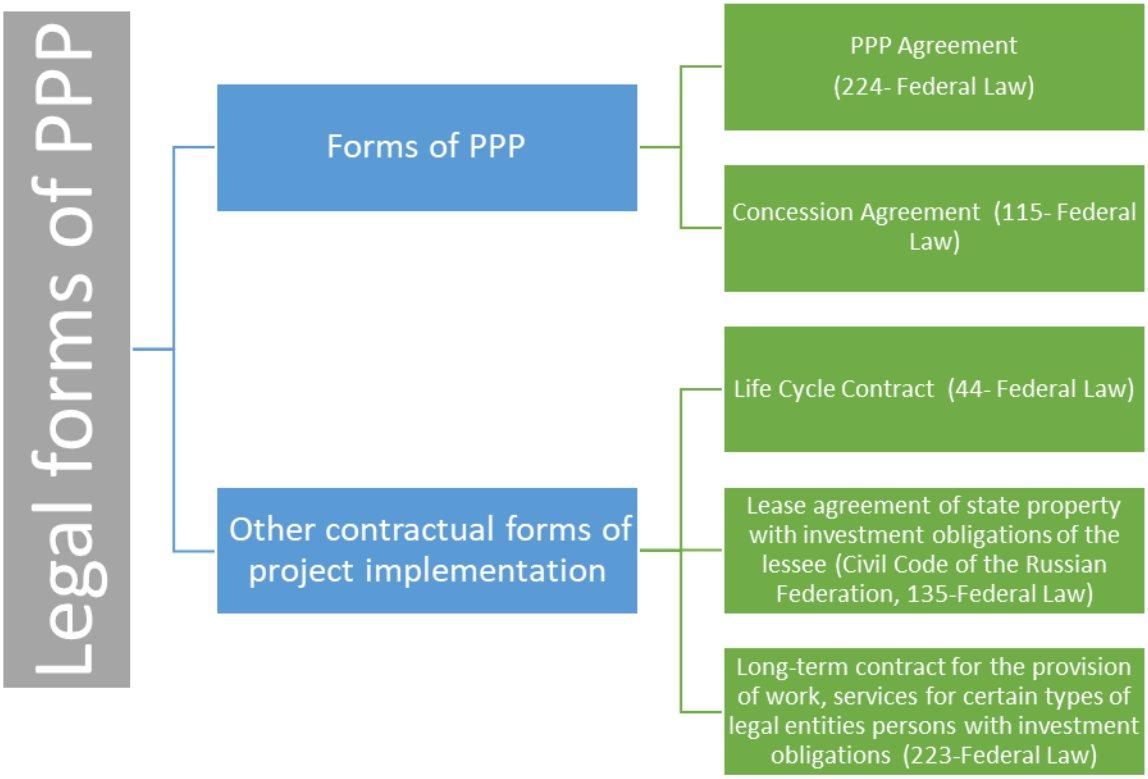



*Figure 2: Legal forms of public-private partnerships in Russia*

Projects of municipal-private partnership are most common in the construction and reconstruction of infrastructure (road construction) and social services (health care, education, housing and communal services, physical education and sports). The specifics of municipalities, their geographical location, and climate conditions largely determine the success of projects. Objectively, some of them are most favorable for the development of entrepreneurship, while others are unfavorable. Towns have a number of advantages for business development. These include:

- detailed understanding of specific problems of small business.
- evidence of the needs and requests of the population in determining the priority directions of small business development.
- the authority of municipal leaders and the popularity of local entrepreneurs among the population.

However, small municipalities have insufficient economic resources, low qualifications of municipal employees, poor infrastructure development. Of course, large cities have more opportunities to implement relatively large-scale projects through a stable financial base, high qualifications of municipal employees, flexible spatial localization of projects. Thus, the possibility of successfully implementing municipal PPPs to address local issues increases significantly in large municipalities, but risks also increase. According to the Ministry of economic development, 94% of all concession agreements are implemented at the municipal level, 5% at the regional level, and 1% at the Federal level (*Figure 3)*.

*Figure following on the next page*

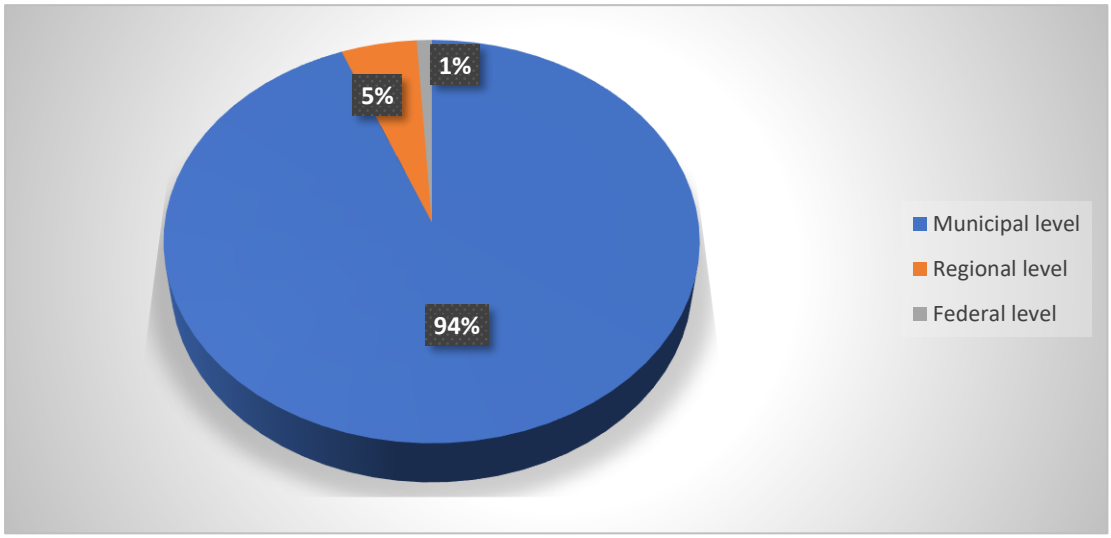



*Figure 3: Allocation of concession agreements by level of authority, 2019*

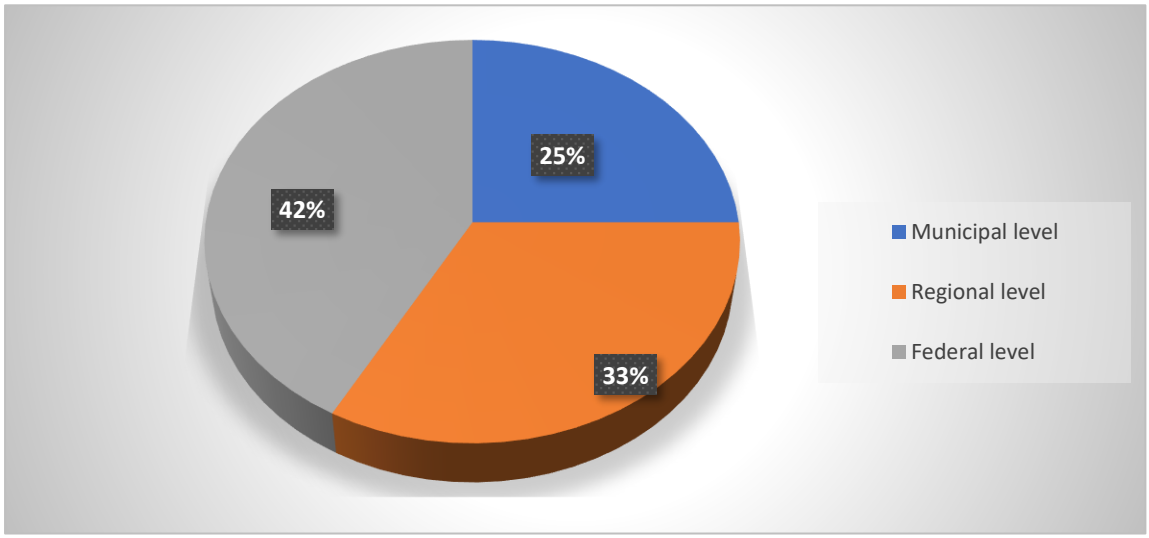



*Figure 4: Allocation of investments in concession agreements, 2019*

Figure 4 shows the allocation of investments in concession agreements. Most of the investments are made at the federal level, 25% at the municipal level and 33% at the regional level.

## 5. DYNAMICS OF INVESTMENTS IN PPP PROJECTS IN RUSSIA

According to the Ministry of economic development in Russia, at the beginning of 2020, there were about 3,100 active or completed concession agreements in Russia. The total amount of investment obligations is more than 1.7 trillion rubles. Extra-budgetary investments amount to 1.2 trillion rubles (70%), and 0.5 trillion rubles are state funds [1]. According to the Ministry's experts, the data indicated a lack of investment in infrastructure through PPP contracts. Investment commitments under the concession agreements reached amount to about 1.6 per cent of GDP for 2019. In the UK, for example, investment in PPP projects is at least 6.6% of GDP, and in Canada 8.1%. To date, almost all regions have used PPP mechanisms to attract investment, but only 10 of them have signed 100 or more concession agreements, taking into account municipal concessions. The number of agreements with investments of more than 10 billion rubles is only 32. On average, about 500 new agreements with investment volume of about 280 billion rubles are concluded annually in Russia.

At this rate, Russia will not reach the British level of investment in concessions for the foreseeable future. Today, the PPP market is large. Financial resources exceed the number of projects required.

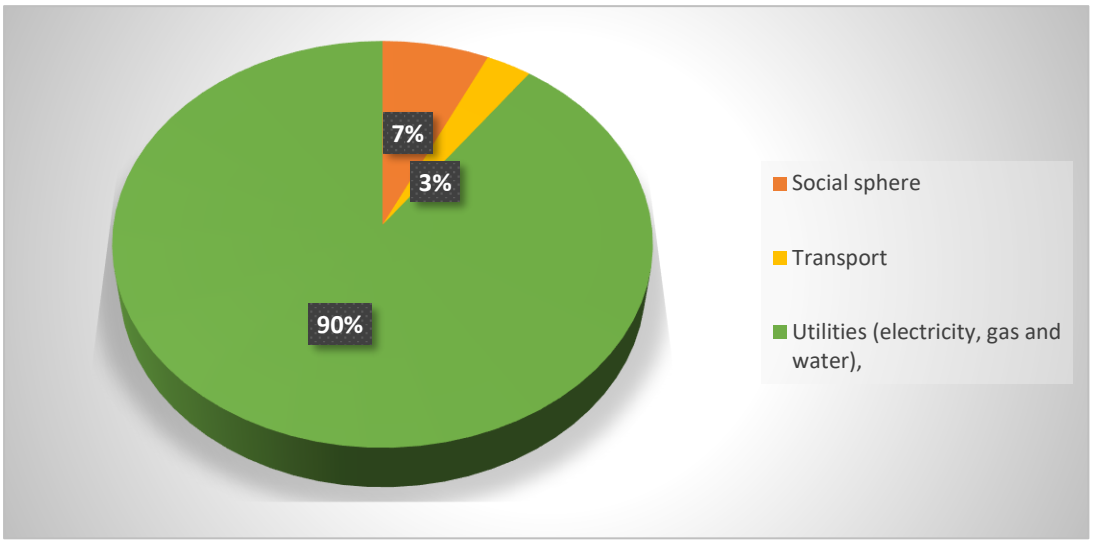



*Figure 5: Allocation of concession agreements by field of activity in 2019, in %*

The majority of concession agreements are in the utilities (electricity, gas and water) (90%), 7% are in the social sphere and 3 % are in the transport sector. Despite a small percentage, transport concessions represent the largest total investment, accounting for 70 % of the funds. These are mainly road infrastructure projects. Most agreements (94%) have been concluded at the municipal level. These are public utilities. However, the largest investments (42%) are in federal concessions, 96% of which are in transport infrastructure[1]. The most important projects to date are the construction of the railway line «Obskaya - Salehard - Nadym» in the Yamal-Nenets Autonomous District (total investment - 130 billion rubles), and the creation of the railway line «Elegest - Kyzyl - Kuragino» in Tuva and Krasnoyarsk Krai (127 billion rubles). The Ministry of Economic Development has ranked Russia's regions by the level of PPP development. Each indicator was defined as the weighted average of three factors: the experience of implementing PPP projects in the entity, the development of the institutional environment in PPPs, and the regulatory framework in this area. The leaders of the rating were Samara Region, Moscow and Moscow Region (98 points). They are followed by Nizhny Novgorod Region (96.9 points) and Perm Territory (95.8 points). The worst developed PPPs are in Republic of North Ossetia – Alania (6.7), Ingushetia (7.5), Bryansk (11.3), Karachayevo-Circassian Republic (14,7) and Tver Region (15.6). The potential of PPPs in Russia remains untapped. The main problem is the lack of a mechanism to share responsibility among project participants. A compromise solution must be found.

## 6. PROBLEMS OF INVOLVING SMALL AND MEDIUM BUSINESSES IN PPP PROJECTS

Implementation of infrastructure projects involving small and medium-sized businesses can be considered as the most popular and promising area for PPP. To date, small and medium-sized businesses have been assigned a modest role in the implementation of large projects as a subcontractor. A typical scheme of interaction between all participants is as follows: the concessionaire enters into a contract with a large enterprise - the General contractor, which, in turn, enters into many contracts with subcontractors to perform construction and installation work, develop design and estimate documentation or perform service functions.

Thus, small business today is excluded from interaction with government structures and from detailed project development, its interests are not taken into account by any party. In order to increase business activity in the region, it is necessary to attract small businesses to participate in megaprojects by integrating them into the technological and production chain. Currently, the state provides assistance to small and medium-sized businesses in the implementation of social projects. This area is promising for the development of PPP and municipal-private partnership. Investing in socially significant objects has its own specifics. When investing in the social sphere, the state should act as a guarantor of repayment. Accordingly, risk-sharing mechanisms should be included in cases of incorrect assessment of the population's ability to pay. And if the project for objective reasons (subject to the requirements for the quality and cost of services) is not provided with a demand sufficient for the effective work of the private party, the authorities within the partnership should provide support. At the first stage, this may be a reduction in prices for the service, in which the state participates financially in partial reimbursement of investments. However, despite the fact that such a partnership would be beneficial for everyone, such mechanisms are not yet developed in Russia. The term "socially significant objects" should be understood in the broadest sense. In addition to social facilities such as schools, hospitals, and kindergartens, these may include energy, communications, and road infrastructure. When implementing social projects, there is a problem of attracting investment at the expense of financial organizations. It is not profitable for banks and other investors to participate in small projects from small businesses. To solve this problem, we can offer a mechanism for cooperation between them for the purpose of joint implementation of the project. It is still quite widespread in agriculture. Its application can reduce risks and increase investment attractiveness using the cluster approach. Examples of such cooperation can be found in the regions of Russia. For example, in the Rostov region, a comprehensive project was implemented to create a network of private kindergartens, which were joined by developing children's centers and service enterprises. In this case, the project amount increased from 28 to 150 million rubles, which is the Bank's interest. Thus, it is necessary to make the PPP and municipal-private partnership format applicable for small and medium-sized businesses. The potential benefits of all participants in a municipal-private partnership are associated with the emergence of potential risks.

*Figure following on the next page*

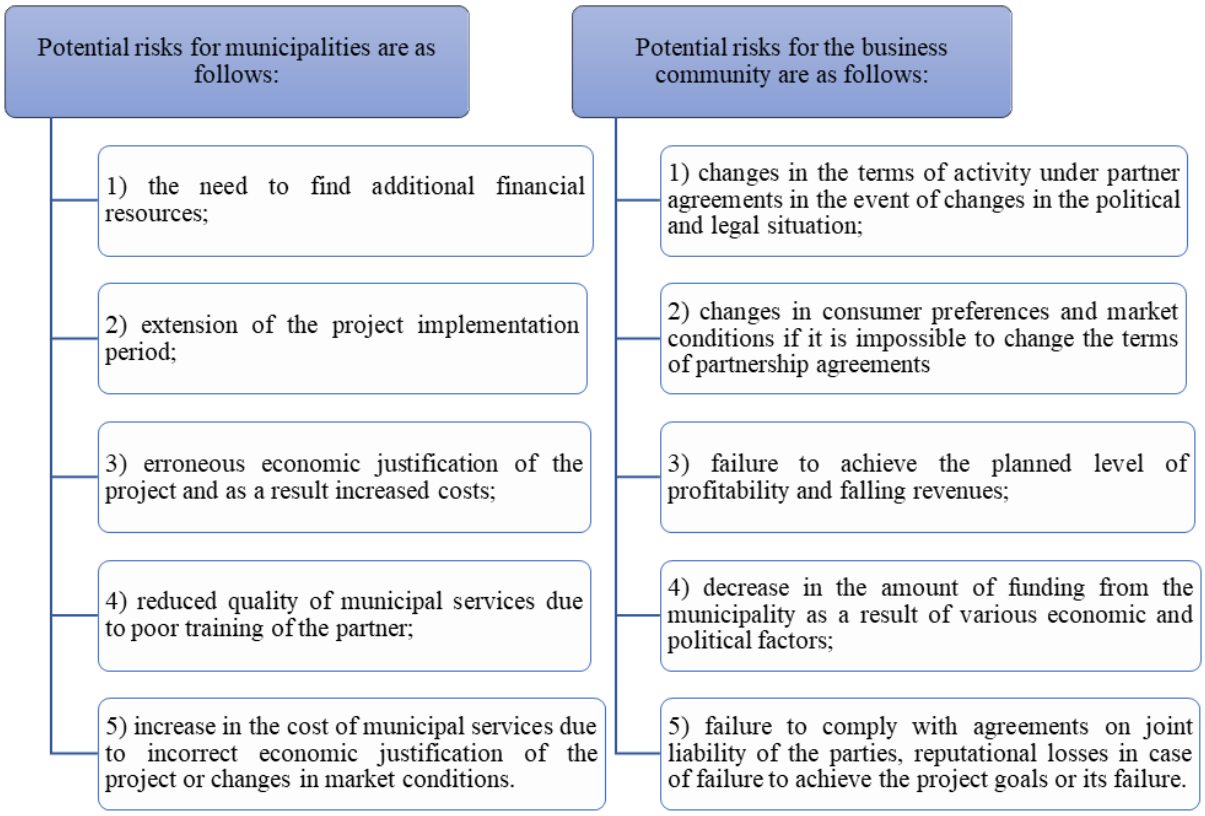



*Figure 6: Potential risks of participants in a municipal-private partnership*

Local authorities are restricted by law in the implementation of municipal projects aimed at the development of the municipal sphere, with the involvement of private investors. So, according to the Federal law of 27.07.2010 N 190 "About heat supply" and the Federal law of 7.12.2011 N 416 "About water supply and water disposal" the rights of ownership and use of objects in municipal ownership must be transferred only under concession agreements providing for the creation or reconstruction of property. However, delays in the conclusion of concessions in this area, lack of financial resources due to the high cost of such projects, and low interest of private investors hinder the development of partnership between municipalities and businesses. Solving the problem of attractiveness of PPP projects at the municipal level is possible by reducing administrative barriers.

## 7. CONCLUSIONS

The regulatory and organizational framework created in Russia allows us to implement a comprehensive approach to the development of small and medium-sized businesses. Taking into account the economic crisis, the reduction of municipal budget revenues, and the solution of local problems with the involvement of private investors can be considered as one of the promising areas of activity of state authorities and local self-government. The use of PPP and municipal private partnership mechanisms can increase the participation of small and medium-sized businesses in the country's economy, the degree of their penetration into socially important sectors, as well as the level of cooperation with large enterprises. To achieve these goals, it is necessary to review the priorities of supporting small and medium-sized businesses in the allocation of budget funds, which is especially important for the recovery of industries in single-industry towns after the pandemic. The development of unified schemes and algorithms for providing assistance to small and medium-sized businesses can optimize the process of selecting and" replicating " promising and successful projects, taking into account the strategies and programs of economic development of municipalities and the state.

**LITERATURE:**

1. Galcheva, A. The authorities for the first time disclosed the scope of agreements under the PPP. Economy. RBC. February 25, 2020. Retrieved 26.02.2020 from https://www.rbc.ru/economics/25/02/2020/5e4fcdf89a7947decf57ae33
2. Lyubyashenko, S. N. (2019). *Methodological aspects of assessing the market structure: concentration and efficiency*. Economic and Social Development 49th International Scientific Conference on Economic and Social Development. Development – "Building Resilient Society" Book of Proceedings Zagreb, 468-475. Retrieved 20.01.2020 from https://www.esdconference.com/upload/book_of_proceedings/Book_of_Proceedings_esd Zagreb2019_Online.pdf
3. Lyubyashenko, S. N. (2020). *Enterprise Integration and Market performance results*. Economic and Social Development. 51st International Scientific Conference on Economic and Social Development Development. Book of Proceedings Rabat, 312-320. Retrieved 05.04.2020 from file:///C:/Users/Sony/Downloads/Book_of_Proceedings_esdRabat2020_Online%20(1).pdf
4. Lyubyashenko, S, Gennady Lyaskin, G. Antimonopoly policy and development of competition in the Russian Federation. 52st International Scientific Conference on Economic and Social Development Development. Book of Proceedings , Porto, 16-17 April 2020
5. Lyaskin G.G.(2015). History of Economic Thought. The module-problem course / Novosibirsk, 2015.
6. Tatarenko V.I., Lyaskin G.G. (2012). World Economy and International Economic Relations. Novosibirsk, 2012.
7. Lyaskin G.G. Shabashev V.A. (2016). Approaches to characterization of the role of the monopsony on the labour market: regional aspect . The module-problem course / Novosibirsk. 2013. Herald of Omsk University. № 2. pp. 169-179.
8. Lyaskin G.G. (2018) Notion of monopsony: from classic to contemporary interpretation. Siberian Financial School. №4. pp. 52-56
9. Resolution of the Russian Government of 29.07.2014 No. 709, accessed February 27,2017, http://government.ru/docs/all/92333/.
10. Resolution of the Russian Government of 29.07.2014 No. 1398-r, accessed February 27,2017, http://government.ru/media/files/41d4f68fb74d798eae71.pdf.
11. Federal Act of 13.07.2015 N 224 "Public-private partnership, municipal-private partnership in the Russian Federation and amendments to individual legislative acts of the Russian Federation"
12. Resolution of the Russian Government of the Russian Federation from 02.06.2016 N 1083-R "The strategy for the development of small and medium-sized businesses in the Russian Federation for the period up to 2030: [Electronic resource]// http://www.consultant.ru/ document/cons_doc_LAW_199462/15717279f1d8017f1d751059780fba5b9b917b08/

# MANAGING THE FLOW OF GOODS IN POLISH-CHINESE BILATERAL TRADE DURING COVID-19 PANDEMIC - THE ANALYSIS OF PROBLEMS FROM THE PERSPECTIVE OF FREIGHT FORWARDERS

**Magdalena Klopott**
*Gdynia Maritime University, Poland*
*m.klopott@wpit.umg.edu.pl*

***ABSTRACT***
*The spread of coronavirus has disrupted the movement of goods worldwide. In particular, the Chinese lockdown measures have had supply chain implications for many Western countries, including Poland. In the midst of this chaos, freight forwarders who are responsible for organizing transport and facilitating the flow of goods were found themselves on the front lines. Therefore, the aim of this article is to identify problems encountered by freight forwarders at the time of the coronavirus pandemic outbreak and for the following months. The analysis was conducted using a survey questionnaire and was limited to international freight forwarders that service the international trade between Poland and China and are located in Pomerania in Poland. The article starts with a glance at the international trade between Poland and China. Next, ripple effects of pandemic on maritime containerised transport was briefly described. The main part of the article is the presentation of the research results and their discussion. The article reveals, that COVID-19 has placed unprecedented stress on the freight forwarders activity and highlights certain limitations in the containerized trade that affected their operations. Apart of the decline in turnover and thus in revenues, the inefficiencies in communication systems among freight forwarders, ocean carriers and terminals, as well as enormous delays unseen on such a scale were indicated among the most acute problems encountered by freight forwarders. The article also showed how vital are international freight services for ensuring the continuity of supply chains.*
***Keywords:*** *coronavirus disruption, supply chain, freight forwarders problems, COVID-19, containerised shipping*

## 1. INTRODUCTION

At the beginning of 2020, a lot of measures were put in place in countries attacked by SARS-COV-2 virus in order to prevent or slow the spread of the new disease COVID-19. These measures have come as shock on all stages of the supply chains, but it did not equally affect different parties of the chains (OECD, 2020), as well as countries itself. In particular, the Chinese lockdown measures have had supply chain implications for many Western countries, due to the importance of China in their international trade of goods. Moreover, it should be also remembered, that Wuhan (the city where the novel coronavirus broke out) is a home for many factories that serves many of the world's supply chains. Among those factories are the American beverage corporation PepsiCo, German conglomerate Siemens, nine different car factories (e.g. French Peugeot Citroen), Chinese smartphone maker Xiaomi and many, many others. (LogisticsInsights, 2020) As a result, the lockdown imposed by Chinese government (Wuhan and its surroundings were completely closed), severely impacted numerous industries in the global economy. Considering the importance of China in the international trade of Poland, being responsible for as much as about 12 percent of Polish import, these turbulences also influenced the Polish market and flow of containerized goods from/to China. In the midst of this chaos, freight forwarders who are responsible for organizing transport and facilitating the flow of goods were found themselves on the front lines. Therefore, it seemed reasonable to research what kind of problems freight forwarders encountered during the outbreak of the

pandemic and for the following months, which is the main objective of the article. The identification of these problems can be helpful in formulating contingency planning, but also can point out areas which needs improvements.

## 2. POLISH-CHINESE INTERNATIONAL TRADE

Trade between Poland and China is still blooming, however is highly imbalanced. (Figure 1) In 2019 the volume of trade in goods increased by over 13 percent and reached UDS 32.7 billion, which constitutes 5.5 percent of Polish GDP. (Statistical Publishing Establishment, 2020). Imports from China were responsible for most of the trade, and, generally for every dollar of exports to China there was 7 dollars paid for goods imported from China. As a result of this disproportion, Poland regularly records the largest bilateral deficit in trade with China. According to the data of the Chinese customs officers, it amounted to a record 19.9 billion dollars last year (Kalwasiński, 2020). Imports from China to Poland have grown rapidly in recent years. In 2005, China was fifth among importers to Poland and sold goods for USD 5.5 billion (Statistical Publishing Establishment, 2006). In 2010, the import amounted to USD 16.7 billion, and China was in the third position among the largest importers to Poland (Statistical Publishing Establishment, 2011). In 2019 China climbed to second position, right after import from Germany, being responsible for 12.4% of Polish imports (Statistical Publishing Establishment, 2020). To a large extent, Poland imports capital goods from China. In the Polish economy about 60 percent of goods imported from China are consumed directly, and 40 percent are used by Polish companies in production processes. Potential huge constraints in trade with China due to coronavirus would therefore deprive Polish companies of both: final products for sale (impact mainly on trade) and input to production (impact on the manufacturing sector).

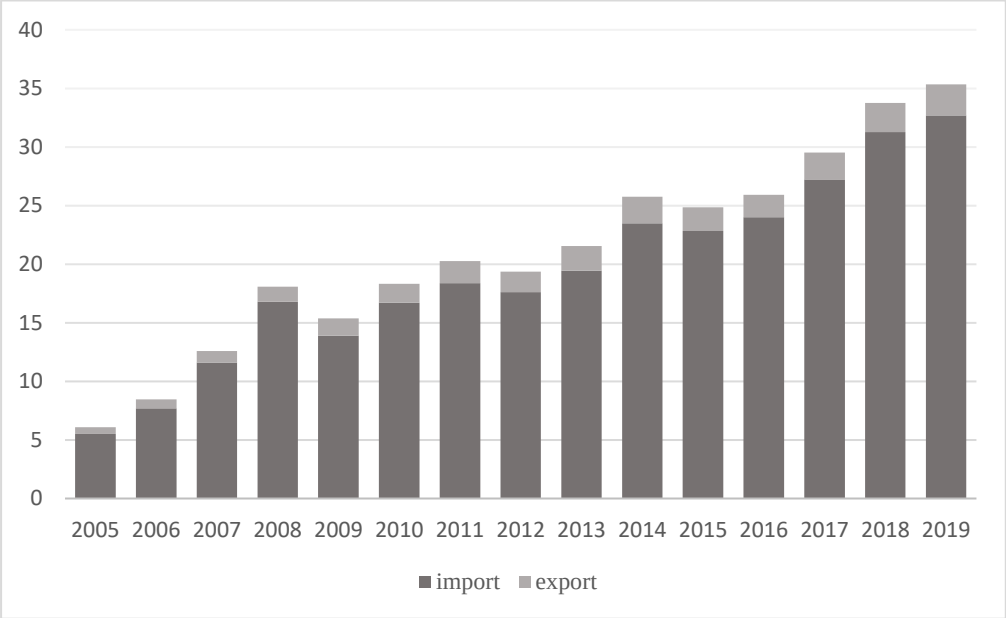



*Figure 1: International trade between Poland and China in 2005-2019*
*Source: Yearbook of Foreign Trade Statistics of Poland, issues from 2006 to 2020*

## 3. RIPPLE EFFECTS OF PANDEMIC ON MARITIME CONTAINTERIZED TRANSPORT

Such a significant share of China in Polish foreign trade made the turbulences related to the outbreak of the epidemic in China very noticeable on the Polish market. The lockdown in China had a ripple effect on the entire SC management, as disruption in one part of the supply chain causes a bottleneck and will trigger disruption elsewhere (Ivanov et.al., 2019).

A lot of disruption generated by lockdown measures affected maritime containerized transport. First, the coronavirus outbreak has severely impacted some of the Chinese ports like Shanghai, Ningbo, Xingang, Shenzhen or Yantian (Kelly, 2020), belonging to the top 10 container ports in the world. As maritime container supply chains include physical, clerical and data entry processes, the human element is still crucial in performing those chains. Also, physical cargo packing operations and cargo consolidations inherently involve human interaction. The obligatory quarantine for people resulted in, among others: (Klopott, 2020)

- the scarcity of terminal, clerical and port workers,
- changes in terminal work organization,
- the slowdown in the clearance of exports and imports,
- deferring or delaying receipt of containers after clearance by some consignees,
- delaying in cargo consolidations and delivering LCL containers to the port of loading
- the shortage of truck drivers.

All these, together with restricted access to roads and enormous backups at storage facilities were among factors that triggered huge congestions in Chinese container ports. This, in turn, triggered a certain decision of shipping lines, that had acute effects on the performance of FF and their clients. Ocean carriers addressed the port congestion problem in a similar way by:

- diverting the cargo to a different port or even ship it back to the port of loading,
- discharging a container at an intermediate or alternative port without the consent of the merchant, where the goods could be stored ashore or afloat until it is possible to forward them to the designated port of discharge (such a right is given by a Bill of Lading)
- introducing a really high Port Congestion Surcharge (PCS) per every container as an additional fee to the basic freight rate.

Port congestions, however, have not been the only gripe of freight forwarders, as at the same time many shipping lines announced changes in their liner schedules and services connecting China with other major seaports in Europe. Simply, they introduced so called blank sailings (void sailings) that usually refers to a sailing bypassing one or more specific ports on the route, and/or reduction of the number of vessels on the routes, and/or skipping one particular voyage of one vessel. According to data provided by Ocean Insights (2020) the number of blank sailing announcements between mid-March until the end of April 2020 reached as much as 386. In numbers, these cancellations in the trans-Pacific routes amounted to the equivalent of 198,500 TEUs, and to 151,000 TEUs between Europe and Asia. (Moss, 2020) Moreover, ocean lines have also started to adjust the vessels' capacity i.e. they started to substitute container vessels of huge capacity (about 18-24 thousands of TEUs) with those of two or three times smaller capacity (Klopott, 2020). Freight forwarders were among many parties in supply chains grappling with these logistical disturbances. As their role is to facilitate the movements of goods worldwide, they are generally used to work in uncertain environment. However, this pandemic brought unseen turbulences to their everyday work, and consequently to their customers' businesses, especially those involved in Polish- Chinese bilateral trade.

## 4. RESEARCH FINDINGS AND DISCUSSION

In order to achieve the goal stated in the introduction, a survey questionnaire was distributed among the freight forwarders located in Pomeranian district, Poland. The questionnaire was sent via the LinkedIn platform in order to obtain a higher response rate and was available from 20 to 30 of August 2020. For the same reason, the number of questions was limited to six, and there was a place for commentary in each question. Two question (5 and 6) remained open-ended. 67 freight forwarders responded to the survey (i.e. about 69% of those located in Pomerania), most of which come from the port cities of Gdynia and Gdansk (80%).

All respondents admitted that their business portfolio includes customers who trade with China. However, the freight forwarding service of these clients accounts for a diversified share in the overall turnover of the company. The number of respondents whose business mostly rely on handling imports and exports from/to China accounts for slightly more than 60%. Only for10% of companies this kind of activity is not significant. (Figure 2) Majority of the freight forwarders (49) mainly serve the imports.

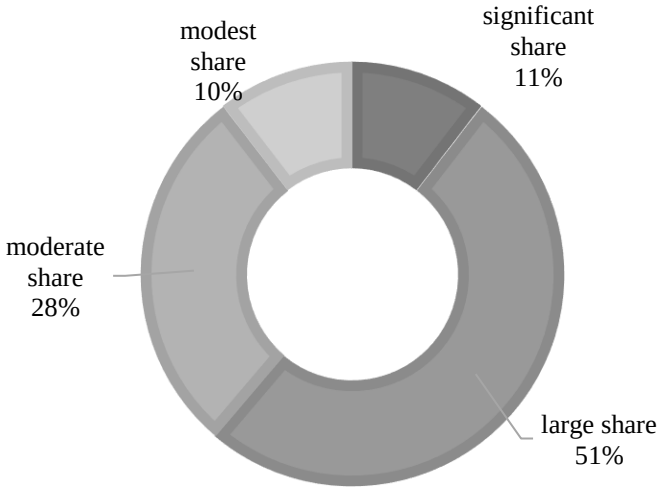



*Figure 2: The share of import/exports freight forwarding from/to China in the overall business activity of respondents*
*Source: own elaboration*

Majority of survey takers (65%) admitted that their operations had been severely or significantly affected. 35% of them have been moderately or slightly affected. (Figure 3) The level of disruptions in freight forwarding business caused by the COVID-19 pandemic was not heterogenous, and, generally, the greater the share of customers involved in trade with China, the more noticeable and severe was the impact on freight forwarder performance.

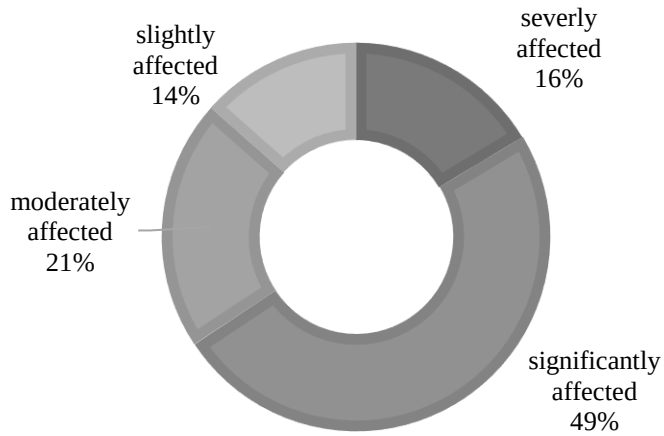



*Figure 3: The extent to which freight forwarders have been affected by the COVID-19 pandemic.*
*Source: own elaboration*

However, this does not necessarily mean that freight forwarders, whose share of clients trading with China do not constitute such a large part, experience the pandemic effect to a much lesser extent. The influence of the organization's culture, company size, turnover, the degree of connection with shipowners and other factors is not without significance here. The freight forwarders were also asked to identify those customers most affected by the transport disruptions, taking into account the type of cargo (commodity). It turned out that the most affected group of customers were those whose production is based on components from China, mainly focused on the automotive and electronic industries, as transport disruption had a ripple effects on the whole production process. Another significantly affected group of customers were those who traded food that required refrigeration and are transported in refrigerated containers. In fact, the effects of the pandemic have been more pronounced for perishable food logistics than those for dry cargo. In particular, congestion has detrimental effects on reefer operation (Manaadiar, 2020), as it leads to a massive shortage of electrical plug points in the ports to connect the reefer containers, that should be done immediately after discharge in order to safeguard uninterrupted cold chain. Unfortunately, many shipping lines were unable to discharge reefer containers at the designated ports because most reefer plugs were totally utilized. It led to potential cargo deterioration and actual losses and damages to the perishable cargo. The fourth questions in the questionnaire was open-ended. In this question freight forwarders were asked to indicate problems they faced during the pandemic. Many of the responses to this question were surprisingly long and detailed. Reading them carefully allowed the identification of the most important problems which freight forwarders encountered during the first wave of the pandemic. (Figure 4) All these troubles were among challenges that needed to be answered immediately. Although freight forwarders are used to working in turbulent and constantly changing conditions, they experienced huge operational disruptions that no one was prepared for. They admitted that they had to deal with severe disruptions in the flow of goods they had never experienced on such a scale and for so long time.

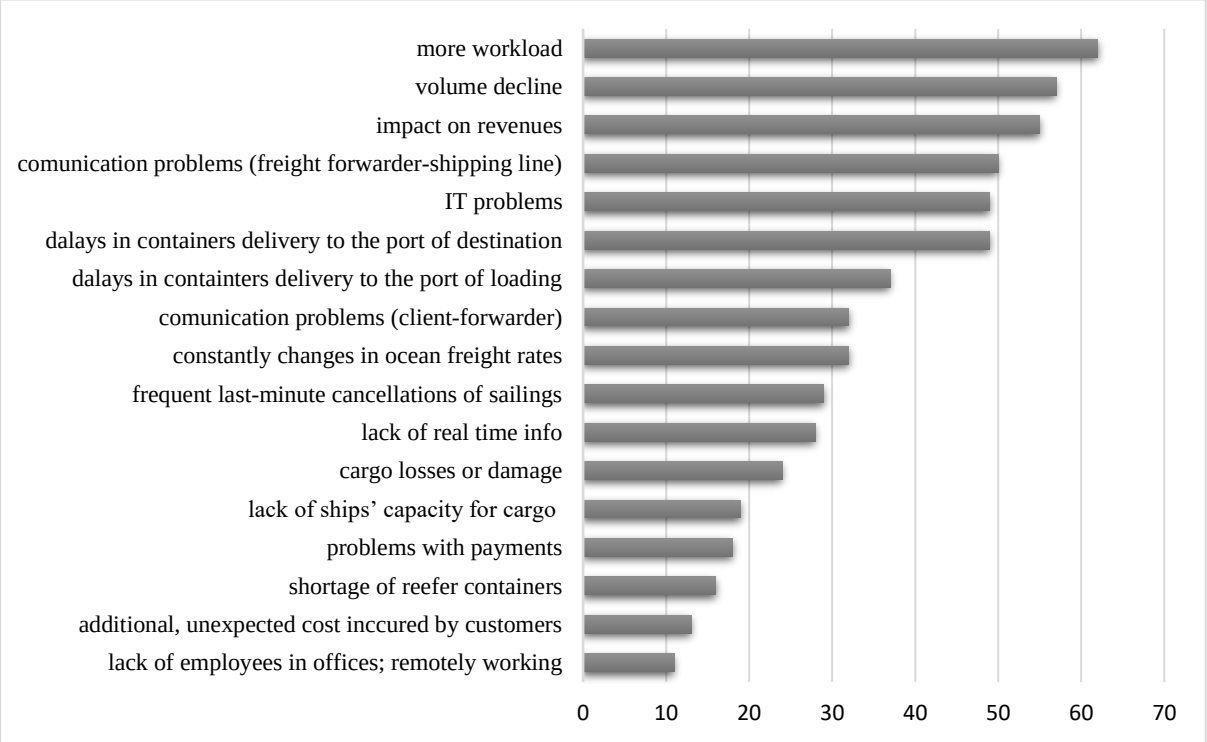



*Figure 4: Major problems encountered by freight forwarders during the outbreak of pandemic and thereafter until the mid- August 2020.*
*Source: own elaboration*

As could be expected, the most frequent problems indicated by all respondents was the decline in turnover, and thus in revenues. Almost all freight forwarders admitted that the organizational turmoil in maritime transport caused by the pandemic has become the cause of increased workload of all office workers. It was related to the requirements of customers (sometimes unrealistic) who expected a quick solution to the problem, including finding an alternative mode of transport. It was also extremely time-consuming, as they tried to keep their customers inform of all problems experienced by other stakeholders in the given supply chain, such as resellers, carriers, lines, agents and terminals. The respondents even described such days in which they needed to work up to 20 hours. Unfortunately, not all customers have shown an understanding of the problems, often due to a misunderstanding of complex organizational and legal issues in the maritime container shipping. That is why so many freight forwarders (46%) indicate communication with their customers among the main problems they encounter. The crisis has also revealed a lot of inefficiencies in communication systems between freight forwarders and ocean carriers and terminals, which only exacerbated the existing chaos. As much as 76% of freight forwarders have complained about insufficient, inconsistent and non-coherent information, as well as different and changing means of communication, even among the alliance partners. They also pointed out confusions over whether a service was blanked or suspended, and over sometimes different information, that came from alliance partners as to when a loop would be reactivated. Moreover, they indicated the lack of uniform patterns in cancellations between the alliances, that only added uncertainty to transport planning. Freight forwarders emphasized that the ability to provide real-time information to others in the supply chain has become paramount, as knowing of arrival times and container availability were more important than ever. In addition to communication problems, the respondents expressed many objections to ocean carriers. While in the initial period their decisions were understandable, as everyone was equally surprised by the sudden outbreak of the pandemic and the lockdown in China, the subsequent decisions of the shipowners raised reservations. In the opinion of respondents, shipowners used their monopoly position, ignoring the consequences of their decisions for the activities of others. They pointed out constantly changes in freight rates (the magnitude of these changes was sometimes shocking, on some Europe-Asia routes from 40 to 60 percent), frequent last-minute cancellations of sailings and lack of ships' capacity for cargo as the most frustrating decisions. As many as 74% of respondents indicated delays as one of the most acute problems. In fact, from the beginning of 2020, container operations have been dominated by delays unseen on such a scale: delays in deliveries to destination ports, delays in getting empty containers back, delays in reception of containers after clearance, delays in delivering container to the port of loading etc. In some regions and routes delays have taken as long as 3-4 weeks, and shippers had to wait for FAV (i.e. first available vessel) for weeks. These delays, on the one hand, could only be perceived as failure to meet contractual obligations (goods intended for retail sale), but on the other hand, they could have had serious consequences, such as stopping the production processes leading to significant financial losses. Moreover, such delays constituted additional risk to some cargoes as e.g. perishable food, which need refrigeration because any increase in transit time can negatively affect the quality of cargo and shorten its shelf life, leading to losses, damage and wastage. This issue was mentioned by some respondents, who indicate shortage of reefer containers (24%) as well as losses and damage to perishable cargoes as the main problem encountered during this time. The pandemic has demonstrated the need for exceptional management and contingency planning. However, all freight forwarders admitted that most of their customers were not prepared for such disruptions in the supply chains, especially since they lasted for many months. Only those who imported components from China that are necessary for further production processes had any contingency plans. Unfortunately, none of the food traders had such a plan. Freight forwarders were also asked (open ended question) about the changes that should take place to avoid or

minimise many of the problems described here in the future. All respondents agreed unanimously, that shipping needs more digitization and more online procedures. In fact, the current events associated with the coronavirus pandemic has also highlighted certain limitations in organization of containerised shipping. Apart from data entry and validation activities, despite the increasing level of digitization, the industry still relies moderately on the transferring and dealing with physical documentation. As many people during the pandemic have started working from home or were placed under mandatory quarantine, despite IT functionality, if offices remain closed for prolonged periods, the circulation of customs and transport documentation has been disrupted, leading to problems with delivering the cargo to its destination or to port of loading. About 35% of freight forwarders admitted that communication with customers should be improved. First of all, they should gather evidence that they did everything reasonable to avoid the customer's losses. They should also keep record of communications with supply chain stakeholders and contractors in order to prove that any failure to perform were caused by matters genuinely and reasonably outside its control.

## 5. CONCLUSION

The crisis caused by Covid-19 pandemic made people realized how vital the international freight services are for ensuring the continuity of supply chains. The level of disruptions in freight forwarding business caused by the COVID-19 pandemic was not heterogenous, and, generally, the greater was the share of customers involved in trade with China, the more noticeable and severe was the impact on freight forwarder performance.The research revealed that pandemic has placed unprecedented stress on the freight forwarders activity and highlights certain limitations in the containerized trade that affected their operations. Apart of the decline in turnover and thus in revenues, the inefficiencies in communication systems among freight forwarders, ocean carriers and terminals, as well as enormous delays unseen on such a scale were indicated among the most acute problems encountered by freight forwarders. The research also revealed that, in the opinion of freight forwarders, shipping needs more digitization and more online procedures, because apart from data entry and validation activities, despite the increasing level of digitization, the industry still relies moderately on the transferring and dealing with physical documentation.

## LITERATURE:

1. *How global logistics providers are managing the coronavirus crisis*. (2020) Retrieved 24.02.2020 from https://logisticsinsights.agility.com/smart-shipping/how-global-logistics-providers-are-managing-the-coronavirus-crisis/.
2. Ivanov D., Dolgui A., Sokolov B. (2019). Ripple Effect in the Supply Chain: Definitions, Frameworks and Future Research Perspectives. In Ivanov D., Dolgui A., Sokolov B. *Handbook of Ripple Effects in the Supply Chain*, Springer.
3. Kalwasiński, M. (2020). *Rekordowy deficyt w handlu z Chinami to nie problem*. Retrieved 27.08.2020 from https://www.bankier.pl/wiadomosc/Handel-Polska-Chiny-Rekordowy-deficyt-7809437.html.
4. Kelly P. (2020). Carriers fear coronavirus port congestion. *Lloyds's Loading List*. 9 April 2020. Retrieved from https://www.lloydsloadinglist.com/freight-directory/news/Carriers-fear-coronavirus-port-congestion/76349.htm#.X1Dmdy22xQI.
5. Klopott, M. (2020). *Navigating uncharted waters – the shipping sector's response to the COVID-19 pandemic and its impact on the perishable food supply chains*. Proceedings of the 36 International Business Information Management Association (IBIMA) Conference, November 2020, Granada, Spain.
6. Manaadiar,H. (2020). *Impact of Coronavirus on Reefer Containers*. Retrieved 27.02.2020 https://www.shippingandfreightresource.com/impact-of-coronavirus-on-reefer-containers/.

7. Moss J. (2020). *Coronavirus - The Insurance market impact*. Retrieved 24.03.2020 from https://dwfgroup.com/es-es/news%20and%20insights/press%20releases/2020/2/coronavirus%20the%20insurance%20market%20impact
8. Neame, C. (2020). *The coronavirus and freight forwarding*. Retrieved 16.06.2020 from https://www.hfw.com/The-coronavirus-and-freight-forwarding-March-2020.
9. Ocean Insights. (2020). *Blank sailings due to COVID-19 outbreak*. Retrieved 18.08.2020 from https://mailchi.mp/ocean-insights.com/blank-sailing-updates.
10. OECD (2020). *OECD Policy Responses to Coronavirus (COVID-19). Food Supply Chains and COVID-19: Impacts and Policy Lessons*, OECD. Geneva.
11. *Yearbook of Foreign Trade Statistics of Poland* (issues from 2006 to 2020), Statistical Publishing Establishment, Warsaw, Poland.

# HUMAN CAPITAL ASSESSMENT WITH IMPORTANCE AND SATISFACTION WITH DIFFERENT SPHERES

**Maria Volkova**
*Central Economics and Mathematics Institute of Russian Academy of Sciences, Moscow, Russia,*
*Plekhanov Russian University of Economics, Moscow, Russia*
*frauwulf@gmail.com*

**Maksim Rybachuk**
*Central Economics and Mathematics Institute of Russian Academy of Sciences, Moscow, Russia*
*m.ribachuk@gmail.com*

***ABSTRACT***
*The criteria of satisfaction and importance of nineteen categories covering most aspects of human capital in fifteen municipalities of Perm region of Russian Federation are evaluated. Methodology of calculation of satisfaction criteria of various life aspects is based their importance. A method of assessing the combined subjective indicator of human capital in the form of a geometric mean of importance and satisfaction ratings is proposed. The method was tested on the questionnaire data of a sociological survey of the population of the Perm region. The questionnaire is designed in such a way that respondents could choose any number of questions when assessing satisfaction with the categories, and when assessing their importance, the number of questions is limited to five, which allows to determine the most important aspects of human capital development and circumstances for its development. The obtained estimates were used to determine the values of three enlarged categories of human capital: Personal Potential, Material Well-being and Social Well-being. The aggregate indicator was calculated. The greatest contribution to the formation of the aggregate indicator is made by personal potential (first, health and education) and social well-being (in particular, respect for the human rights and the level of personal security). The results reflect a mismatch in importance and satisfaction estimates for a few main parameters. Of all the proposed categories, respondents are satisfied with their relationships with relatives to the maximum extent, and with their careers to the minimum. Health and income are the most important. Least important are relationships with colleagues. Almost all the key features are skewed: low satisfaction combined with high importance of the feature.*
***Keywords:*** *Quality of Life, Welfare, Social Sphere, Population, Satisfaction, Importance*

## 1. INTRODUCTION

The problem of assessing human capital from the standpoint of satisfaction and the importance of individual areas is considered. Synthetic categories of Personal Potential, Material and Social well-being were identified. A method for estimating various parameters using a geometric mean of satisfaction and importance ratings was proposed. To obtain aggregate indicator, the principal component method was used. According to Sheen and Johnson [1], the best way to assess personal human capital is to measure the range within which individuals' basic needs are met. One of the main elements of the assessment of subjective spheres of life is the concept of vital capacity. According to Alferova [2], the availability for potential realization is associated with the concept of life satisfaction. There are two ways to assess satisfaction with life. The first way – "bottom-up" is considered in [3] and characterizes the movement from physiological to complex cognitive and communication needs. The opposite "top-down" path is represented, e.g. by Johansson [4] and defines a system of basic needs inherent for all people, regardless of

nationality, cultural background, time of residence. In this paper we will consider the human capital being the part of quality of life – the complex of needs in good health, high education, good job, etc. Methodologically, the assessment of subjective spheres of quality of life in terms of satisfaction and importance analysis is represented by a wide range of studies, all of which are based on the use of different mathematical methods and models: Palomiaki [5], Rodriguez-Rosa [6], Ip Po-Keung [7], Halleröd [8], Ferrans and Powers quality of life indicator [9]. In these and other studies, the importance score is used as a multiplier for the satisfaction score in order to produce an aggregate indicator.

## 2. METHODS

Assessment of satisfaction and importance of different categories was made by dividing features into separate synthetic categories of quality of life in accordance with their meaning. Within each synthetic category (Personal Potential, Material Well-being, Social Well-being), relative importance and relative satisfaction (relative to the sum of all respondents ' answers) were calculated. Several researchers, for example, Hagell [10], claim that there is no significant difference in the estimates "satisfaction certain categories – life satisfaction and satisfaction with specific, important, categories – life satisfaction ". In our point of view, such differences exist, as will be demonstrated later.

## 3. ESTIMATION OF SATISFACTION

Let there be synthetic category *j*, which includes *p* questions-parameters. Then we assume $x_{irj}^{(l)}$, where *i* is the region number, *r* is the number of respondents, *l* is the number of questions in the category. Note that this methodology is applicable to any synthetic category with any number of questions included in it. In our case $x_{irj}^{(l)}$ is a binary variable, $x_{irj}^{(l)} = \begin{cases} 1 \\ 0 \end{cases}$, which takes a value of “1” if respondent agrees with the proposed statement (for example, "Are you satisfied with your health?"), and “0” otherwise. For further analysis, all binary variables were converted to percentages without considering respondent numbers. Namely, $\bar{x}_{i.j}^{(l)} = \frac{1}{n}\sum_{r=1}^{n} x_{irj}^{(l)} * 100\%$ – the percentage of satisfactory answers to the question *l* in the region *i* among all respondents in it. Satisfaction level indicator for each synthetic category *j* in the region *i*: $\tilde{X}_{i.j} = \frac{1}{np}\sum_{l=1}^{p}\sum_{r=1}^{n} x_{irj}^{(l)}$.

Thus, for a fixed synthetic category: $\tilde{X}_i = \frac{1}{np}\sum_{l=1}^{p}\sum_{r=1}^{n} x_{irj}^{(l)}$.

## 4. ESTIMATION OF IMPORTANCE

By analogy with the calculation of satisfaction indicators, $v_{irj}^{(l)}$ – the initial form of data on the importance of certain features, indices *i*, *r*, *l* and *j* are the same for both cases. Just as in the case of satisfaction assessment, $v_{irj}^{(l)} = \begin{cases} 1 \\ 0 \end{cases}$, where $v_{irj}^{(l)}$ takes the value "1 "if the answer is "Yes" to the proposed question, and "0" - otherwise. The percentage of affirmative answers in the total answers for the *i*-th region: $\bar{v}_{i.j}^{(l)} = \frac{1}{n}\sum_{r=1}^{n} v_{irj}^{(l)} * 100\%$. Hence, the indicator of the level of importance of the *j*-th synthetic category in the *i*-th region: $\tilde{X}_{i.j} = \frac{1}{np}\sum_{l=1}^{p}\sum_{r=1}^{n} x_{irj}^{(l)}$.

Like satisfaction assessment: for each synthetic category, the following is true: $\tilde{X}_i = \frac{1}{np}\sum_{l=1}^{p}\sum_{r=1}^{n} x_{irj}^{(l)}$.

The aggregate indicator of *j*-th synthetic category is calculated as the geometric mean of two indicators (satisfaction and importance): $\tilde{Z}_i = \sqrt{\tilde{X}_i * \tilde{V}_i}$.

The procedure for calculating the aggregate indicator of Quality of Life ($Q_i$) is made in accordance to Aivazian [11]: $Q_i = N - \rho_i$, where $\rho_i^2 = \sum_{j=1}^{3} \alpha^{(j)} * (\tilde{Z}_i^{(j)} - N)^2$ – weighted Euclidean distance to the "ideal" point (*N*, *N*) calculated with the weight coefficient of each *j*-th synthetic category ($j = 1, 2, 3$): $\alpha^{(j)} = \frac{s_j^2}{\sum_{j=1}^{3} s_j^2}$. Weight coefficient is calculated in proportion to the sample variance $s_{(j)}^2 = \frac{1}{n}\sum_{i=1}^{n}(\tilde{Z}_i^{(j)} - \bar{Z}^{(j)})^2$. The average for all regions value of the integral indicator of each *j* synthetic category is determined as: $\bar{Z}^{(j)} = \frac{1}{n}\sum_{i=1}^{n} \bar{Z}^{(j)}$.

## 5. RESULTS

### 5.1. Personal Potential (PP)

Personal potential is distinguished from the concept of adaptation. So, Konovalova [12] associates personal and adaptive potential of the person, reducing them to possibilities of mental adaptation in society. Posokhova [13] equates personal potential to adaptive abilities of a person and includes bioplastic, biographical, psychic and personality-regulatory components.

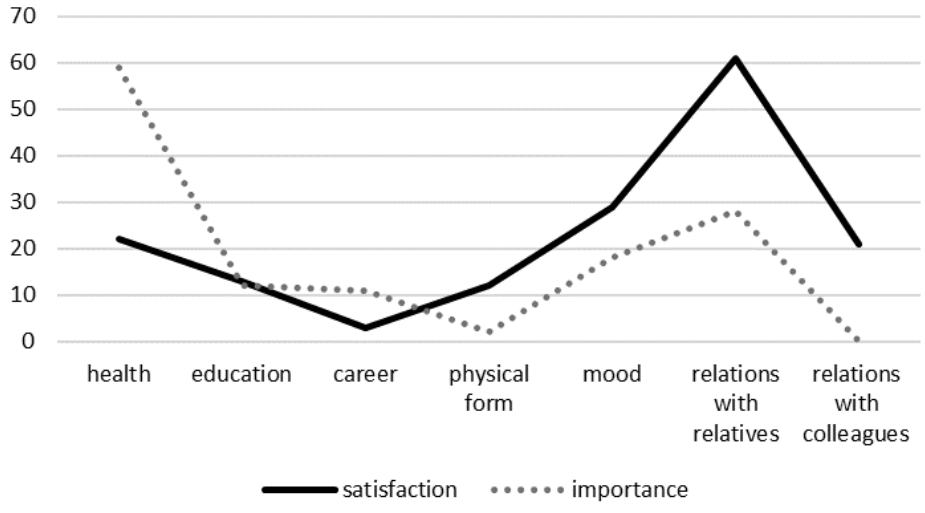
From the available set of features, received as the result of sociological survey, those that most characterize the personal and adaptive potentials are identified:

*l (1)* – health;
*l (2)* – education;
*l (3)* – career;
*l (4)* – physical form;
*l (5)* – mood;
*l (6)* – relationships with loved ones, in the family;
*l (7)* – relations with colleagues.

Here and later *l* is the number of question-category.

Diagram of importance and satisfaction level for components of Personal potential category – on picture 1.

*Figure 1: Satisfaction with categories of Personal Potential and their importance*



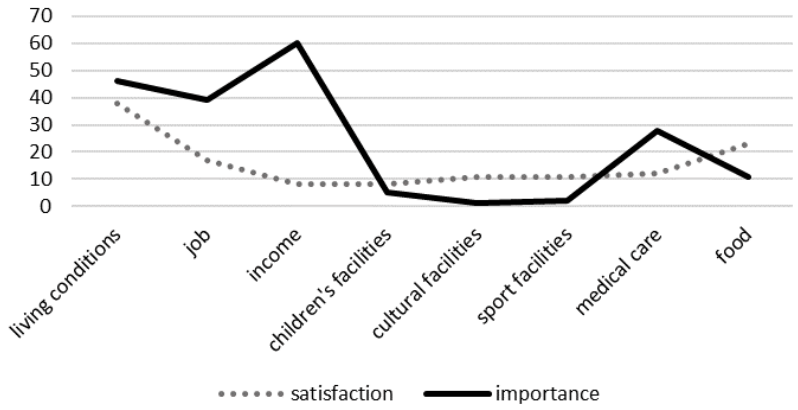
The population of mostly satisfied with relations with relatives to the maximum extent, with their career to the minimum. Residents of all considered settlements are low satisfied with the level of their health (for 24% of respondents on average). At the same time, health is the most important aspect of all considered (for 59% of respondents on average). In General, such estimates are quite true. From the point of view of the psychological aspect of the quality of life of the population, the researchers are interested in behavioral criteria, namely, the assessment of mood, relationships within the family. In most cases, there is a significant discrepancy in the assessments of importance and satisfaction with mood. An interesting fact is that there is almost no statistical relationship between the two variables ($r_{(\bar{x}^{(5)},\bar{v}^{(5)})} = 0.023$). This, in our opinion, indicates that the importance of good mood is not noticed by people if it (good mood) presents. The value of the pair correlation coefficient between variables $\bar{x}^{(6)}$ и $\bar{v}^{(6)}$ (satisfaction and importance of family relationships) ($r_{(\bar{x}^{(6)},\bar{v}^{(6)})} = 0.57$). On average, 61% of respondents are satisfied with relations within the family, but they are important only for 26% of respondents. Good family relationships are a valuable attribute of an individual's life, but only if they can be considered good. According to the proposed methodology, the following criteria were calculated: satisfaction, importance, as well as a summary indicator of personal potential $\tilde{Z}_i = \sqrt{\tilde{X}_i * \tilde{V}_i}$ . A higher degree of satisfaction with all the features that are part of the considered synthetic category provides a high rank of the municipality according to the summary indicator "Personal potential".

**5.2. Material well-being (WB)**

In the context of subjective evaluations, the following criteria were considered:
*l (8)* – living conditions;
*l (9)* – job;
*l (10)* – income;
*l (11)* – availability of children's educational and developmental facilities;
*l (12)* – availability of cultural and leisure facilities;
*l (13)* – availability of sports facilities;
*l (14)* – medical care;
*l (15)* – food.

There are two groups of features. The first is characterized by the excess of satisfaction over importance (provision of children's educational, cultural, sports institutions, as well as food). For the second – the excess of importance over satisfaction. In the second group-the key factors of material well-being: housing, health care, job and income – figure 2.

*Figure 2: Satisfaction with categories of Material wellbeing and their importance*



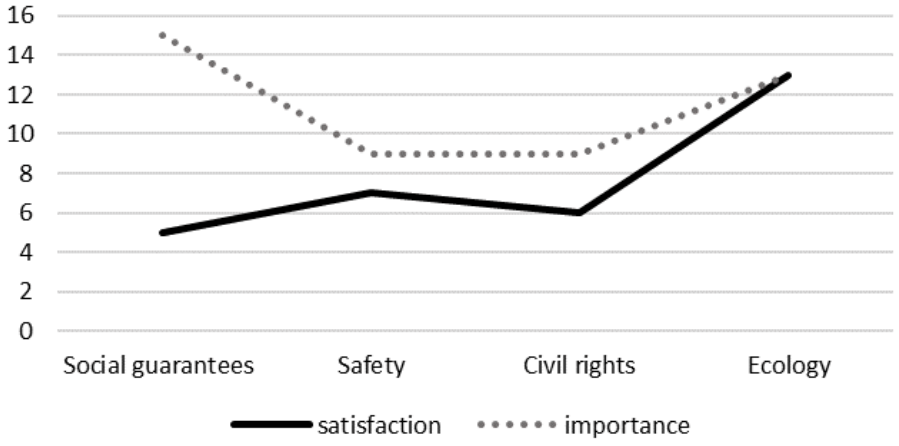
The negative value of the pair correlation coefficient between the two parameters indicates a decrease in the significance (importance) of living conditions with an increase in satisfaction with them. In General, household infrastructure in observed settlements is poorly developed, although the implementation of a number of state and regional programs aimed at improving the infrastructure development of the region as a whole, a number of areas have undergone positive changes. Income for respondents is less important than work. At the same time, several settlements are characterized by a certain discrepancy in the sphere of material security.

### 5.3. Social wellbeing and security

We considered social well-being as one of the key factors of quality of life. The analysis was carried out from the standpoint of evaluation criteria:
*l (16)* – social guarantees;
*l (17)* – personal safety;
*l (18)* – respect for civil rights;
*l (19)* – state of the environment.

When considering the indicators averaged over all settlements, two are of the greatest importance: the level of implementation of social guarantees and the quality of the environment. The low importance of the level of personal security at a very low level of satisfaction with the category – in some ways a mystery. The only category for which there is a common assessment of the quality of the environment (figure 3).

*Figure 3: Satisfaction with categories of Social Wellbeing and Security and their importance*




The indifference of the population to the estimates or to their own safety – what do we rather face when analyzing the available data? The high importance of security of life and property is explained, in our opinion, by the same factors as the importance of the implementation of social guarantees.

### 5.4. Integral indicator of quality of life (IQOL)

For all parameters values of nonparametric U Mann-Whitney criterion were calculated [14], revealing statistically significant differences in satisfaction and importance classes $U = n_1 * n_2 + \frac{n_1(n_1+1)}{2} - R_1$ or $U = n_1 * n_2 + \frac{n_2(n_2+1)}{2} - R_2$, where $n_1$ – number of elements in the first sample and $n_2$ – the number of elements in the second sample. Sample $n_1$ is verifiable, analyzed, and $n_2$ – modified. Scores are ranked in descending order in each sample. $R_1$ – sum of sample ranks by volume $n_1$, and $R_2$ – the sum of ranks of sample volume $n_2$.

In assessing the independence between two samples using the Mann-Whitney test, the null hypothesis $H_0$ is put forward: there is no difference between the medians of the two samples under consideration. Alternative hypothesis $H_1$: there is a difference between medians. We combined two samples: satisfaction and the importance of each criterion of quality of life. Thus, nineteen estimates of the criterion and significance levels were obtained (table 1). Returning to the notation adopted in the methodology for calculating the U-test, we introduce: $n_1$ - a combined sample of estimates calculated by formulas: $\bar{x}_{i.j}^{(l)} = \frac{1}{n}\sum_{r=1}^{n} x_{irj}^{(l)} * 100\%$ – for satisfaction and $\bar{v}_{i.j}^{(l)} = \frac{1}{n}\sum_{r=1}^{n} v_{irj}^{(l)} * 100\%$ – for importance. But $n_2$ is a sample in which variables are set to "1" for satisfaction and " 2 " for importance. The assessment was conducted for the significance level $\alpha = 0.05$.

*Table 1: Mann-Whitney criterion calculation Results*

| | Median | | U- criteria and significance | |
|---|---|---|---|---|
| | Satisfaction (medium value) | Importance (medium value) | Mann-Whitney criterion | Sig. level (p) |
| Health | 24.165 (9.03) | 58.904 (23.97) | 247.5 | 0.000* |
| Education | 14.495 (18.25) | 12.070 (14.75) | 100 | 0.290 |
| Career | 3.194 (11.69) | 11.891 (21.31) | 205 | 0.030* |
| Physical form | 12.863 (22.28) | 2.472 (10.72) | 35.5 | 0.000* |
| Mood | 28.443 (21.16) | 16.374 (11.84) | 53.5 | 0.005* |
| Relations with relatives | 61.758 (23.06) | 26.121 (9.94) | 23 | 0.000* |
| Relations with colleagues | 21.805 (24.5) | 1.142 (8.5) | 0 | 0.000* |
| Living conditions | 36.947 (13.81) | 45.984 (19.19) | 171 | 0.105 |
| Job | 16.635 (9.84) | 38.176 (23.16) | 234.5 | 0.000* |
| Income | 6.829 (8.50) | 59.360 (24.50) | 256 | 0.000* |
| Children's educational institutions | 7.856 (19.44) | 4.450 (13.56) | 81 | 0.072 |
| Cultural institutions | 11.089 (21.81) | 1.693 (11.19) | 43 | 0.001* |
| Sport institutions | 11.317 (21.88) | 1.062 (11.12) | 42 | 0.001* |
| Medical service | 12.004 (10.03) | 27.688 (22.97) | 231.5 | 0.000* |
| Food | 25.070 (21.84) | 11.409 (11.16) | 42.5 | 0.001* |
| Social guaranties | 5.027 (12.62) | 11.682 (20.38) | 190 | 0.019* |
| Safety | 7.468 (17.56) | 7.324 (15.44) | 111 | 0.517 |
| Human rights | 5.987 (16.50) | 7.067 (16.50) | 128 | 1.000 |
| Ecology | 16.875 (17.75) | 12.816 (15.25) | 108 | 0.449 |

** Differences are statistically significant* $(p \le 0.05)$.

There were no statistically significant differences between satisfaction and importance for several criteria. Among them: education, housing, children's educational institutions, security, rights and ecology. Note that all these criteria are characterized by differences in average ranks, average values and median satisfaction and importance. The parameter of respect for the rights of individuals stands out most clearly. Calculation of values of the integral QOL indicator is based on the methodology offered in Ayvazyan S. A. [11] consisting in determination of Euclidean distance to a reference point taking into account weight $\alpha^{(j)} = \frac{s_j^2}{\sum_{j=1}^{3} s_j^2}$ of each synthetic category in the final indicator. The weights of categories are provided in the Table 5.

*Table 2: Normalized weights of synthetic categories*

| Synthetic category, $\boldsymbol{j = 1, 2, 3}$ | Weight ($\boldsymbol{\alpha^{(j)}, j = 1, 2, 3}$) |
|---|---|
| j=1 Personal potentional | 0.377 |
| j=2 Material wellbeing | 0.244 |
| j=3 Social wellbeing and security | 0.379 |

## 6. CONCLUSION

The human capital of population is formed largely due to intangible quality of life components: the psychological climate in the family, at work, assessment of health, education, mood. In addition, criteria for assessing the quality of work of social protection and security agencies make a significant contribution to the quality of life. Indicators of material security (contrary to expectations) affect the formation of the quality of life to a lesser extent. The obtained results illustrate the possible activities of local and regional governments. And, if it is impossible to influence directly the assessment of the psychological component, the indirect influence is quite feasible.

***ACKNOWLEDGEMENT:*** *Russian Foundation for Basic Research. Project 19-29-07488.*

## LITERATURE:

1. Shin, D.C. & Johnson, D.M. *Social Indicators Research*, 1978, vol.5, pp. 475-492. doi: 10.1007/BF00352944.
2. Alferova M.N. [About possible way to develop regional conception and program of Quality of Life improvement]. *Technologii kachestva jizni = Quality of Life Technologies*, 2002, vol. 2., no 2, pp. 1-10 (in Russ.).
3. Loewe N., M. Bagherzadeh, L. Araya-Casillo, C. Thieme, J.M. Batista-Foguet. Life Domain Satisfactions as Predictors of overall life satisfaction among workers: evidence from Chile. *Social Indicators Research*, 2014, vol. 118, pp. 71-86. doi: 10.1007/s11205-013-0408-6.
4. Johansson Sten. Conceptualizing and measuring Quality of Life for National Policy, *Social Indicators Research*, 2002, vol. 58, pp. 13-32. doi: 10.1007/0-306-47513-8_2.
5. Palomaki L.-M. Reference Groups and Pensioners' Subjective Economic Well-Being in Europe. *Social Indicators Research*, 2017, vol. 131, pp. 509-525. Doi 10.1007/s11205-016-1262-0.
6. Rodriguez-Rosa M. Are Social, Economic and Environmental Well-Being Equally Important in all Countries Around the World? A Study by Income Levels. *Social Indicators Research*, 2017, vol. 131, pp. 543-565. Doi 10.1007/s11205-016-1257-x.
7. Ip Po-Keung. A Tale of Three Chinese Societies: The Quality of Life and Well-Being of Chinese People in a Changing World. *Social Indicators Research*, 2014, vol. 117, pp. 665-671. Doi 10.1007/s11205-013-0400-1.
8. Halleröd B. The Multi-dimensional Characteristics of Wellbeing: How Different Aspects of Wellbeing Interact and Do Not Interact with Each Other. *Social Indicators Research*, 2013, vol. 113, pp. 807-825. Doi 10.1007/s11205-012-0115-8.
9. Ferrans, C. and Powers, M., Quality of life index: Development and Psychometric properties. *Advances in Nursing Science*, 1985, vol. 8, pp. 15-24.
10. Hagell P. and Albert Westergren. The significance of importance: an evaluation of Ferans & Powers' quality of life index. *Quality of life research*, 2006, vol.15, pp. 867-876. doi:10.1007/s11136-005-5467-y.
11. Aivazian S.A. *Analiz kachestva I obraza jizni naseleniya* [Analysis of Quality of Life of population]. M., Nauka, 2012. 432 p.

12. Konovalova N.L. *Preduprejdenie narusheniy v razvitii lichnosti pri psihologicheskom soprovojdenii shkolnikov: monographiya* [Prevention of violations in the development of personality in the psychological accompaniment of schoolchildren: a monograph]. Spb., SpbSU, 2000. 232 p.
13. Posochova S.T. *Psichologiya adaptiruyusheisya lichnosti: monographiya* [Psychology of the Adaptive Personality: a monograph]. Spb., SpbSU, 2001. 393 p.
14. Mann H. B., Whitney D. R. On a test of whether one of two random variables is stochastically larger than the other. *Annals of Mathematical Statistics*, 1947, № 18, pp. 50-60. doi:10.1214/aoms/1177730491.

# EXPERIENCE IN ORGANIZING DISTANCE LEARNING IN LOCKDOWN

**Marina Bareicheva**
*Ural Federal University (UrFU), Ekaterinburg, Russia*
*bareicheva.m@yandex.ru*

**Ekaterina Kubina**
*Ural Federal University (UrFU), Ekaterinburg, Russia*
*Akula1002@mail.ru*

**Viola Larionova**
*Ural Federal University (UrFU), Ekaterinburg, Russia*
*v.a.larionova@urfu.ru*

**Natalia Stepanova**
*Ural Federal University (UrFU), Ekaterinburg, Russia*
*n.r.stepanova@urfu.ru*

**Ken Brown**
*Letterkenny Institute of Technology, Letterkenny, Ireland*
*ken.brown@lyit.ie*

***ABSTRACT***
*Due to the fact of coronavirus infection (COVID-19), higher education institutions in the spring of 2020 were urgently forced to switch to a distance-learning format. An important role was played by informing all participants about the transition in a short time using messengers and other Internet resources. During the transition, special support services were created to assist the teaching staff. Some universities have taken advantage of their educational platforms, while others have been forced to seek help. The main issue was to coordinate the work of thousands of people online in a short time. The authors of the study conducted in-depth interviews with teachers of the Ural Federal University (Russia) in various fields of training to improve planning, organization, and management during the transition to distance education. The main problems of distance learning in Russia were identified and possible solutions were proposed. Using the experience gained from conducting classes in a mass distance format, the authors of the article structured directions for improving the quality of distance learning in a short time. The results were proposed to the University administration for implementation in the University educational environment and successfully implemented at the Ural Federal University in the future. We have accumulated a lot of experience working with various tools for working in an online environment – social networks, messengers, applications, and online platforms. The presented research will also be interesting for representatives of different universities to integrate the solutions obtained into the existing learning model. This practice can be useful for those who want to get up-to-date knowledge remotely, without losing the quality of training.*
***Keywords:*** *Distance education, experience, in-depth interviews, teachers*

## 1. INTRODUCTION

To date, the COVID-19 pandemic has become the most pressing issue for discussion in the world. There are three views on the current crisis for higher education around the world. One of them is a quick transition to distance learning. Here, views were divided into skeptical and optimistic.

All training events, including graduation and admissions companies, were moved to an online format. Most universities had to adapt quickly to the transition to distance learning. So they were forced to create electronic databases with educational and methodological materials almost from scratch. Further, the administration had to help teachers and students if there were difficulties with switching to online training. Another view describes the current situation as an impetus to the development of the modern education system. The crisis clearly showed that universities were not prepared enough for it, despite their historical resilience. Educational institutions in their practice do not use the analysis of the scenario of world shocks. The latter view describes that any crisis reveals weaknesses. In the higher education system, there is a clear differentiation among the funding of different universities. The pandemic has shown who does not have enough funds, who did not create a safety cushion to provide for their teachers and students (Melnik, 2020; HSE, 2020; Interfax, 2020).

## 2. AN OVERVIEW OF THE SOURCES AND THE PROBLEM STATEMENT

Against the background of the current situation in the world, all universities were forced to switch to distance learning. Each of them faced certain problems when switching to distance learning and developed their ways to solve them. First, let's look at the experience of foreign universities (Pop, 2020; Seale, 2020).

### 2.1. Financing

So at the University of London, SOAS had to take drastic measures to reduce jobs. This decision was caused by problems with funding, which weakened due to the crisis during the coronavirus infection. The University of Auckland (New Zealand) has a similar situation. However, the decision made by the management looked more critical. They sent out e-mails notifying that the staff of the "New Start General" program (additional training course for specialists) have a limited choice (a modest choice). They can either work for free in the second half of 2020 or retire (Collins, 2020; McKie, 2020). Undoubtedly, the resulting crisis in University funding will lead to higher education institutions to significantly lower enrollment figures for the coming year. This is due to a reduction in University revenues from all sources, as well as the risk of staff cuts. However, a reduction in spending on the part of higher education institutions can not be expected due to the long-term obligations of higher education Institutions to business (HSE Institute of education, 2020). In other words, funding has decreased, but the cost of implementing educational programs has remained unchanged.

### 2.2. Tight deadlines for switching to online

Employees of Guildford technical College (England) were forced to implement tools for communication between teachers and students in a few days. While initially, we planned to allocate 90-120 days for this. The Microsoft Teams program was chosen for communication. This app has become a link between all departments and staff of the College (Msgeek, 2020).
In Russia, the first University to switch to online education was Moscow State University (MSU). He set an example and proved that the transition to online training can be carried out in a short time. The development of the distance learning format continues to this day (How to read the media? 2020). In the context of the coronavirus, Rostov State University of Economics (Russia) completely switched the educational process to online in just two days. We used a combination of strict centralization with free, creative solutions to narrow problems. The main goal was to maintain control over the assimilation of the curriculum. Moodle has become the basis of the entire online learning system. This is where the main digital footprint of the educational process is collected. The collected database of tasks is analyzed and evaluated in the University's data center using AI technologies (MEL Edition, 2020).

In other words, some universities have met the intensive deadlines for switching to online education. This was due to a clear organization and administration. In others, there were significant difficulties.

### 2.3. Monitoring the learning process

A topical issue was the topic of who is in the ring in remote mode. So at Vyatka State University (Russia) passed the first remote protection of final qualifying works of students. The basic protection scheme has not changed. The main feature is the use of online proctoring. A similar practice is implemented at Tambov State University named after G. R. Derzhavin (Russia) (Klyagin, Makarieva, 2020). In connection with the transition to distance learning, the Ministry of science and higher education of Russia regularly began to conduct inspections to monitor the situation on the ground. Teachers should also send weekly reports to Vice-rectors on academic work (Filippova, 2020). The control over the implementation of the training process was carried out using the proctoring system. But in some places, the number of students increased, and the quality of training was not the best.

## 3. RESEARCH QUESTION

The main topics for discussion and study were the following questions:

- How much distance education meets the requirements of the online learning format;
- Are you satisfied with the quality of feedback from students;
- What information support is formed at the university level;
- What methods of transmitting information and communicating with students do you use?

The aim of the study was to study models of transition to distance learning in a short time in order to identify algorithms for working in the new conditions of teachers.
Tasks:

1) Study previously conducted research in the area of interest to us;
2) Structure the acquired knowledge;
3) Conduct in-depth interviews with the teaching staff of Ural Federal University (Russia);
4) Give practical recommendations for teachers ' work in an online format;
5) Analyze the data obtained, identify problems of online education for teachers, and suggest ways to solve them;
6) Make General conclusions and recommendations.

The subject of the study was the study of the organization and planning of distance learning as a model for working in a pandemic. Conducted in-depth interviews with University teachers, showed their view of distance learning. The object of research is distance learning in higher education institutions. A novelty in the multi-aspect analysis and synthesis of the best practices of distance learning for teachers and replication of techniques for working online. Research methods include in-depth interviews, analysis, structuring, generalization, and Object modeling.

### 3.1. Conducted in-depth interviews (based on the Ural Federal University)

The authors of the article conducted several in-depth interviews with teachers of the Ural Federal University (UrFU). The authors interviewed 10 groups of UrFU teachers from 13 institutes. The responses received were analyzed and structured as the following conclusions:

- The first question of the in-depth interview was: "How did the University facilitate the transition of teachers to distance learning?".
- Each teacher was assigned three employees from the University's technical support Department;

- Several online sessions were held for UrFU teachers to learn how to work on available platforms. They could also ask questions. All online broadcasts were recorded and posted on the Internet as online lessons;
- To keep in touch with students, teachers were helped by University resources, such as Moodle and hypermethod;
- Online courses, live broadcasts from classrooms, electronic resources (video lectures, electronic textbooks, webinars via Skype, Zoom, Teams, Google G Suite, interaction via social networks and messengers, as well as via email) have become forms of distance learning at the University.

The second question was about the most popular forms of communication with students. Each teacher prefers a particular form of communication:

- First in popularity-social networks and messengers (VK, Telegram), the next Moodle, and the Hypermetod platform. Moodle and HyperMethod exist in UrFU for quite a long time. So there are already digitized lectures and course materials, so it was enough just to update these electronic resources and transfer them to students. In this case, there was less work for teachers;
- Email is used, but not as popular and is not actively used by all students. Usually, they are responsible headmen of student groups;
- There are also alerts on the site where the teacher can send alerts to students. For example, about the beginning of a lecture or a new homework assignment. This expands the range of interaction between teachers and students.

The third question that interested the authors was the presence of certain difficulties with the implementation of certain algorithms for conducting classes, for example, the step-by-step output of formulas for disciplines or other graphical actions that need to be shown to students in real-time. Each teacher has their own approach to this problem:

- The first thing that became popular was that teachers got used to using classic information input tools (mouse, keyboard);
- To implement this feature, the teacher set up an additional video camera to record the output of formulas manually on a piece of paper;
- The use of graphic tablets is popular among young and creative teachers.

Also relevant was the fourth question, how difficult it was for teachers to switch to the remote format of work. Below are some of the difficulties they encountered:

- Many teachers have already used the remote mode system. Therefore, they are already used to organizing their work independently. The only difficulty for them was buying new equipment, such as a headset to improve the quality of communication, a graphics tablet, a printer, etc.;
- Initially, the use of many resources was limited due to the lack of a full user license. for example, in Zoom, you could only hold conferences for 40 minutes. To facilitate online lectures, the University has provided teachers with paid rates on various platforms for free use;
- One of the problems was fixing the process of independent work of students. If Moodle services recorded the activity of work, then the new platforms did not have such an opportunity. In this situation, teachers created questions for independent work that controlled the deadline, intermediate tests based on electronic platforms for almost all classes, compiled Excel tables for filling out, as well as separate questions for video conferences and for written works.

The authors of the study were also interested in the fifth question related to the emotions of teachers in connection with remote work. Opinions were divided:

- Teachers said that interaction with students has become easier. This means that students become more independent, performing individual tasks. Now there are no unscheduled consultations during the break, everything is regulated by time. Also, reports on students ' work come in ready-made and sorted form, which simplifies the process of recording results.
- However, not all teachers were prepared for such a high rate of change. Many do not feel confident when using digital technologies. Teachers over the age of 50 are a Prime example.
- The distance between teachers and students who hold conferences via image broadcasting has been significantly reduced. Teachers note that students become more involved in the discussion during the class. In addition, the home environment disposes participants to each other.

Next, the sixth question was asked about the electronic resources provided by universities for organizing distance learning. The University has an e-learning portal that has been around for several years. Teachers are already familiar with it, as many have taken advanced training courses there. In everyday academic life, the portal was also used to interact with students. For the continuous operation of the entire University, work was carried out to increase its capacity. For example, at the initial stage, a certain module was linked to an educational program. And the last, seventh question that was asked to Urfu teachers was: "what changes do you think will remain in the educational process after the pandemic?". The responses are presented in the form of the following conclusions:

- Teachers are of the opinion that a complete transition to offline mode is unlikely. Since everyone is already used to working online, many of the advantages of this format will be very difficult to refuse. Therefore, after the end of the quarantine, there will be people among teachers and students who will be more comfortable working offline, and they will be happy to return to their former life. However, there will be those who will understand that they would prefer to stay online;
- Some teachers are of the opinion that the University as an educational space will lose its relevance. The online learning environment will become so popular that it will begin to displace traditional education;
- The main aspects of the disciplines, such as lectures, can be studied online. More in-depth study of the subject, such as practice or laboratory work, should take place offline in the University. This approach will save time, both for teachers and students. Since there is no need to travel to the University and you will be able to work from any convenient place. The main thing is to have access to the Internet.

### 3.2. Practical recommendations for working remotely

The authors asked teachers to give some recommendations for improving the distance learning process. These wishes are formulated as follows:

- Do not refuse to help each other and do not be afraid to ask for it. This applies to both teachers and students. After all, helping each other in this difficult time. We will be able to achieve good result-effective training;
- You need to correctly evaluate your strength and time of students. Although you should complete the educational program in full, you should not overload students with homework. You need to understand that some things and disciplines are very difficult to master on your own;

- Teachers should not strive to master all available electronic resources. You should choose platforms that will help you implement the distance learning process as effectively as possible;
- Teachers should not forget about feedback from students. Keep in mind that not all issued tasks will be immediately understood and perfectly executed. Students may have questions as they complete assignments and teachers should provide them with contact information. As practice shows, the more effective the feedback from the teacher, the more loyal the attitude of students towards him.

### 3.3. Analysis of the obtained data and possible solutions to existing problems

Based on the results of research and in-depth interviews with the teaching staff of the Ural Federal University, the authors identified several existing problems in the field of distance learning in Russia, as well as suggested ways to solve them. One of the problems of the world's universities is insufficient funding for universities. Everyone has faced this problem, but it is especially evident in small universities. The result is a reduction in jobs. In this situation, it is necessary to correctly allocate available funds and control expenses. For example, it is possible to reduce the cost of operating and maintaining the University building and grounds. To prevent this situation from happening again in the future, reserve funds of universities should be created. This airbag will help to avoid difficulties in the period of crisis and lack of funding. Lack of personalized resources at the university to ensure online work. This led to a long transition to a distance-learning format. The authors are confident that many universities will correct this error soon and create their electronic platforms and services. Many teachers over the age of 50 noted that it is very difficult for them to adapt to working online. They are not very familiar with the computer and the capabilities of electronic resources. At the moment, they are provided with all possible support for the organization of work by the University and active students. To avoid a similar situation with younger teachers, it is suggested that information education courses be held regularly to maintain the teacher's level of qualification in the field of online systems. Many institutions have found ways to solve this problem, but it requires attention. The problem is the difficulty of recording students ' activity during distance learning. This is due to the fact that not all resources provide reporting on the time and quality of task completion. Therefore, it is difficult for the teacher to monitor the individual work of the student. At the moment, the solution can only be a competent selection of resources. In the future, it is possible to create a special Supplement for educational resources, which will facilitate the integration of the platform data and the student assessment system (Ilingin, 2020).

## 4. DISCUSSION OF RESULTS

The proposed solutions will help those who have not yet decided on how to increase the effectiveness of the distance learning process. Based on world practice, each University can apply the proposed solutions to its system. As a result of in-depth interviews, many valuable tips for teachers were revealed. They can share their experience and improve their approach to distance learning (Savitskaya, 2020). The results of our research in some aspects coincide with the conclusions of similar works. We also synthesized the best practices of distance learning and conducted a multidimensional analysis. As a result, we obtained structured techniques for teachers to work online. The transition to distance learning cannot remain without consequences for the educational system. Many authorities have expressed their views on the consequences of switching to emergency distance learning. So Simon Marginson (Oxford University) claims that it will take at least 5 years to stabilize student mobility. In his opinion, it is possible to change the learning paradigm: online education will be more viable than traditional (HSE Institute of education, 2020). Jeff Maggioncalda (Chief Executive of Coursera) speaks about the fact that there will be a large demand for blended learning.

The crisis is an analogy of "natural selection" for all universities in the world, where the strongest survive. Lawrence Bakov (President, Harvard University) also supports the idea of introducing mixed education. This will allow you to adapt online learning to the needs of the educational environment and keep students active (HSE Institute of education, 2020).

## 5. CONCLUSION

Thus, the authors of the study identified the main problems of the world education system that were formed as a result of the COVID-19 pandemic. Reviewed and analyzed in-depth interviews with teachers of one of the leading universities in Russia, which contributed to finding solutions to the identified problems. It is not known how the education system would have developed without the intervention of a period of quarantine and self-isolation. However, the authors believe that the pandemic not only highlighted the weaknesses of universities and the education system as a whole but also gave a strong impetus to development. It turned out that changes are not so terrible, but changes bring a new stage in the development of the education system.

## LITERATURE:

1. Collins, S. (2020). Covid 19 coronavirus: University of Auckland asks contract staff to work for no pay. Retrieved 15.08.2020 from https://www.nzherald.co.nz/nz/covid-19-coronavirus-university-of-auckland-asks-contract-staff-to-work-for-no-pay/HF6ULPD36YARISA6QO6CZ2I6UI/
2. Filippova, L. (2020). Russian universities are adjusting the educational process due to the coronavirus. *Perviy kanal.* Retrieved 15.08.2020 from https://www.1tv.ru/news/2020-03-25/382610-v_rossiyskih_vuzah_iz_za_koronavirusa_korrektiruyut_obrazovatelnyy_protsess
3. How to read the media? (2020). Universities go online: interview with Moscow State University teacher Ekaterina Sivakova. Retrieved 15.08.2020 from https://howtoreadmedia.ru/ru/what_is_media/read/vuzy-vykhodyat-v-onlayn-intervyu-s-prepodavatelem-mgu-ekaterinoy-sivyakovoy/
4. Ilingin, A. (2020). 6 ways for remote teachers to get closer to their students. *MEL*. Retrieved 15.08.2020 from https://mel.fm/blog/piar-sluzhba/53762-6-sposobov-kak-distantsionnomu-uchitelyu-stat-blizhe-k-uchenikam Retrieved 15.08.2020
5. Klyagin, A. V., Makarieva, A. U. (2020). Cases of rapid reactions of universities during a pandemic. *Moscow: National Research University "Higher School of Economics"*. Retrieved 15.08.2020 from https://ioe.hse.ru/sao_universitycases
6. Klyagin, A.V. et al. (2020). The storm of the first weeks: how higher education stepped into the reality of a pandemic. Modern educational analytics. *Moscow: National Research University "Higher School of Economics", Institute of Education.* No. 6 (36). pp. 29–54.
7. McKie, A. (2020). SOAS faces 'viability problems' amid pandemic crisis. Retrieved 15.08.2020 from https://www.timeshighereducation.com/news/soas-faces-viability-problems-amid-pandemic-crisis-director-warns The Worid Yniversity Rankings. Retrieved 15.08.2020
8. MEL edition (2020). How Rostov University successfully transferred the entire university to online education in two days. *MEL*. Retrieved 15.08.2020 from https://mel.fm/distantsionnoye-obucheniye/7152364-rsue_online_education
9. Melnik, D. (2020). Higher education in the world: what problems were highlighted by the pandemic. Retrieved 15.08.2020 from https://tass.ru/opinions/8306213
10. Msgeek (2020). Two years of digital transformation in two months. *Habr*. Retrieved 15.08.2020 from https://m.habr.com/ru/company/microsoft/blog/500556/

11. National Research University ″Higher School of Economics″ (2020). Universities during a storm. Retrieved 15.08.2020 from https://ioe.hse.ru/news/368075821.html?fbclid=IwAR1lQt0drJ4vKyLeyyuaGqeW6-q-SJkgWDBdrZW8zNgOkwFkfUOVi1uqmbI
12. National Research University ″Higher School of Economics Retrieved″ (2020). *Institute of Education, Five challenges for universities - five opinions of international experts*. Retrieved 15.08.2020 from https://ioe.hse.ru/news/359153775.html
13. Net.finam.ru (2020). Distance learning in extreme conditions. *Interfax.* Retrieved 15.08.2020 from https://academia.interfax.ru/ru/analytics/research/4491/
14. Pop, A. (2020). 10 Great European Distance Learning Universities. *Studyportals.* Retrieved 15.08.2020 https://www.distancelearningportal.com/articles/1308/10-great-european-distance-learning-universities.html
15. PUL "University Development" (2020) April theses on the future of universities. Challenges for higher education from COVID-19. *Moscow: National Research University "Higher School of Economics", Institute of Education.* Retrieved 15.08.2020 from https://ioe.hse.ru/data/2020/04/21/1560047503/%D0%9A%D0%B0%D1%80%D1%82%D0%BE%D1%87%D0%BA%D0%B8%20%D0%B0%D0%BF%D1%80%D0%B5%D0%BB%D1%8C%D1%81%D0%BA%D0%B8%D0%B5%20%D1%82%D0%B5%D0%B7%D0%B8%D1%81%D1%8B%20(2).pdf
16. Savitskaya, N. (2020). After the pandemic, higher education will never be the same. *Nezavisimaya.* Retrieved 15.08.2020 from http://www.ng.ru/education/2020-03-25/8_7826_education1.html Retrieved 15.08.2020
17. Seale, C. (2020). Distance Learning During The Coronavirus Pandemic: Equity And Access Questions For School Leaders. *Forbes.* Retrieved 15.08.2020 from https://www.forbes.com/sites/colinseale/2020/03/17/distance-learning-during-the-coronavirus-pandemic-equity-and-access-questions-for-school-leaders/#72b1342a1d4d

# CROATIA: Q1-Q3 2020 TOURISM RESULTS IN CONTEXT OF COVID-19 PANDEMIC

**Mario Basic**
*OTP banka d.d., Croatia*
*mariobasic84@gmail.com*

**Mario Skoric**
*University Department of Professional Studies,*
*University of Split, Split, Croatia*
*skoric.mario@gmail.com*

***ABSTRACT***

*COVID-19 pandemic outbreak caused slowdown of global tourism performance already in March 2020, followed by freefall in second quarter amid worldwide travel restrictions and lockdowns. Tourism as the most important industry in Croatia has been seriously affected by pandemic related travel restrictions, with hotels facing the most serious decline year-on-year. Usually tourists can autonomously choose where to travel and in other recent crisis events dominantly only some specific areas were affected. During this pandemic there are no unaffected areas, but some regions and accommodation types are more resistant than the others. Lower number of confirmed COVID-19 cases and gradual reopening of Croatia in summer months enabled partial rebound of tourism results in the country, however August brought new slowdown of foreign arrivals of such magnitude that higher number of domestic nights spent were not sufficient to compensate severe drop of tourist arrivals coming from other important tourism markets. The goal of this paper is to analyse impact of COVID-19 pandemic on recent tourism results in Croatia, with breakdown by accommodation type, most important markets and local sub-regions. Analysis of different outcome depending on this breakdown should indicate causes of more resistant areas and lead to some recommendations for advanced destination management.*

***Keywords:*** *COVID-19 pandemic, Croatia, tourism*

## 1. INTRODUCTION

Over the last decades, tourism became not only one of the most important industries in the world, but it also triggered various socio-cultural changes. However, since the outbreak of the COVID-19 pandemic in 2019, the travel and tourism sector results experienced strong decline around the world at different periods and degrees. Intensity and timing of the pandemic depend on many variables, from location, health and social protection system, type of measures introduced by each country and numerous other variables specific for different countries or regions. During the 21st century, tourism survived several crises and none of them lasted longer than two years, with global economic crisis as the one with most severe impact worldwide until COVID-19 outbreak in 2019. At the moment of writing this paper, full effect of COVID-19 pandemic is still not fully known. According to UNWTO World Tourism Barometer and Statistical Annex (August/September, 2020), extended scenarios for 2021-2024 point to a strong rebound in 2021 based on the assumption of a reversal in the evolution of the pandemic, significant improvement in traveller confidence and major lifting of travel restrictions by the middle of the year. Nonetheless, the return to 2019 levels in terms of international arrivals could take up to four years. Having in mind strong uncertainty around the COVID-19 pandemic, many tourism researchers around the world are analysing numerous scenarios and its impact on all aspects of life and business, including tourism. However, more comprehensive and precise forecast will be possible once COVID-19 vaccine will be validated.

When it comes to Croatia as one of the leading tourist destinations in Europe, it has to be noted that tourism industry has been a major employer, one of the key pillars of the economy and the largest source of foreign currency in the country. Main characteristic of the local tourism industry is strong seasonality, with majority of overnights concentrated in the main (summer) season, thus impact of COVID-19 pandemic was mostly determined by intensity of COVID-19 cases during these months in the country and most important markets. The goal of this document is to analyse the impact of crisis events on tourism industry, with special focus on COVID-19 pandemic outbreak and its impact on tourism results in Croatia during the first nine months of 2020 when according to Croatian National Tourist Board (October, 2020) overall tourist arrivals and tourist nights declined close to 60% and 50%, respectively. Using CNTB data, main tourist markets by accommodation type and local sub-region are analysed as well.

## 2. TOURISM INDUSTRY IN CRISIS EVENTS WITH SPECIAL FOCUS ON COVID-19 PANDEMIC OUTBREAK

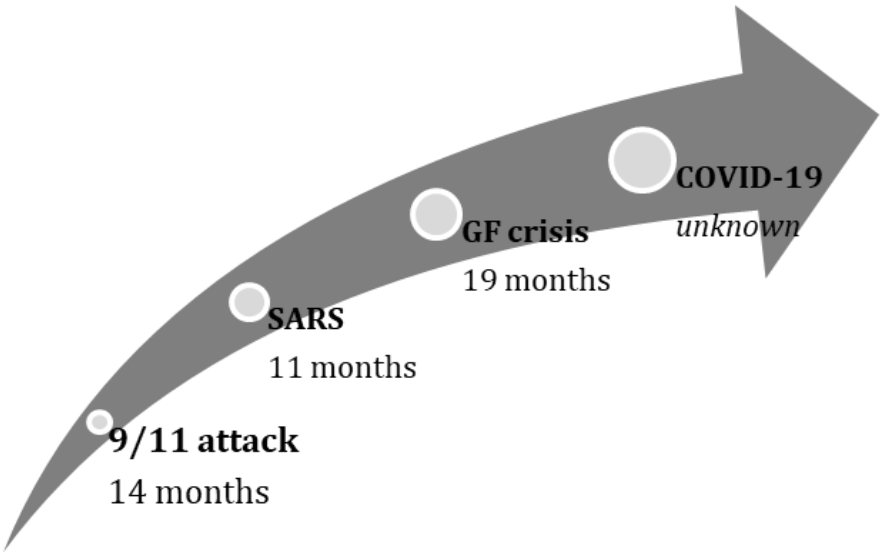
Crisis events are inevitable part of our lives, both private and business. As it is not possible to avoid all of them, its negative impact has to be reduced taking into account specificity of each such event. As explained by Hart, Heyse and Boin (2002), the world of crises and crisis management has changed considerably over the past decades and one should be careful to generalise the trends without any qualification. Tourism is an industry which is highly susceptible to negative events and, since there is always a crisis somewhere in the world, the sector appears to be under an almost permanent threat of another crisis looming (Pforr and Hosie, 2008). This industry is dependent on many variables, with sudden crisis events as one of the most important ones. Unfavourable images about the political, economic or social situation are often distributed all over the world through numerous media channels (Glasser, 2003, Kesić and Pavlić, 2011). Safety aspect is of great importance when it comes to tourism destination image and the decision-making process about whether or not to visit a certain location (Martens, Feldesz and Merten, 2016). This aspect is especially significant in the context of 2019 coronavirus pandemic when it comes to decision on final destination but also whether to travel at all during the pandemic outbreak. Different nature of the crises creates different effects on tourism and the rate of recovery. Rapid media uninterest means that normal marketing effort will largely restore pre-crisis levels of tourism. However, where the crisis includes a perception of risk, especially health, more comprehensive strategies appear necessary. This includes management of the media, especially images displayed during the crisis. Then in post-crisis period, aggressive marketing is needed that does not remind target markets of the crisis, but presents an image of "business as usual" (Zeng, Carter and De Lacy, 2005).As per types of crisis events, Ritchie and Jiang (2019) elaborated that crises can be categorized as endocrisis (representing triggers from within the sector) with a gradual change, or exocrisis (representing triggers from outside the sector) which are hard to anticipate.

*Figure 1: Basic breakdown of crisis categories*


*Source: Own illustration based on Ritchie and Jiang (2019)*

Pforr and Hosie (2008) stated that external shocks which are interently unpredictable make the crises preparation an integral part of the industry's operations and that proactive crisis management should form an integral part of contemporary tourism business by making a case for using preparation for any potential crisis in tourism as a strategic key to recovery. Having the breakdown on endocrisis and exocrisis in mind, response of stakeholders on crisis situation may differ depending on crisis type and intensity. As already proven, performance of tourism industry is determined by every shock in the environment, no matter whether it is related to political, social, medical or economic contraction, as it was already proven during the several events over the last 20 years. According to May 2020 UNWTO World Tourism Barometer analysis, it took eleven months for international arrivals to regain pre-crisis levels after the SARS epidemic of 2003, 14 months after the USA September 11th attacks of 2001 and 19 months after the global economic and financial crisis of 2009.

*Figure 2: Recovery duration of international arrivals crisis 2000-2020*




*Source: Own illustration based on May 2020 UNWTO World Tourism Barometer*

Mihai and Toma (2020) elaborated how many countries depend on tourism, a sector that is blocked by the current pandemic and its evolution cannot be anticipated, explaining that in several European countries the share of tourism in GDP was significant in 2018 (25% Croatia, 22% Cyprus, 21% Greece, 19% Portugal). Among the most popular tourist destinations in the world are the European countries such as France, Spain, Italy and Germany which will record significant losses in the number of international tourists and receipts from international tourism during the COVID-19 pandemic. Restrictive measures introduced to limit the spread of the pandemic have affected the economic activity and paralyzed tourism activity. The economic agents in the hospitality and tourism industry face serious challenges, being threatened by a significant decrease in income, the danger of bankruptcy, with immediate consequences in terms of job losses. Without urgent action and emergency funding to pass the period until the resumption of tourist flows, many companies could go bankrupt in the coming period according to Mihai and Toma. As elaborated by Zenker and Kock (2020), there are six main sub-topics that constitute a starting point for a research agenda beyond obvious crisis-induced research areas depending on complexity, changes in destination image, tourist behaviour, resident behaviour, tourism industry in general and long-term and indirect effects, explaining that most research on crises is focusing on immediate effects thereof, yet, in order to grasp the full impact of the coronavirus pandemic, one has to take into account the long-term and indirect effects as well.

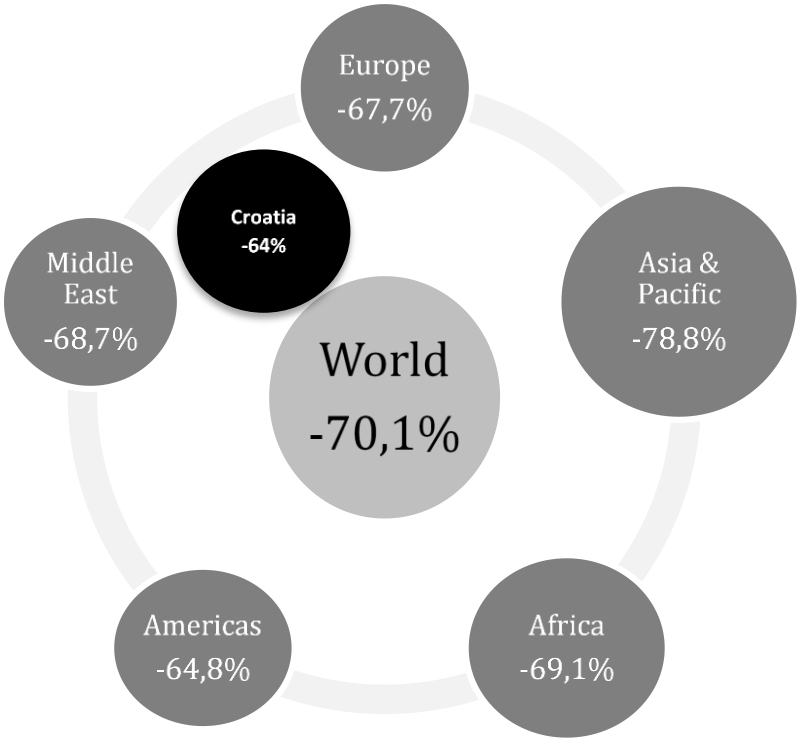
*Figure 3: Six Covid-19 paths that constitute a starting point for a research agenda*


*Source: Own illustration based Zenker and Kock (2020)*

COVID-19 pandemic crisis as an extremely complex and unpredictable one depend on various variables which may change general approach on the demand and supply side. Zenker and Kock stated that COVID-19 outbreak can create deep marks in the tourist's thinking and feeling and change how tourists travel. They see two coronavirus-induced phenomena. First, the destinations exposed to COVID-19 may face a liability in future attempts to attract tourists because of their worsened image, particularly among those tourists who are risk-sensitive and vulnerable. Second, in contrast, these destinations may benefit from a charitable attitude of future tourists who choose these coronavirus-shaken destinations to economically support them. Authors also noted that residents may become less welcoming of incoming tourists and that a strong collaboration with external systems will be needed in coming period, such as health and emergency systems. As per long term estimation, Zenker and Kock explained that we could see government and businesses seek to preserve the existing economic system, by financial support and deregulations, but that there is also a possibility of a new paradigm triggered by the COVID-19 pandemic with a cycle of more sustainable development. Anyhow, COVID-19 pandemic obviously represent one of the most impactful events of the 21st century in general, has tremendous effects on tourism and is a combination of a natural disaster, a socio-political crisis, an economic crisis and a tourism demand crisis, as explained by Zenker and Kock. This pandemic brought most severe one-shot impact on tourism results so far due to its worldwide impact with strong uncertainty about real risk and duration of the pandemic, resulting in changed travel habits and planning. As presented by the analysis of Li, Nguyen and Coca-Stefaniak (2020), negative impacts on tourism may be expected with around the half of the respondents intending on taking their next holiday six months or longer after the pandemic is brought under control, with generally shorter holidays planned. It can be concluded that described sentiment triggered decline in international tourist arrivals (overnight visitors) by 70% during the first eight months of 2020, as published by October 2020 UNWTO World Tourism Barometer, emphasising that experts consider travel restrictions as the main barrier weighing on the recovery of international tourism, along with slow virus containment and low consumer confidence. Decline in observed period represents 700 million arrivals less in the world in comparison to 2019, representing a loss of US$ 730 billion in export revenues from international tourism Y-o-Y. As explained in the document, this is more than eight times the loss experienced on the back of the global economic crisis in 2009. As per tourism performance of Croatia during the COVID-19 outbreak, according to UNWTO analysis 64% less international arrivals was conducted in first eight months of 2020, followed by 73% lower international tourist receipts until June 2020 Y-o-Y. Almost all regions in the world noted stronger decline in international tourist arrivals than Croatia during the first eight months of 2020.

*Figure followingon the next page*

*Figure 4: International Tourist Arrivals Jan-Aug 2020 Y-o-Y (provisional data)*



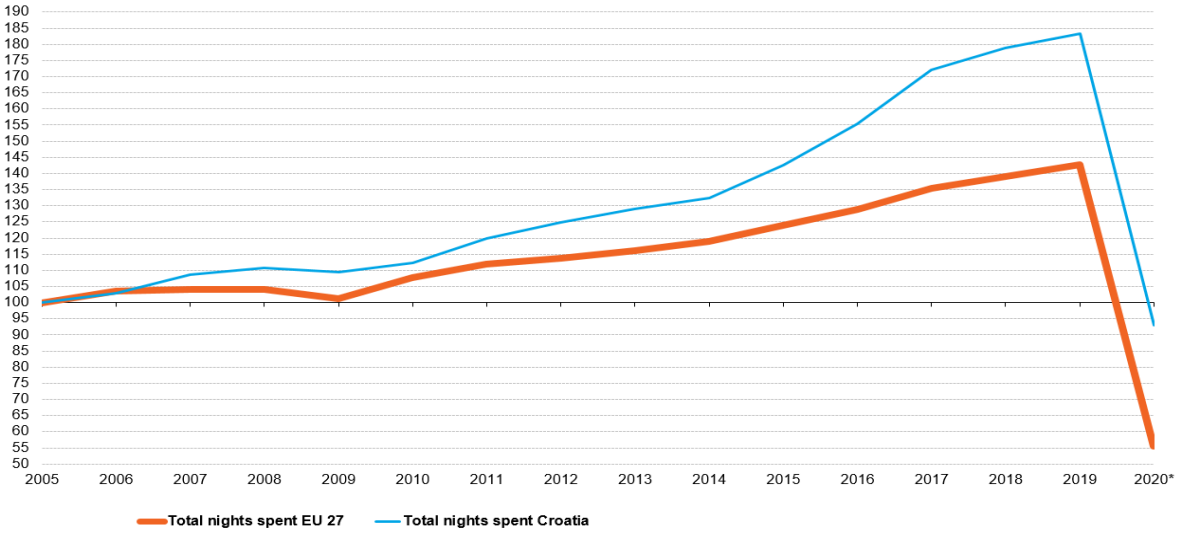

*Source: Own illustration based on UNWTO World Tourism Barometer (October 2020)*

Asia and the Pacific, the first region to suffer the impact of the COVID-19 outbreak, declined 79% during the first eight months of 2020. Africa and the Middle East both recorded a 69% drop this eightmonth period. Europe recorded almost 68% decline and Americas close to 65% drop in observed period, according to UNWTO.

## 3. IMPACT OF COVID-19 PANDEMIC ON TOURISM IN CROATIA

Organization for Economic Co-operation and Development (OECD) published on 1st October "The COVID-19 crisis in Croatia" paper elaborating that Croatia is highly dependent on tourism, a sector which was among the most severely affected by the pandemic, which provides around 25% of Croatian GDP. OECD stated that despite a significant drop in tourist visits in 2020, Croatia managed to salvage 50% of tourism revenues compared to the previous year, which was an overachievement compared to initial expectations (set at around 30%). It is crucial to perform regular analysis of volatility in tourism especially for the countries with strong seasonality, with Croatia as one of the best examples in the world. Almost 90 percent of visits in Croatia are usually registered during the „4 summer months" (June, July, August and September), so it is crucial to understand each deterioration or imbalance of touristic results, especially during these peak months. A majority of destinations around the world launched strict travel restrictions in March 2020. Croatia removed majority of restrictions for EU citizens on 9th May, as one of the first countries decided to take this step. Majority of tourists in Croatia are foreign ones, mostly from other EU countries, where travel restrictions were modified later on. When analysing touristic nights spent in 2019 in Croatia, around 95% were related to first nine months (January-September), so analysis of tourism performance in 2020 based on the first nine months of 2020 can be taken into consideration as representative. As visible on the Chart 1, caused by COVID-19 pandemic, tourism performance in Croatia declined at level recorded in mid-2000s, representing slower deterioration in comparison to EU-27.

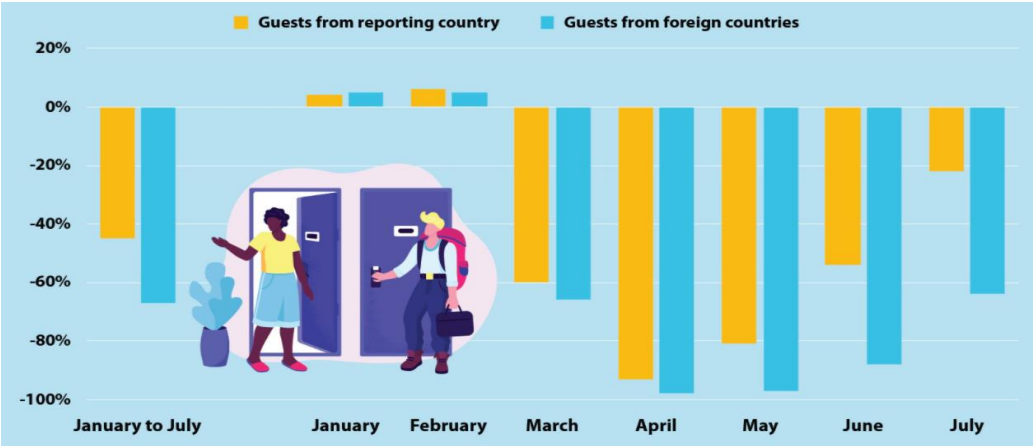
*Chart 1: Nights spent at EU-27 tourist accommodation establishments, EU-27 vs Croatia, 2005-2020 (index 2005=100, data for 2020 based on data for first seven months of 2020)*




*Source: data compilation of Eurostat (tour_occ_nim), Croatian Bureau of Statistics and Croatian National Tourist Board data*

Tourism in Croatia recorded stronger growth during the last 15 years in comparison to the EU average, followed by slower decline during the COVID-19 pandemic crisis, according to Eurostat and Croatian Bureau of Statistics. Sharp growth was delivered especially after the 2010 when tourism performance in Croatia reached its all time high result. COVID-19 outbreak caused freefall in nights spent both in Croatia and EU, representing the first period with downward trend after the global economic and financial crisis in 2009. Taking into account only first seven months of 2020, decline in nights spent in Croatia was lower by around 10 percentage points in comparison to EU-27 area. This deterioration was not equally distributed in regard to the breakdown on domestic and foreign tourists and it depend on country and each specific region. As presented upon Chart 2, decline in nights spent within EU area was lower within domestic guest category. This fact is especially important for the countries with majority of tourists coming from abroad, like Croatia where around 90% of nights spent are related to foreign guests.

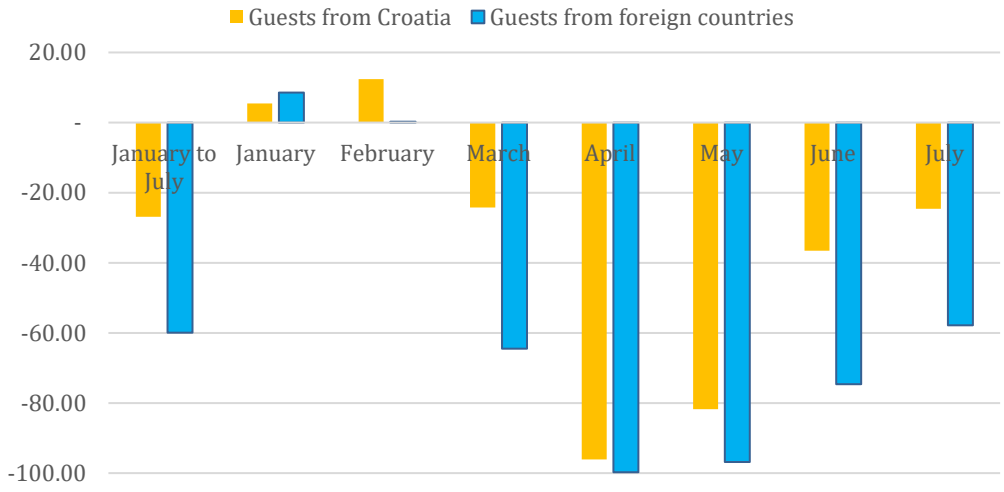
*Chart 2: Change in nights spent in EU tourist accommodation by origin of the guests, Jan-Jul 2020 compared to Jan-Jul 2019 (%)*




*Source: European Commission, Eurostat (tour_occ_nim)*

EU recorded stronger decline than Croatia in both categories and almost all months during the COVID-19 pandemic outbreak. Somewhat better performance by local tourism industry was driven by lower number of confirmed COVID-19 cases in late spring and changed sentiment in most important markets in this period.

*Chart 3: Change in nights spent in Croatia tourist accommodation by origin of the guests, Jan-Jul 2020 compared to Jan-Jul 2019 (%)*




*Source: data compilation from Croatian National Tourist Board*

In average, majority of nights spent in Croatia are related to two peak months (July and August) and almost 60% of overall nights are conducted during these two months according to Croatian Bureau of Statistics. Having this in mind, the overview of results in first nine months of 2020 should be representative when analysing Y-o-Y changes. Table 1 shows that after continuous surge in pre-coronavirus period, strong decline was delivered in both categories, arrivals and nights spent of tourists coming from all major markets Y-o-Y, with somewhat slower deterioration of domestic tourist results which was expected due to measures introduced during the pandemic.

*Table 1: Arrivals and nights spent of domestic and foreign tourists in Croatia during Jan.-Sept. 2020/2019, top 10 countries per nights spent in 2019*

| | I-IX 2020. | | | I-IX 2019. | | | index 2020./2019. | |
|---|---|---|---|---|---|---|---|---|
| Country | Arrivals | Nights spent | % Nights | Arrivals | Nights spent | % Nights | Arrivals | Nights spent |
| Germany | 1.534.305 | 12.484.198 | 23,82% | 2.801.583 | 20.266.718 | 19,68% | 54,77 | 61,60 |
| Slovenia | 968.281 | 8.117.112 | 15,49% | 1.453.353 | 10.539.316 | 10,24% | 66,62 | 77,02 |
| Poland | 662.554 | 4.528.282 | 8,64% | 950.392 | 6.068.427 | 5,89% | 69,71 | 74,62 |
| Czechia | 511.199 | 3.487.677 | 6,65% | 778.939 | 5.316.131 | 5,16% | 65,63 | 65,61 |
| Austria | 385.091 | 2.472.015 | 4,72% | 1.356.729 | 7.404.557 | 7,19% | 28,38 | 33,39 |
| Italy | 235.615 | 1.425.717 | 2,72% | 1.133.452 | 5.306.928 | 5,15% | 20,79 | 26,87 |
| Hungary | 223.766 | 1.305.928 | 2,49% | 620.023 | 3.212.098 | 3,12% | 36,09 | 40,66 |
| Slovakia | 156.879 | 1.096.528 | 2,09% | 457.069 | 3.010.808 | 2,92% | 34,32 | 36,42 |
| Bosnia and Herzegovin | 137.995 | 995.376 | 1,90% | 465.334 | 2.615.430 | 2,54% | 29,66 | 38,06 |
| UK | 123.530 | 662.649 | 1,26% | 828.730 | 4.272.511 | 4,15% | 14,91 | 15,51 |
| ... | | | | | | | | |
| **Foreign** | **5.947.506** | **41.968.104** | **80,07%** | **16.837.875** | **90.471.635** | **87,87%** | **35,32** | **46,39** |
| **Domestic** | **1.437.643** | **10.447.795** | **19,93%** | **1.964.875** | **12.484.092** | **12,13%** | **73,17** | **83,69** |
| **Total** | **7.385.149** | **52.415.899** | **100,00%** | **18.802.750** | **102.955.727** | **100,00%** | **39,28** | **50,91** |

*Source: data compilation from Croatian National Tourist Board*

Comparing 2020 (Y-t-D) results with same period in 2019, there is almost 65% lower number of foreign arrivals and 54% less nights spent in 2020 in Croatia. When it comes to domestic tourist category, around 27% less arrivals and 16% fewer nights was spent in comparison to 2019. Even though overall nights spent almost halved in 2020, somewhat lighter decline was noticed from markets less affected by the pandemic during the observed period (Slovenia -23%, Poland -25%, Czechia -35% and Germany -38%). On the other side, strongest decline was recorded from the markets seriously affected by the disease, with most important ones related to Italy declining 73% and UK down 84% vs. the same period in 2019.

*Table 2: Nights spent of declared tourists in Croatia during Jan.-Sept. 2020/2019, per country*

| | I-IX 2020. | | | | I-IX 2019. | | | | index 2020./2019. | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| County | Domestic | Foreign | Total | % nights spent | Domestic | Foreign | Total | % nights spent | Domestic | Foreign | Total |
| Istria | 769.303 | 12.617.952 | 13.387.255 | 24,97% | 1.141.161 | 27.277.379 | 28.418.540 | 26,62% | 67,41 | 46,26 | 47,11 |
| Kvarner | 2.317.733 | 8.611.884 | 10.929.617 | 20,38% | 2.893.795 | 16.098.010 | 18.991.805 | 17,79% | 80,09 | 53,50 | 57,55 |
| Lika-Senj | 411.332 | 1.432.833 | 1.844.165 | 3,44% | 448.325 | 2.938.440 | 3.386.765 | 3,17% | 91,75 | 48,76 | 54,45 |
| Zadar | 3.684.452 | 6.052.173 | 9.736.625 | 18,16% | 4.176.735 | 10.805.425 | 14.982.160 | 14,03% | 88,21 | 56,01 | 64,99 |
| Sibenik-Knin | 1.169.679 | 2.831.767 | 4.001.446 | 7,46% | 1.473.182 | 5.807.275 | 7.280.457 | 6,82% | 79,40 | 48,76 | 54,96 |
| Split-Dalmatia | 1.312.039 | 7.856.407 | 9.168.446 | 17,10% | 1.382.603 | 18.885.302 | 20.267.905 | 18,98% | 94,90 | 41,60 | 45,24 |
| Dubrovnik-Neretva | 480.465 | 2.348.830 | 2.829.295 | 5,28% | 473.471 | 8.580.178 | 9.053.649 | 8,48% | 101,48 | 27,38 | 31,25 |
| **TOTAL Dalmatia** | **6.646.635** | **19.089.177** | **25.735.812** | **47,99%** | **7.505.991** | **44.078.180** | **51.584.171** | **48,32%** | **88,55** | **43,31** | **49,89** |
| **TOTAL Adria** | **10.145.003** | **41.751.846** | **51.896.849** | **96,78%** | **11.989.272** | **90.392.009** | **102.381.281** | **95,90%** | **84,62** | **46,19** | **50,69** |
| **TOTAL Croatia** | **10.948.091** | **42.674.962** | **53.623.053** | **100,00%** | **13.179.162** | **93.583.498** | **106.762.660** | **100,00%** | **83,07** | **45,60** | **50,23** |

*Source: data compilation from Croatian National Tourist Board*

As per touristic results of Croatian sub-regions, the most distressed were the ones in the southern part of the country. In Split-Dalmatia County there were 58% and in Dubrovnik-Neretva County even 73% less nights spent Y-o-Y. This decline was mostly driven by lack of reliable airline operations during the high season in Croatia. Dependency of Dubrovnik-Neretva County on airlines should be reduced once Pelješac bridge will be finalized. With this project, a road connection between South Dalmatia – the southernmost part of Adriatic Croatia, where the city of Dubrovnik is located – and the mainland of the country will be completed. This project co-financed by EU's European Regional Development Fund will reduce the need for road users travelling between the two parts of Croatia to go through two customs controls in less than 10 kilometres and thus significantly cut travel time. Only one region noted somewhat improved Y-o-Y performance in one of the observed categories as Dubrovnik-Neretva County saw slight increase of domestic tourists in first nine months in comparison to the same period year before, however due to the proportion of decline in foreign tourists category, slight surge in domestic guest bucket was not strong enough to compensate the overall losses. According to Croatian National Tourist Board (2020), the most popular destinations in observed period were Vir (2,1 mil. nights), Rovinj (1,79 mil.), Medulin (1,42 mil.) and Poreč (1,35 mil). As majority of nights spent in Vir were related to domestic tourist category, Rovinj was destination with most foreign-related nights spent in first nine months of 2020 (1,65 mil.). As per breakdown by accommodation type, it has to be noted that most of the arrivals in Croatia before the COVID-19 pandemic outbreak were related to hotel arrangements, however in 2020 (Y-t-D) almost 80% more arrivals was noted in objects in households than in hotels, followed by more than three times higher number of nights spent.

*Table 3: Arrivals of declared tourists in Croatia during Jan.-Sept. 2020/2019 per accommodation type (commercial accommodation only)*

| | I-IX 2020. | | | I-IX 2019. | | | index 2020./2019. | |
|---|---|---|---|---|---|---|---|---|
| Accommodation type | Arrivals | Nights spent | % Nights | Arrivals | Nights spent | % Nights | Arrivals | Nights spent |
| Hotel | 1.732.101 | 6.550.274 | 12,50% | 6.598.158 | 22.852.056 | 22,20% | 26,25 | 28,66 |
| Campsite | 1.236.609 | 8.714.877 | 16,63% | 2.817.693 | 18.547.740 | 18,02% | 43,89 | 46,99 |
| Object in household | 3.102.295 | 21.778.057 | 41,55% | 6.570.373 | 38.220.606 | 37,12% | 47,22 | 56,98 |
| Rest | 647.132 | 3.257.840 | 0,01% | 1.808.934 | 7.529.417 | 0,07% | 35,77 | 43,27 |
| **Total commercial accommodation** | **6.718.137** | **40.301.048** | **76,89%** | **17.795.158** | **87.149.819** | **84,65%** | **37,75** | **46,24** |

*Source: data compilation from Croatian National Tourist Board https://www.htz.hr/hr-HR/informacije-o-trzistima/informacije-o-tijeku-sezone*

According to CNTB data (Table 3), hotels recorded strong decline by more than 70% in nights spent, followed by downturn in arrivals with campsite of around 55% and objects in households decline of 53% and 43% in arrivals and nights spent, respectively. Performance in category of hotels in nights spent in observed period was outperformed even by campsites, as 33% more nights spent were recorded in campsites than in hotels. In 2020, objects in households delivered higher average number of days spent per arrival compared to the same period year before (7 vs. 5,8).

## 4. CONCLUSION

It is already proven and well known that tourism industry in Croatia is marked by strong seasonality followed by low share of hotel accommodation in the overall result. However, in context of COVID-19 pandemic outbreak when accommodation in a hotel turned out to be less resistant compared to campsites or even objects in households, we can conclude that these shortages had mostly positive impact on local tourism in 2020. For example, during the summer season most destinations in the country achieved higher than expected results having in mind the environment and especially in comparison with EU area or worldwide overall result. As a reaction to the COVID-19 outbreak, local government released a series of balanced measures in order to boost tourism results during the summer months. During this period and especially until August, most of the EU countries eased travel restrictions keeping arrivals and nights spent during the peak months in Croatia elevated. Also, since great part of tourist arrivals in Croatia is related to road transport, the uncertainty around the airline departures affected local tourism less in comparison to other Mediterranean destinations. Having above mentioned in mind, resolution of transportation alternative as well as balanced accommodation types in all regions in Croatia should be important topic in coming period.

## LITERATURE:

1. Brent W., R., Yawei, J. (2019), A review of research on tourism risk, crisis and disaster management: Launching the annals of tourism research curated collection on tourism risk, crisis and disaster management
2. Croatian Bureau of Statistics, www.dzs.hr , retrieved 01.11.2020
3. Croatian National Tourist Board, www.htz.hr, retrieved 27.10.2020
4. European Commission, https://ec.europa.eu/regional_policy/en/projects/croatia/new-bridge-to-improve-road-connections-with-croatias-south-dalmatia-region, retrieved 29.10.2020
5. European Commission, https://ec.europa.eu/eurostat/statistics-explained/index.php/Tourism_statistics_-_nights_spent_at_tourist_accommodation_establishments, retrieved 3.11.2020
6. Glaesser, D. (2003), Crisis Management in the Tourism Industry
7. Hart, P., Heyse, L., Boin, A. (2002), New Trends in Crisis Management

8. Li, J., Nguyen, T.H.H., Coca-Stefaniak, J.A. (2020), Coronavirus impacts on post-pandemic planned travel behaviours
9. Kesić, T., Pavlić I. (2011), Tourism destination Image formation
10. Martens, H.M., Feldesz, K., Merten, P. (2016), Crisis Management in Tourism – A Literature Based Approach on the Proactive Prediction of a Crisis and the Implementation of Prevention Measures
11. Mihai, D., Toma, S. (2020), The International Tourism and the COVID-19 Pandemic – Present and Perspectives
12. OECD https://www.oecd.org/south-east-europe/COVID-19-Crisis-in-Croatia.pdf, retrieved 29.10.2020
13. Pforr, C., Hosie, P.J. (2008), Crisis Management in Tourism: Preparing for Recovery
14. UNWTO, www.unwto.org, retrieved 27.10.2020
15. Zeng, B., Carter, Rodney W., De Lacy, T. (2005), Short-term Perturbations and Tourism Effects: The Case of SARS in China
16. Zenker, S., Kock, F. (2020), The coronavirus pandemic – A critical discussion of a tourism research agenda

# THE APPLICATION OF THE HDI INDEX TO ASSESS THE SOCIO-ECONOMIC DEVELOPMENT OF THE EU COUNTRIES IN 1990-2018

**Monika Miskiewicz-Nawrocka**
*University of Economics in Katowice*
*1 Maja 50, 40-287 Katowice, Poland*
*monika.miskiewicz@ue.katowice.pl*

***ABSTRACT***

*The level of economic development of a country is attempted to be measured using various indicators. One of the most popular and comprehensive measures of the performance of the entire economy is GDP. However, as a measure of welfare it is not a perfect measure because it is calculated in current prices and takes into account only the financial aspect. While socio-economic development also has non-financial aspects. It also depends on the knowledge, awareness and health of the inhabitants. An alternative approach is the HDI index, used by the UNDP (United Nations Development Program) to classify countries according to the broadly understood quality of life of their inhabitants. The HDI is a synthetic measure that takes into account the three main characteristics of socio-economic development: healthy life expectancy, education and a fair standard of living. Healthy life expectancy is expressed as the average life expectancy of newborns. The second feature is related to access to education and is expressed by the average number of years of education for the population aged 25 and over and the expected number of years of education for children starting education. While the standard of living is estimated on the basis of the national income per capita calculated according to the parity of the labor force. Currently, HDI is estimated as the geometric mean of the indices describing each of the above-mentioned features. On the basis of the HDI, all countries can be divided into 4 groups: very high human development, high human development, medium human development, low human development. The aim of the study is to assess the level of socio-economic development of EU countries using the HDI index. It will also be examined whether it was gaining strength in the period under study and whether the differences between countries deepened or blurred over time. The study took into account Eurostat data for the years 1990, 2000, 2010 and 2018.*

***Keywords:*** *education, HDI index, healthy life expectancy, socio-economic development, standard of living*

## 1. INTRODUCTION

The Human Development Index (HDI) is a summary measure used to describe the level of socio-economic development of territorial units. It is based on three dimensions: a long and healthy life, access to knowledge and a decent standard of living. On its basis, UNDP (United Nations Development Program) prepares an annual ranking of countries from the most to the least developed. Norway has been at the top of the ranking since 2009, for which HDI = 0.954 in 2018. The next places were taken by Switzerland (0.946) and Ireland (0.942). The worst situation was recorded for Niger (0.377) and Central African Republic (0.381). The aim of the study is to assess the level of socio-economic development of EU countries using the HDI index and its components. It was examined whether the HDI was gaining strength in the analyzed period and whether the differences between countries deepened or blurred over time. The study also examined spatial relationships between EU countries in terms of the analyzed phenomenon.

## 2. HDI INDEX

The HDI is estimated as the geometric mean of the normalized indexes for each of the three dimensions mentioned (HDR 2019):

$$HDI = \sqrt[3]{LEI \cdot EI \cdot GNII},$$

where: *LEI* – life expectancy index, *EI* – education index, GNII –gross national income index. The life expectancy is assessed by life expectancy at birth (*LE*), the education is measured by mean of years of schooling for adults aged 25 years and more (*MYS*) and expected years of schooling for children of school entering age (*EYS*), and the standard of living is measured by gross national income per capita in constant 2011 purchasing power parity (*GNI*).

The dimension indices *LEI, EI* and *GNII* are calculated as (HDR 2019), (Hozer_Koćmiel, 2018):

$$LEI = \frac{LE - \min LE}{\max LE - \min LE}, \quad (1)$$

$$EI = \frac{MYSI + EYSI}{2}, \quad (2)$$

$$MYSI = \frac{MYS - \min MYS}{\max MYS - \min MYS}, \quad (3)$$

$$EYSI = \frac{EYS - \min EYS}{\max EYS - \min EYS}, \quad (4)$$

$$GNII = \frac{\ln(GNI) - \ln(\min GNI)}{\ln(\max GNI) - \ln(\min GNI)}, \quad (5)$$

where: min *LE* = 20 years, max *LE* = 85 years, min *MYS* = min *EYS* = 0, max *MYS* = 15 years, max *EYS* = 18 years, min *GNI* = 100$, max *GNI* = 75000$.

HDI assumes values in the range [0,1] and can classify objects into one of the classes:

- very high human development (0.800 < HDI),
- high human development (0.700 < HDI < 0.799),
- medium human development (0,550 < HDI < 0,699),
- low human development (HDI < 0.550).

## 3. SPATIAL AUTOCORRELATION

Spatial autocorrelation is defined as a situation in which a specific phenomenon in one spatial unit has the effect of reducing or increasing the probability of this phenomenon occurring in neighboring units (Kopczewska, 2007). The definition is based on the fact that neighboring objects are more similar in terms of the investigated feature than objects that are more distant from each other (Tobler, 1970; Pośpiech, 2015). The measure of spatial autocorrelation are global and local spatial statistics.

Global I Moran statistics is used to test the global spatial autocorrelation between adjacent units and expressed as (Suchecki, 2010):

$$I = \frac{n}{S_0} \cdot \frac{\mathbf{z}^{\mathbf{T}}\mathbf{W}\mathbf{z}}{\mathbf{z}^{\mathbf{T}}\mathbf{z}} = \frac{n\sum_{i=1}^{n}\sum_{j=1}^{n} w_{ij}\left(x_i - \bar{x}\right)\left(x_j - \bar{x}\right)}{\sum_{i=1}^{n}\sum_{j=1}^{n} w_{ij} \cdot \sum_{i=1}^{n}\left(x_i - \bar{x}\right)^2}, \qquad (6)$$

where: $x_i, x_j$ - values of variables in the spatial unit *i* and *j*, $\bar{x}$ - arithmetic mean of the variable value for all units, $\mathbf{z} = [z_i]_{n\times 1} = [x_i - \bar{x}]_{n\times 1}$, $\mathbf{W} = [w_{ij}]_{n\times n}$ - matrix of spatial weights given by the formula:

$$w_{ij} = \begin{cases} 1, & \text{when } i \text{ - th unit is a neighbor } j \text{ - th unit} \\ 0, & \text{when } i \text{ - th unit is not a neighbor } j \text{ - th unit} \\ 0, & \text{when } i = j \end{cases},$$

$S_0 = \sum_{i=1}^{n}\sum_{j=1}^{n} w_{ij}$, $n$ – number of spatial units, $i, j = 1,\ldots,n$.

The distribution of the Moran I statistic is asymptotically normal and its statistical significance is verified by statistic (Cliff and Ord, (1973):

$$Z_I = \frac{I - E(I)}{\sqrt{Var(I)}} \sim N(0,1), \qquad (7)$$

where: $E(I) = -\frac{1}{n-1}$ - the expected value of Moran statistic,
$Var(I)$ - the variance of Moran statistics, which, assuming the normality or randomness of the sample, is expressed by formulas:

$$Var(I) = \frac{n^2 S_1 - nS_2 + 3S_0^2}{(n^2-1)S_0^2} - \frac{1}{(n-1)^2}, \qquad (8)$$

$$Var(I) = \frac{n\left[(n^2 - 3n + 3)S_1 - nS_2 + 3S_0^2\right] - k\left[(n^2 - n)S_1 - 2nS_2 + 6S_0^2\right]}{(n-1)(n-2)(n-3)S_0^2} - \frac{1}{(n-1)^2}, \qquad (9)$$

$$S_1 = \frac{1}{2}\sum_{i=1}^{n}\sum_{j=1}^{n}\left(w_{ij} + w_{ji}\right)^2, \qquad S_2 = \sum_{i=1}^{n}\left(\sum_{j=1}^{n} w_{ij} + \sum_{j=1}^{n} w_{ji}\right)^2, \qquad k = \frac{\frac{1}{n}\sum_i \left(x_i - \bar{x}\right)^4}{\left(\frac{1}{n}\sum_i \left(x_i - \bar{x}\right)^2\right)^2},$$

other symbols as above.

Positive and significant values of the I statistics mean the similarity of the investigated spatial objects (positive autocorrelation), while negative values of the I statistics mean the differentiation of the investigated objects (negative autocorrelation). For positive spatial autocorrelation we have: $I > -\frac{1}{n-1}$ and $Z_I > 0$, while for negative autocorrelation: $I < -\frac{1}{n-1}$ and $Z_I < 0$. Lack of autocorrelation means spatial randomness and the relationships are true:

$$I \approx -\frac{1}{n-1} \text{ oraz } Z_I \approx 0 .$$

Moran's local statistics are given by the formula (Suchecki, 2010):

$$I_i = \frac{(x_i - \bar{x})\sum_{j=1}^{n} w_{ij}^{*}(x_j - \bar{x})}{\frac{1}{n}\sum_{i=1}^{n}(x_i - \bar{x})^2}, \qquad (10)$$

where: $\mathbf{W}^{*} = \left[w_{ij}^{*}\right]_{n \times n}$ - standardized weight matrix according to the formula:

$$w_{ij}^{*} = \frac{w_{ij}}{\sum_{j=1}^{n} w_{ij}}, \qquad (11)$$

other symbols as above.

The distribution of the local Moran statistics is also asymptotically normal, and its statistical significance is tested using the statistical data (Anselin, 1995):

$$Z_{Ii} = \frac{I_i - E(I_i)}{\sqrt{Var(I_i)}}, \qquad (12)$$

where:

$E(I_i) = -\frac{\sum_{j=1}^{n} w_{ij}}{n-1}$ - the expected value of local Moran I statistic $I_i$,

$Var(I_i) = \frac{(n-k)\sum_{i \neq j} w_{ij}^2}{n-1} + \frac{2(2k-n)\sum_{l \neq i}\sum_{h \neq i} w_{il} w_{ih}}{(n-1)(n-2)} - \left(\frac{\sum_{i \neq j} w_{ij}}{n-1}\right)^2$ - the variance of Moran statistics $I_i$

other symbols as above.

Local Moran statistics, unlike the global one, allow to determine local interactions between spatial objects.

It measures whether a spatial unit is surrounded by neighboring regions with similar or different values of the studied variable in relation to the random distribution of these values in space (Ojrzyńska, Twaróg, 2011). Standardized local Moran statistics take positive values when the object is surrounded by similar neighbor regions with similar values of the studied variable (positive autocorrelation). On the other hand, if the local Moran statistic takes negative values, it means that the object is surrounded by regions with significantly different values of the analyzed variable (negative autocorrelation). (Ojrzyńska, Twaróg, 2011)

## 4. EMPIRICAL ANALYSIS

The subject of the research was 28 countries that belonged to the EU in 2018. The study included data for 1990, 2000, 2010 and 2018. For each studied country, the following variables were taken into account: life expectancy at birth, mean years of schooling of adults, expected years of schooling of children, GNI and HDI. The data used for the analysis come from the UNDP database. (http://hdr.undp.org/en/data). In the first stage of the study, the LEI, EI, GNII indexes, the ratio of the maximum value to the minimum value of each of the selected indicators and single-base indexes expressing the change in the level of the above-mentioned measures in 2018 compared to the level in 1990 were estimated. Next, country differences were research using classical measures of standard deviation variation and the coefficient of variation. In the last stage of the study, spatial correlations between the studied countries were researched in terms of selected indicators. Table 1 presents the LEI values, basic statistics for LEI and single-base indexes for selected countries in 1990, 2000, 2010 and 2018. Analyzing the data in Table 1, it can be noticed that in analyzed years life expectancy increased in all the studied countries and the highest values were reached in 2018. This means that in 2018 people on average live longer than in previous years (5 years longer compared to 1990). The highest values of life expectancy in the analyzed years were recorded for Spain, Italy, Sweden, France and Malta, which means that the inhabitants of these countries, on average, live longer than in other countries. The lowest values of life expectancy were recorded for Latvia, Romania, Lithania and Bulgaria. The inhabitants of these countries live, on average, shorter than the rest of the EU. On the basis of the single-base index, the dynamics of the studied variable in 2018 compared to 1990 was characterized. The pace of changes in life expectancy varies, but increases have been recorded for all countries. The highest increase in LEI compared to 1990 was recorded for Estonia, Poland, Slovenia and Hungary, while the lowest for Bulgaria, Cyprus, Sweden and Netherland.

*Table following on the next page*

| | 1990 | 2000 | 2010 | 2018 | 2018/1990 |
|---|---|---|---|---|---|
| Austria | 0,855 | 0,895 | 0,932 | 0,945 | 1,104 |
| Belgium | 0,860 | 0,891 | 0,925 | 0,946 | 1,100 |
| Bulgaria | 0,789 | 0,792 | 0,826 | 0,845 | 1,070 |
| Croatia | 0,805 | 0,843 | 0,874 | 0,897 | 1,115 |
| Cyprus | 0,871 | 0,892 | 0,914 | 0,935 | 1,074 |
| Czech Republic | 0,798 | 0,845 | 0,886 | 0,911 | 1,141 |
| Denmark | 0,845 | 0,872 | 0,914 | 0,935 | 1,107 |
| Estonia | 0,760 | 0,775 | 0,851 | 0,902 | 1,186 |
| Finland | 0,851 | 0,889 | 0,925 | 0,949 | 1,116 |
| France | 0,874 | 0,908 | 0,946 | 0,962 | 1,100 |
| Germany | 0,854 | 0,892 | 0,925 | 0,942 | 1,103 |
| Greece | 0,871 | 0,902 | 0,931 | 0,955 | 1,097 |
| Hungary | 0,758 | 0,795 | 0,838 | 0,872 | 1,150 |
| Ireland | 0,843 | 0,875 | 0,926 | 0,955 | 1,133 |
| Italy | 0,875 | 0,917 | 0,954 | 0,975 | 1,114 |
| Latvia | 0,755 | 0,765 | 0,812 | 0,849 | 1,124 |
| Lithuania | 0,780 | 0,785 | 0,812 | 0,857 | 1,099 |
| Luxembourg | 0,849 | 0,888 | 0,929 | 0,955 | 1,125 |
| Malta | 0,875 | 0,908 | 0,937 | 0,960 | 1,097 |
| Netherlands | 0,877 | 0,895 | 0,935 | 0,955 | 1,089 |
| Poland | 0,782 | 0,826 | 0,866 | 0,900 | 1,152 |
| Portugal | 0,838 | 0,872 | 0,923 | 0,952 | 1,136 |
| Romania | 0,762 | 0,777 | 0,832 | 0,860 | 1,129 |
| Slovakia | 0,788 | 0,820 | 0,854 | 0,883 | 1,121 |
| Slovenia | 0,818 | 0,860 | 0,914 | 0,942 | 1,150 |
| Spain | 0,880 | 0,912 | 0,952 | 0,975 | 1,108 |
| Sweden | 0,886 | 0,918 | 0,946 | 0,965 | 1,089 |
| United Kingdom | 0,857 | 0,889 | 0,929 | 0,942 | 1,099 |
| **max/min** | 1,173 | 1,201 | 1,174 | 1,155 | |
| **mean** | 0,831 | 0,861 | 0,900 | 0,926 | |
| **standard deviation** | 0,043 | 0,048 | 0,045 | 0,040 | |
| **coefficient of variation** | 0,052 | 0,056 | 0,049 | 0,043 | |

*Table 1: LEI index for EU countries*

Table 2 presents the education index (EI), basic statistics for EI and single-base indexes for selected countries in 1990, 2000, 2010 and 2018. In 1990, the highest values were recorded for Belgium, Spain and Hungary, while the worst situation in terms of the number of years education was in Romania, Greece and Lithuania. In 2018, the most favorable situation was recorded for Crotia, Estonia, Cyprus and Latvia, while Luxemburg and Netherland were characterized by the lowest LEI values. For all countries in 2018. there was an increase in the LEI compared to 1990, with Greece being the highest and Hungary the lowest. The ratio of the maximum value to the minimum value has decreased from 1.505 in 1990 to 1.251 in 2018, which shows that the differences in the number of years of education between countries have decrised.

*Table following on the next page*

| | 1990 | 2000 | 2010 | 2018 | 2018/1990 |
|---|---|---|---|---|---|
| Austria | 0,602 | 0,731 | 0,714 | 0,871 | 1,448 |
| Belgium | 0,748 | 0,831 | 0,779 | 0,892 | 1,192 |
| Bulgaria | 0,674 | 0,675 | 0,753 | 0,873 | 1,295 |
| Croatia | 0,631 | 0,655 | 0,879 | 0,951 | 1,506 |
| Cyprus | 0,666 | 0,678 | 0,927 | 0,945 | 1,420 |
| Czech Republic | 0,667 | 0,739 | 0,783 | 0,811 | 1,216 |
| Denmark | 0,659 | 0,807 | 0,793 | 0,831 | 1,259 |
| Estonia | 0,633 | 0,807 | 0,858 | 0,949 | 1,500 |
| Finland | 0,606 | 0,802 | 0,850 | 0,801 | 1,322 |
| France | 0,631 | 0,741 | 0,878 | 0,893 | 1,417 |
| Germany | 0,656 | 0,823 | 0,853 | 0,816 | 1,245 |
| Greece | 0,534 | 0,673 | 0,832 | 0,907 | 1,696 |
| Hungary | 0,705 | 0,734 | 0,767 | 0,812 | 1,151 |
| Ireland | 0,598 | 0,816 | 0,779 | 0,866 | 1,447 |
| Italy | 0,682 | 0,701 | 0,896 | 0,936 | 1,371 |
| Latvia | 0,673 | 0,708 | 0,838 | 0,941 | 1,398 |
| Lithuania | 0,546 | 0,757 | 0,901 | 0,804 | 1,475 |
| Luxembourg | 0,599 | 0,716 | 0,768 | 0,759 | 1,268 |
| Malta | 0,697 | 0,651 | 0,803 | 0,823 | 1,181 |
| Netherlands | 0,589 | 0,821 | 0,784 | 0,764 | 1,297 |
| Poland | 0,611 | 0,778 | 0,872 | 0,881 | 1,442 |
| Portugal | 0,608 | 0,660 | 0,856 | 0,818 | 1,346 |
| Romania | 0,497 | 0,655 | 0,760 | 0,797 | 1,602 |
| Slovakia | 0,692 | 0,710 | 0,893 | 0,890 | 1,287 |
| Slovenia | 0,693 | 0,795 | 0,832 | 0,939 | 1,354 |
| Spain | 0,708 | 0,716 | 0,852 | 0,917 | 1,294 |
| Sweden | 0,644 | 0,902 | 0,780 | 0,824 | 1,280 |
| United Kingdom | 0,605 | 0,837 | 0,872 | 0,790 | 1,306 |
| **max/min** | 1,505 | 1,387 | 1,297 | 1,252 | |
| **mean** | 0,638 | 0,747 | 0,827 | 0,861 | |
| **standard deviation** | 0,056 | 0,067 | 0,053 | 0,059 | |
| **coefficient of variation** | 0,088 | 0,090 | 0,064 | 0,069 | |

*Table 2: EI index for UE cuntries*

Table 3 shows the GNII index, basic statistics for GNII and single-base indexes for selected countries in 1990, 2000, 2010 and 2018. When analyzing changes in the GNI index, it can be noticed that for most countries in the analyzed years there was an increase in the analyzed index, except for Malta, Austria , Lithuania, Luxembourg, Belgium and Slovakia. The largest increases in the index were recorded for Estonia, Cyprus and Finland, and the smallest increases for Netherland and Hungary. At the beginning of the analyzed period, Austria, Slovakia, Belgium, Netherland and Lithuania were characterized by values higher than the average value of the GNII index, while in 2018 - values lower than the average for other countries. This means that the economic growth rate in these countries was lower than in other EU countries. The ratio of the maximum value to the minimum value decreases from 1.513 in 1990 to 1.228 in 2018, which shows that the differences in economic development between countries have been decreased.

*Table following on the next page*

| | 1990 | 2000 | 2010 | 2018 | 2018/1990 |
|---|---|---|---|---|---|
| Austria | 0,967 | 0,899 | 0,842 | 0,842 | 0,871 |
| Belgium | 0,872 | 0,898 | 0,890 | 0,860 | 0,986 |
| Bulgaria | 0,757 | 0,674 | 0,757 | 0,927 | 1,224 |
| Croatia | 0,859 | 0,760 | 0,907 | 0,935 | 1,088 |
| Cyprus | 0,695 | 0,845 | 0,910 | 0,929 | 1,337 |
| Czech Republic | 0,852 | 0,806 | 0,896 | 0,907 | 1,065 |
| Denmark | 0,800 | 0,910 | 0,852 | 0,833 | 1,042 |
| Estonia | 0,671 | 0,759 | 0,841 | 0,912 | 1,358 |
| Finland | 0,747 | 0,883 | 0,788 | 0,980 | 1,311 |
| France | 0,716 | 0,886 | 0,853 | 0,872 | 1,218 |
| Germany | 0,766 | 0,891 | 0,805 | 0,846 | 1,105 |
| Greece | 0,801 | 0,834 | 0,808 | 0,939 | 1,172 |
| Hungary | 0,865 | 0,777 | 0,875 | 0,876 | 1,013 |
| Ireland | 0,769 | 0,881 | 0,982 | 0,849 | 1,105 |
| Italy | 0,753 | 0,891 | 0,891 | 0,932 | 1,238 |
| Latvia | 0,869 | 0,712 | 0,918 | 0,919 | 1,057 |
| Lithuania | 0,820 | 0,723 | 0,914 | 0,798 | 0,972 |
| Luxembourg | 0,865 | 1,010 | 0,845 | 0,851 | 0,983 |
| Malta | 1,016 | 0,828 | 0,832 | 0,865 | 0,851 |
| Netherlands | 0,825 | 0,915 | 0,778 | 0,827 | 1,002 |
| Poland | 0,801 | 0,753 | 0,812 | 0,863 | 1,078 |
| Portugal | 0,808 | 0,837 | 0,890 | 0,884 | 1,094 |
| Romania | 0,751 | 0,701 | 0,802 | 0,822 | 1,095 |
| Slovakia | 0,875 | 0,762 | 0,922 | 0,869 | 0,993 |
| Slovenia | 0,870 | 0,819 | 0,810 | 0,955 | 1,097 |
| Spain | 0,863 | 0,861 | 0,920 | 0,903 | 1,046 |
| Sweden | 0,843 | 0,893 | 0,872 | 0,885 | 1,050 |
| United Kingdom | 0,779 | 0,877 | 0,927 | 0,890 | 1,142 |
| **max/min** | 1,513 | 1,499 | 1,298 | 1,228 | |
| **mean** | 0,817 | 0,832 | 0,862 | 0,885 | |
| **standard deviation** | 0,074 | 0,078 | 0,054 | 0,044 | |
| **coefficient of variation** | 0,091 | 0,093 | 0,062 | 0,049 | |

*Tabel 3: GNII index for UE countries*

Table 4 presents the HDI index, basic statistics for HDI and single-base indexes for selected countries in EU countries in 1990, 2000, 2010 and 2018. In the analyzed years, all the European countries considered belong to the group of very highly or highly developed. The lowest HDI values were recorded for Croatia, Bulgaria, Latvia and Romania, while the highest values for Netherlands, Sweden and Germany. In 1990, Slovenia was among the countries with the highest HDI value, which in the following years was much lower in the ranking. In 2018, there was a clear increase in HDI for all the analyzed countries compared to 1990. In 2018, there was a clear increase in HDI for all the countries surveyed compared to 1990. In analyzed the period, the highest increases in HDI were recorded for Croatia and Ireland, while the lowest for Slovenia and Netherlands. When analyzing the ratio of the maximum value to the minimum value, it can be noticed that in the years 1990-2000 the differentiation between the selected countries in terms of socio-economic development deepened, while in the following years it decreased. In 1990. the maximum HDI value was 23.9% higher than the minimum value, in 2010 it was higher by 26.5%, while in 2018 it was was higher by 15.4%. Estimated classical measures of differentiation (standard deviation, coefficient of variation) confirm this regularity.

*Table following on the next page*

| Country | 1990 | 2000 | 2010 | 2018 | 2018/1990 |
|---|---|---|---|---|---|
| Austria | 0,795 | 0,838 | 0,895 | 0,914 | 1,149686 |
| Belgium | 0,806 | 0,873 | 0,903 | 0,919 | 1,140199 |
| Bulgaria | 0,694 | 0,712 | 0,779 | 0,816 | 1,175793 |
| Croatia | 0,67 | 0,749 | 0,811 | 0,837 | 1,249254 |
| Cyprus | 0,731 | 0,799 | 0,85 | 0,873 | 1,194254 |
| Czechia | 0,73 | 0,796 | 0,862 | 0,891 | 1,220548 |
| Denmark | 0,799 | 0,863 | 0,91 | 0,93 | 1,163955 |
| Estonia | 0,73 | 0,78 | 0,844 | 0,882 | 1,208219 |
| Finland | 0,784 | 0,858 | 0,903 | 0,925 | 1,179847 |
| France | 0,78 | 0,842 | 0,872 | 0,891 | 1,142308 |
| Germany | 0,801 | 0,869 | 0,92 | 0,939 | 1,172285 |
| Greece | 0,753 | 0,796 | 0,857 | 0,872 | 1,158035 |
| Hungary | 0,704 | 0,769 | 0,826 | 0,845 | 1,200284 |
| Ireland | 0,764 | 0,857 | 0,89 | 0,942 | 1,232984 |
| Italy | 0,769 | 0,83 | 0,871 | 0,883 | 1,148244 |
| Latvia | 0,698 | 0,728 | 0,817 | 0,854 | 1,223496 |
| Lithuania | 0,732 | 0,755 | 0,824 | 0,869 | 1,187158 |
| Luxembourg | 0,791 | 0,86 | 0,893 | 0,909 | 1,149178 |
| Malta | 0,744 | 0,787 | 0,847 | 0,885 | 1,189516 |
| Netherlands | 0,83 | 0,876 | 0,911 | 0,934 | 1,125301 |
| Poland | 0,712 | 0,785 | 0,835 | 0,872 | 1,224719 |
| Portugal | 0,711 | 0,785 | 0,822 | 0,85 | 1,195499 |
| Romania | 0,701 | 0,709 | 0,797 | 0,816 | 1,164051 |
| Slovakia | 0,739 | 0,763 | 0,829 | 0,857 | 1,159675 |
| Slovenia | 0,829 | 0,824 | 0,881 | 0,902 | 1,088058 |
| Spain | 0,754 | 0,825 | 0,865 | 0,893 | 1,18435 |
| Sweden | 0,816 | 0,897 | 0,906 | 0,937 | 1,148284 |
| United Kingdom | 0,775 | 0,867 | 0,905 | 0,92 | 1,187097 |
| **max/min** | 1,239 | 1,265 | 1,181 | 1,154 | |
| **mean** | 0,755 | 0,810 | 0,862 | 0,888 | |
| **standard deviation** | 0,043 | 0,052 | 0,038 | 0,036 | |
| **coefficient of variation** | 0,057 | 0,064 | 0,045 | 0,040 | |

*Table 4: HDI for UE countries*

In the next stage of the research, the spatial autocorrelation of LEI, EI, GNII and HDI indices in the EU countries in 1990, 2000, 2010 and 2018 was estimated. The values of the global Moran I statistics are presented in tables 5-8, respectively.

| | I | E(I) | Var(I) | I(S) | p-value |
|---|---|---|---|---|---|
| 1990 | 0,5751 | -0,0370 | 0,0223 | 4,0955 | 0,00002 |
| 2000 | 0,5620 | -0,0370 | 0,0221 | 4,0322 | 0,00003 |
| 2010 | 0,5657 | -0,0370 | 0,0220 | 4,0589 | 0,00002 |
| 2018 | 0,5213 | -0,0370 | 0,0219 | 3,7699 | 0,00008 |

*Table 5: Global Moran I statistics values for LEI estimated for EU countries*

| | I | E(I) | Var(I) | I(S) | p-value |
|---|---|---|---|---|---|
| 1990 | -0,2424 | -0,0370 | 0,0213 | -1,4069 | 0,9203 |
| 2000 | 0,2775 | -0,0370 | 0,0220 | 2,1195 | 0,0170 |
| 2010 | -0,0490 | -0,0370 | 0,0221 | -0,0801 | 0,5319 |
| 2018 | 0,0976 | -0,0370 | 0,0224 | 0,9002 | 0,1840 |

*Table 6: Global Moran I statistics values for EI estimated for EU countries*

| | I | E(I) | Var(I) | I(S) | p-value |
|---|---|---|---|---|---|
| 1990 | 0,3890 | -0,0370 | 0,0209 | 2,9456 | 0,0016 |
| 2000 | 0,5879 | -0,0370 | 0,0217 | 4,2422 | 0,00001 |
| 2010 | 0,5958 | -0,0370 | 0,0219 | 4,2773 | 0,00001 |
| 2018 | 0,5456 | -0,0370 | 0,0219 | 3,9400 | 0,00004 |

*Table 7: Global Moran I statistics values for GNII estimated for EU countries*

| | I | E(I) | Var(I) | I(S) | p-value |
|---|---|---|---|---|---|
| 1990 | 0,3890 | -0,0370 | 0,0221 | 2,8644 | 0,0021 |
| 2000 | 0,5932 | -0,0370 | 0,0221 | 4,2424 | 0,00001 |
| 2010 | 0,5698 | -0,0370 | 0,0221 | 4,0802 | 0,00002 |
| 2018 | 0,5256 | -0,0370 | 0,0221 | 3,7874 | 0,0001 |

*Table 8: Global Moran I statistics values for HDI estimated for EU countries*

Based on the data presented in Tables 5-8, it can be concluded that in the analyzed years the values of the global Moran I statistics are statistically significant and higher than the expected value. The exception is the EI index in 1990, 2000 and 2018. Thus, there is a positive spatial autocorrelation due to the level of the investigated features between EU countries, which means the forming of clusters of countries with a similar level of LEI, GNII and HDI. At the same time, the decrease in the value of the I Moran statistics in the analyzed years due to the average life expectancy suggests a weakening of the spatial dependence. On the other hand, the increase in the value of the global I Moran statistics for GNII and HDI means strengthening the spatial dependence of countries due to the GNI level and HDI level. The next stage of the study was to estimate the local values of Moran's statistics in order to identify the spatial structure. The calculated values of the Ii statistics for the EU countries in 1990, 2000, 2010 and 2018 are given in Tables 9 and 10. The significant values of Moran's local statistics are marked in bold.

| | **LEI** | | | | **EI** | | | |
|---|---|---|---|---|---|---|---|---|
| | **1990** | **2000** | **2010** | **2018** | **1990** | **2000** | **2010** | **2018** |
| Austria | -0,2045 | -0,0872 | -0,0838 | -0,0602 | -0,5143 | -0,0126 | -0,4055 | 0,0195 |
| Belgium | 0,5236 | 0,4533 | 0,4100 | 0,3605 | -0,6760 | 0,5240 | 0,0975 | -0,4659 |
| Bulgaria | 0,3241 | 0,6323 | 0,7020 | 0,9368 | -1,4121 | **1,3359** | 0,8040 | -0,0312 |
| Croatia | 0,5937 | 0,2506 | 0,3225 | 0,3472 | -0,1273 | -0,3634 | -0,5128 | 0,3770 |
| Cyprus | 0,8745 | 0,5549 | 0,2072 | 0,1818 | -0,9217 | 1,1471 | 0,1680 | 1,1119 |
| Czech Republic | 0,1915 | 0,0156 | 0,0435 | 0,0811 | 0,0212 | -0,0229 | -0,0980 | -0,0546 |
| Denmark | 0,1765 | 0,1576 | 0,1653 | 0,0968 | 0,1256 | 1,0155 | -0,3124 | 0,3835 |
| Estonia | **2,8790** | **3,5282** | **2,1971** | 1,1843 | -0,0540 | -0,5149 | 0,1185 | **2,0322** |
| Finland | 0,6072 | 0,7085 | 0,5605 | 0,5820 | -0,0634 | **1,8921** | -0,3815 | 0,6263 |
| France | **0,7756** | **0,7941** | **0,8445** | **0,7538** | -0,0922 | -0,0147 | 0,0484 | 0,0305 |
| Germany | 0,1499 | 0,2282 | 0,2006 | 0,1297 | 0,0031 | **0,3971** | -0,2820 | 0,2932 |
| Greece | -0,0132 | -0,3233 | -0,4650 | -0,6765 | -1,0590 | **1,1701** | 0,0221 | 0,6360 |
| Hungary | **0,9803** | **0,6082** | **0,5951** | **0,7012** | -0,3140 | 0,1064 | 0,2378 | -0,4039 |
| Ireland | 0,1779 | 0,1800 | 0,3759 | 0,2982 | 0,4085 | 1,3792 | -0,7571 | -0,0995 |
| Italy | 0,6109 | **0,7734** | **0,8619** | **0,8287** | 0,2564 | 0,1851 | -0,4820 | 0,4482 |
| Latvia | **2,4712** | **3,3373** | **3,0496** | **2,2746** | -0,5444 | -0,2991 | 0,2005 | 0,3732 |
| Lithuania | **1,7047** | **2,1390** | **2,7086** | **2,2489** | -0,1202 | -0,0079 | 0,7291 | -0,8031 |
| Luxembourg | 0,3227 | 0,4203 | 0,4580 | 0,4534 | -0,5014 | -0,3589 | -0,2054 | -0,1855 |
| Malta | -0,6309 | -0,3565 | -0,4881 | -0,6306 | -0,1221 | **1,9807** | -0,4357 | -0,9747 |
| Netherlands | 0,6608 | 0,4598 | 0,4288 | 0,3419 | -1,0011 | **1,3211** | 0,1610 | 0,1869 |
| Poland | 0,6810 | 0,3767 | 0,5353 | 0,4557 | -0,0197 | 0,0722 | 0,4864 | -0,1731 |
| Portugal | -0,3007 | -0,4256 | -0,5678 | -0,4106 | 0,0457 | -1,1580 | 0,3178 | -1,0756 |
| Romania | **2,1251** | **2,4107** | **2,3304** | **2,8269** | -2,3255 | 0,8685 | **1,5748** | 0,3372 |
| Slovakia | **0,7477** | 0,3561 | 0,4579 | 0,5138 | 0,1450 | 0,0110 | -0,9941 | -0,1443 |
| Slovenia | 0,0470 | -0,0006 | -0,0049 | -0,0349 | 0,3103 | -0,4483 | -0,0216 | **0,7077** |
| Spain | **1,2403** | **1,0941** | **1,2802** | **1,3527** | 0,7202 | 0,1289 | 0,3325 | 0,7118 |
| Sweden | 0,6072 | 0,7085 | 0,5605 | 0,5820 | -0,0634 | **1,8921** | -0,3815 | 0,6263 |
| United Kingdom | 0,1779 | 0,1800 | 0,3759 | 0,2982 | 0,4085 | 1,3792 | -0,7571 | -0,0995 |

*Table 9: Local Moran statistics values for LEI and LE*

Based on the data in Table 9, it can be seen that in the analyzed period, the local Moran statistics for the LEI are significant and greater than 0 for France, Hungary, Latvia, Lithuania, Romania and Spain. This means that these countries form the so-called clusters, i.e. objects surrounded by individuals with a significantly similar level of development of the average life expectancy.

A similar situation can be observed in the case of Estonia (1990, 2000, 2010), Italy (2000, 2010, 2018), Poland (1990) and Slovakia (1990). In 2018. the local Moran statistics estimated for EI are significant and greater than 0 for Estonia and Slovenia, in 2010 for Romania, and in 2000 for Bulgaria, Finland, Greece, Malta, Netherlands and Sweden. This means that the above-mentioned countries form clusters with a significantly similar level of education development as expressed by EI. In 1990, the local Moran statistics are irrelevant.

| | **GNII** | | | | **HDI** | | | |
|---|---|---|---|---|---|---|---|---|
| | **1990** | **2000** | **2010** | **2018** | **1990** | **2000** | **2010** | **2018** |
| Austria | 0,3573 | -0,0820 | -0,0330 | -0,2955 | 0,1581 | -0,0117 | 0,0830 | -0,0538 |
| Belgium | -0,2396 | **1,0300** | -0,4028 | 0,4531 | **1,2211** | **1,1464** | **1,1892** | **0,8843** |
| Bulgaria | 0,4448 | **1,6804** | **2,1047** | -0,0972 | 0,8980 | **2,0801** | **1,9742** | **2,3993** |
| Croatia | 0,3881 | 0,3995 | -0,2967 | 0,8224 | -0,6076 | 0,2755 | 0,2351 | 0,5623 |
| Cyprus | 0,3515 | 0,0043 | -0,9015 | 1,2657 | 0,0230 | 0,0459 | 0,0455 | 0,2102 |
| Czech Republic | 0,2209 | 0,0217 | -0,1995 | -0,3443 | -0,0845 | -0,0175 | 0,0071 | 0,0079 |
| Denmark | 0,1590 | 0,7772 | 0,2001 | 1,0286 | 1,0824 | 1,1234 | **1,9457** | **1,8083** |
| Estonia | -1,3742 | 1,4403 | -0,4058 | 0,4827 | 0,7637 | 0,8725 | 0,4650 | 0,1308 |
| Finland | -0,3233 | 0,5255 | -0,2438 | 0,0174 | 0,9279 | 1,4547 | 1,2244 | 1,6803 |
| France | -0,1261 | **0,7061** | -0,0266 | 0,0402 | 0,3702 | 0,4551 | 0,2009 | 0,0262 |
| Germany | -0,1864 | **0,5246** | 0,3210 | **0,5559** | **0,6155** | **0,6813** | **0,9962** | **0,7750** |
| Greece | 0,2620 | -0,0236 | 0,5471 | **1,2328** | 0,0397 | 0,3054 | 0,2234 | 0,6539 |
| Hungary | 0,4138 | 0,3942 | -0,0261 | 0,0003 | 0,2093 | 0,5004 | 0,4091 | **0,6988** |
| Ireland | 0,3323 | 0,3712 | **2,7103** | -0,0938 | 0,0822 | 1,0090 | 0,7834 | 1,3150 |
| Italy | -0,8680 | 0,2604 | -0,2852 | -0,0326 | 0,2247 | 0,0744 | 0,0433 | -0,0653 |
| Latvia | -0,6711 | **1,7948** | 0,3048 | -0,5393 | 0,7277 | **1,2866** | 0,7912 | 0,2816 |
| Lithuania | 0,0111 | **1,7780** | 0,0530 | -0,2952 | 0,6118 | **1,0888** | 0,8827 | 0,3280 |
| Luxembourg | -0,2807 | **1,7716** | 0,0764 | 0,4462 | 0,7535 | **1,0046** | **0,8829** | 0,5097 |
| Malta | **1,5200** | 0,0372 | -0,4722 | -0,5245 | 0,4828 | 0,5588 | 0,5260 | 0,1495 |
| Netherlands | 0,0031 | 0,8708 | 0,4268 | 0,9425 | **1,9281** | **1,4320** | **1,7334** | **1,4216** |
| Poland | -0,0323 | 0,4668 | -0,3905 | 0,3298 | 0,0957 | 0,1192 | 0,0338 | -0,0178 |
| Portugal | 0,2316 | -0,0661 | -0,2041 | -0,0101 | 0,6090 | 0,3566 | 0,4947 | 0,1692 |
| Romania | 0,0695 | **2,3002** | 0,9660 | -0,5607 | **1,6079** | **2,5541** | **2,4805** | **2,9539** |
| Slovakia | 0,5686 | 0,2627 | -0,1216 | 0,1008 | 0,1634 | 0,2246 | 0,1204 | 0,1707 |
| Slovenia | 0,4235 | -0,0001 | -0,3016 | 0,4336 | -0,8767 | -0,0928 | -0,1398 | -0,1667 |
| Spain | -0,2293 | 0,2021 | 0,4915 | 0,0280 | -0,0108 | 0,0837 | -0,0044 | 0,0002 |
| Sweden | -0,3233 | 0,5255 | -0,2438 | 0,0174 | 0,9279 | 1,4547 | 1,2244 | **1,6803** |
| United Kingdom | 0,3323 | 0,3712 | **2,7103** | -0,0938 | 0,0822 | 1,0090 | 0,7834 | 1,3150 |

*Table 10: Local Moran statistics values for GNII and HDI*

When analyzing the values of the local Moran statistics for GNII (Table 10), it can be noted that Germany and Greece form clusters in 2018, Bulgaria, Ireland, United Kingdom in 2010, Belgium, Bulgaria, France, Germany, Latvia, Lithuania, Luxembourg and Romania in 2000 ., and Malta 1990. Local Moran statistics in these cases are significant and positive. During the analyzed period, the local Moran statistics for HDI are significant and greater than 0 for Begium, Germany and Romania. We observe a similar situation for Bulgaria (2000, 2010, 2018), Denmark (2010, 2018), Hungary (2018), Latvia (2000), Lithuania (2000), Luxembourg (2010, 2000), Netherlands (1990, 2010, 2018) , Sweden (2018). Thus, the above-mentioned countries form clusters with a significantly similar level of socio-economic development measured with the HDI.

## 5. CONCLUSION

The study analyzes the socio-economic development of EU countries using the HDI index and its components. Based on the research, it can be noticed that the EU countries are developing and the differences between them are decreasing for EI, GNII and HDI. It may be related to the accession of some countries to the EU in the period under consideration. There is a relatively free movement of goods, capital, labor and technology between EU countries. In the analyzed period, the highest HDI values were obtained for Netherlands, Sweden and Germany, and the

lowest for Croatia, Bulgaria, Latvia and Romania. Moreover, the conducted study confirmed the existence of a positive global spatial autocorrelation for the EU countries in terms of the level of socio-economic development, as well as LEI, EI and GNII. These relationships are also apparent in the analysis of the local autocorrelation. Clusters are formed to identify countries that have similar values of the studied phenomenon. HDI was created to emphasize the role of people and their capabilities in assessing the development of a country. However, it should be realized that HDI does not reflect everything that is related to human development. HDI does not take into account the basic issues of human development such as gender inequality, race inequality, population security, and poverty.

**LITERATURE:**

1. Anselin (1995), Local Indicators of Spatial Association – LISA, *Geographical Analysis*, 27(2), 93-115.
2. Arbia G. (2006), *Spatial Econometrics: Statistical Foundations and Applications to Regional Growth Convergence.* Springer, New York.
3. Cliff A.D., Ord J.K. (1973), *Spatial Autocorrelation*, Pion, London.
4. Hozer-Koćmiel M. (2018), *Ocena rozwoju społeczno-ekonomicznego województw za pomocą HDI*, Wiadomości statystyczne 3 (682), p. 40-49.
5. Kopczewska K. (2006), *Ekonometria i statystyka przestrzenna z wykorzystaniem programu* R CRAN. Cedewu.pl, Warszawa.
6. Ojrzyńska A., Twaróg S. (2011), Badanie autokorelacji przestrzennej krwiodawstwa w Polsce, *Acta Universitatis Lodziensis. Folia Oeconomia*, 253, 129-141.
7. Pośpiech E. (2015), Analiza przestrzenna bezrobocia w Polsce, *Studia Ekonomiczne*, (227), 59-74.
8. Suchecki B. (red.) (2010), *Ekonometria przestrzenna. Metody i modele analizy danych przestrzennych*. Wydawnictwo C.H. Beck, Warszawa.
9. Tobler W. (1970), A computer Model Simulating Urban Growth in Detroit Region, *Economic Geography*, 46(2), 23-240.
10. UNDP Database, Retrieved 20.10.2020 from http://hdr.undp.org/en/data
11. UNDP, *Human Development Reports* 2019, Retrieved 10.11.2020 from http://hdr.undp.org/sites/default/files/hdr2019_technical_notes.pdf

# COMMUNICATION STRATEGIES OF LUXURY BRANDS DURING COVID-19 CRISIS

**Alica Grilec**
*Assistant Professor, University of Zagreb, Faculty of Textile Technology, Croatia*
*alica.grilec@ttf.hr*

**Dominik Vukusic**
*Student, Croatia*
*dominikvukusic2@gmail.com*

**Dino Dujic**
*Student, Croatia*
*dino.dujic285@gmail.com*

***ABSTRACT***

*As the market for luxury fashion products is constantly evolving and expanding, more challenges lie ahead for luxury fashion brands. Luxury fashion brands are considered as pioneers in introducing trends and pressure of taking additional activities to create a better relationship with their customers to provide them with a better and satisfying. As COVID-19 crisis remodelled global economy, luxury fashion industry was between the first industries that completely transformed their businesses in order to respond to the crisis situation and also between the first industries that placed their focus on humanness. Radical changes on the market needed new skills and marketing strategies to keep pace with global market developments and a completely new situation. This paper focuses on analysing innovative, creative and humanitarian ways of reaction and communication of luxury fashion brands during first three months of COVID-19 period. Content analysis included in total 4 luxury brands (Louis Vuitton, Chanel, Gucci and Burberry) and research was based on secondary data obtained from Social media (Facebook, Instagram and Twitter) in period from February to May 2020. Research concluded that although there were similarities in luxury brands reactions while communicating the same message of importance of staying at home and self-isolation, there were also different communication strategies used. While some of them used photography to deliver the message, other used music, art or poetry. All four observed fashion brands communicated their humanitarian side of business (donating medical masks, equipment and/or money to medical centres, medical workers or research centres) with celebrities' engagement and they posted on social media about their fight against COVID-19 regularly.*

***Keywords:*** *communication, crisis, luxury fashion, communication strategy*

## 1. INTRODUCTION

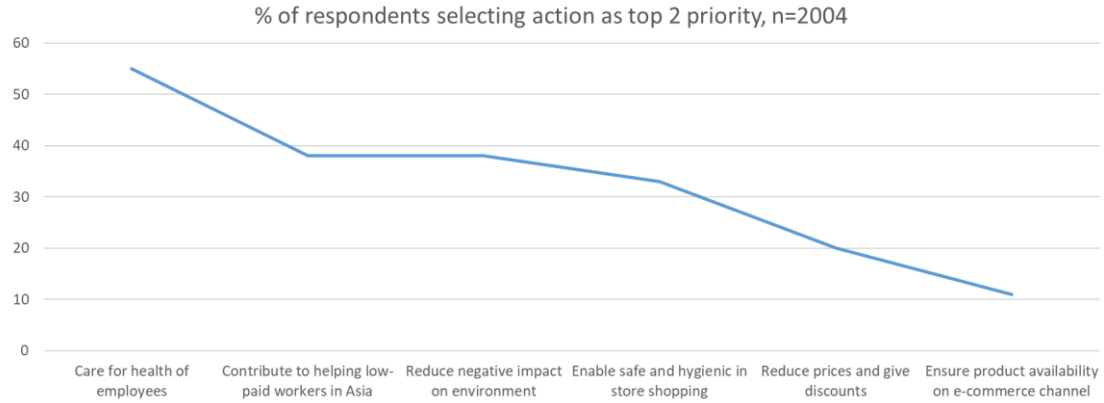
Manufacturers of luxury branded clothing are facing increasing competition in the market in recent years, so it is necessary to attract potential customers in a creative and innovative way to achieve greater financial gain and create positive reputation of products and brands. Manufacturers are therefore becoming increasingly innovative in terms of promoting their own products and brands. In order to gain the attention of customers in a new way, they are combining experience in various senses, who have "dulled" due to many promotional activities and constant exposure to similar types of promotion. Many luxury fashion brands started helping medical institutions and their staff by providing them with masks, sanitizers and gowns for free (Allaire, 2020; O'Kane, 2020). Other launched fashionable masks donating part of the profit against the coronavirus (Tobin, 2020).

The issue of new business strategies and models needs to be further studied in order to develop proposals for new models in pandemics and crises (Larchenko, 2020). In addition to becoming more popular, new promotion and communication strategies are often intertwined with traditional ones and thus achieve the best results with customers. A special challenge was found in the specifics of this crisis, which, unlike the big financial crisis in 2008, companies had to close their stores for a while and find a new way of selling and promoting their products. Since these two crises are different in nature, fashion companies will not have the same impact on their business as they did in 2008. As numerous analyses have shown, overall financial performance between luxury apparel and mass apparel companies was different in period between 2008 and 2011 (Lockrem, 2013), which initiates that luxury fashion had a kind of crisis resistance. Covid-19 crisis has provided a new challenge and an opportunity for new digital ways to work, advertise, shop and get entertained.

## 2. LUXURY FASHION BRANDS PROMOTION TECHNIQUES AND COMMUNICATION STRATEGIES

Since WWII the world has not faced such a form of restriction on the freedom of individuals, including movement, socializing, and most relevant — physical shopping (Pantano et al., 2020). Digitization and behavioural changes will leave a long-lasting mark in the world even after a pandemic (Langer, 2020). The promotion of luxury brands has set a fundamental goal precisely the sustainability of production in response to changes in commercial thinking in the European consumers who want to review and consider the established social and environmental effects of their businesses. The new era when people started prioritizing every-day products over luxury brands, in order to ensure safety and health. Luxury fashion companies, recovering from financial losses due to the Covid-19 crisis, are experimenting different strategies to engage with the consumers by building awareness around Covid-19 and connecting their brand with compassion (Ansari & Ganjoo, 2020). Luxury brands have begun to drastically change the way they are promoted, e.g. Burberry started signing on to Tmall's monthly luxury live streaming promotion and Louis Vuitton was one of the first luxury brand that started using live streaming tool and accentuation on globally accessible platforms like TikTok and Instagram Live (Granskog, A., Lee, L. & Magnus, KH et al., 2020).

*Sheme 1: Actions for fashion brands to help society deal with impact of COVID-19 crisis*



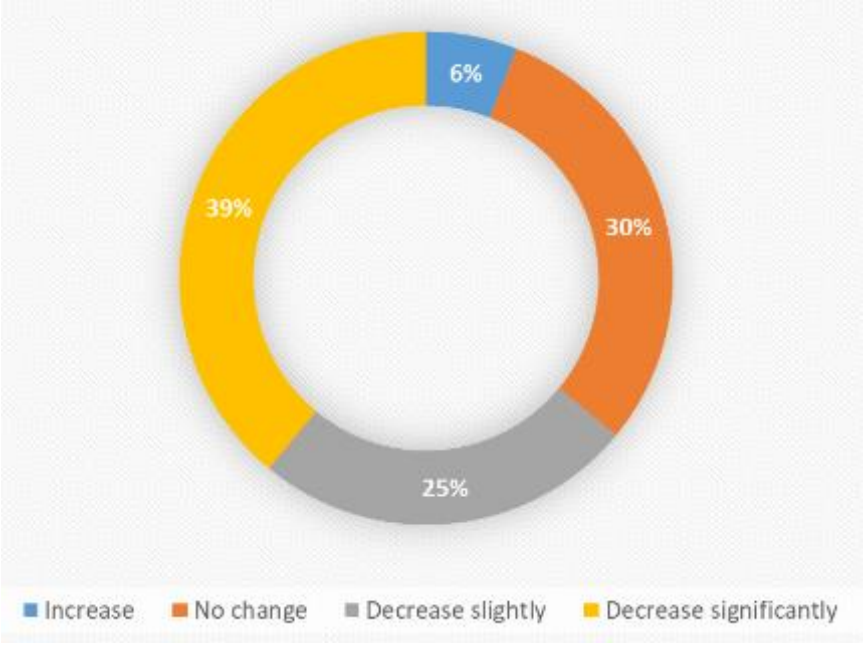

*Source: Granskog, A., Lee, L. & Magnus, KH et al., 2020)*

The graph above proves how the established consumer preferences have experienced a complete reversal with the entry into the health crisis, and accordingly, communication and promotion strategies must adopt to the disrupted environment. According to previous allegations, customer habits will not change abruptly with a change in the situation, but certain behavioural changes will remain for an even longer period of time.

## 3. CRISIS COMMUNICATION STRATEGIES IN FASHION

In times of uncertainty, customer behaviour is often influenced by feelings of shortage of goods (Hamilton et al., 2019). Due to all the characteristics of this crisis, the communication between brands and customers is moving to social networks, and the fight for every customer is conducted mainly on social networks. The advertising strategy must be adapted to modern consumer requirements, it must respect social responsibility and it must patch the financial gaps caused by the crisis as much as possible. Luxury fashion brands (LFB) use social media networks to ensure brand attitude and customer loyalty (Kim & Lee, 2019), require specific marketing strategies and are consumed and promoted on a specific way (Han, Nunes, & Drèze, 2010). Sense-breaking is created through crisis communications on social networks, when the message of great topicality reaches a wide audience (Mirbabaie & Marx 2020). Comprehension of human emotions during reflection on this theme revealed the centrality to fashion strategy implementation for further communication (Faria et al., 2020). However, a new perspective on the communication practice and experimental methods of luxury fashion advertising in the new integrative framework is becoming the new normal (Kohrs, 2020). A quick look at the Sheme 2 below shows that only a negligibly small proportion of customers have increased their consumption and this can be attributed to a single increase in available free time due to the crisis. The rest of the customers (94%) either reduced their consumption or it remained the same. This posed a major challenge for fashion companies and cast doubt on the applicability of their strategies.

*Sheme 2: Effect of COVID_19 crisis on fashion spending (March 2020, n=2004)*




*Source: Granskog, A., Lee, L. & Magnus, KH et al., 2020.*

That's exactly how 2016-2017 Armani was known to use secretive and supportive strategies and to have interaction with their customers via private networks, e.g. email, Facebook Messenger, website response etc. (Cabiddu et al, 2020). Through tabular comparisons of four different luxury brands, we will compare their communication changes. This paper have placed its focus on analysing innovative, creative and humanitarian ways of reaction of 4 luxury fashion brands (the most valuable brands, according Interbrand research, 2020) during COVID-19 period from March to June 2020 on the most popular social media platforms (Facebook, Instagram and Twitter).

## 4. RESEARCH ON LUXURY FASHION BRANDS COMMUNICATION STRATEGIES DURING COVID-19 CRISIS PERIOD

### 4.1. Research methodology and sample

As Baird and Parasnis (2011) emphasize, social networks play a significant role in communication, which is a key asset and advantage of companies in sales to unexpected heights. So, for the purpose of this research, we analysed communication content during the first months of pandemic period (March, April and May 2020) of four luxury brands from some of the most popular social networks worldwide as of October 2020, ranked by number of active users are Facebook (first place), Instagram (sixth place) and Twitter (seventeenth place) (Statista: Most popular social networks worldwide as of October 2020, ranked by number of active users 2020). For years, the most innovative social network Facebook, created in 2004, had socializing as its primary goal, and over the years it has become one of the most powerful business tools in the digital world (Bosanac, 2017). Every day, the number of new Facebook users grows (Kramarić, 2019). According to the statistical portal (Statista: Facebook & Facts, 2020), as of the 4th quarter of 2019, Facebook had more than 2.5 billion active users. These data show that this social network generated $ 70.7 billion in revenue, which mostly came from advertising. Instagram is young social network, which was created in 2010 and started working as a mobile application. Nakić (2017) points out that Instagram, given the importance of visual presentation of the product, is also useful in the business world because photos have become an integral part of the promotion. In the year 2019, almost 855 million users used Instagram (Statista: Number of Instagram user worldwide from 2016-2023), and „Instagram's global user-base is in the vicinity of 715 million and constantly growing", which means that „a large potential audience that can be easily reached via organic ads or influencers" (Statista: Global Instagram influencer market size from 2017 to 2020). Twitter was founded in 2006, and companies use Twitter to share information with those interested in their products and services faster and easier, posts are in the form of 'tweets', and messages contain up to 140 characters (Zavišić and Mijatović, 2015). In the year 2020, 353 million users used Twitter (Statista: Most popular social networks worldwide as of October 2020, ranked by number of active users 2020). Content posted on three observed social networks was analysed in period from March 1st to May 30th 2020 during the first three months of COVID-19 pandemics. This research included sample of four luxury fashion brands listed among 100 Best global brands by Interbrand (2020): Louis Vuitton, Chanel, Gucci and Burberry. Louis Vuitton ranks first in the Interbrand ranking of luxury brands (17th place in total ranking). With its brand value of $ 31,720m, it recorded a decline of 2% compared to the previous ranking. Chanel ranks second (21st place in total ranking), with brand value of $21,201m, it also recorded a decline of -4% compared to the previous ranking. Gucci ranks fourth (32nd place in total ranking) with brand value of $15,675m and decline of 2%. And, the last brand observed, Burberry ranks eight in luxury brand ranking (97th place in total ranking) with brand value of $4,495m and decline of 8% compared to the previous ranking. Content analysis is in detailed explained in the chapter 4.2, and summarized with table 1 in Conclusion.

### 4.2. Analysis on luxury fashion brands crisis communication

*4.2.1. Louis Vuitton*

The LVHM group, like most fashion organizations/brands, has been involved in the fight against COVID-19 since the pandemic began. The LVMH group owns many fashion brands, including Louis Vuitton. On March 20th, the fashion brand advertised for the first time in terms of pandemics and calls for fellowship in difficult times on Instagram and Twitter (Louis Vuitton, Instagram). Due to the impossibility of traveling during April and May, LV constantly invites his own companions/customers to travel "in spirit" to the past called #SpiritOfTravel, so at the end of March begins to publish photos of Jean Lariviere from the rich past that focuses

on the journey and inspiration that can come from it (Louis Vuitton, Instagram-a). On April 8th, via Instagram and Twitter, announces the conversion of their own workshops into facilities for the production of medical masks and angles and thanks to all volunteers who help in their creation (Louis Vuitton, Instagram-b; Louis Vuitton, Twitter). Among other things, the brand donated medical masks and coats to hospitals in Paris, vulnerable groups such as people in nursing homes and 25,000 masks to New York City-area hospitals. At the end of April, LV published a list of music selected by Virgil Abloh, creative director of Louis Vuitton men's collections called "Music Journey Virgil Abloch" urging followers/customers to stay home (Lois Vuitton, Spotify). In early May, they began posting photos of Annie Leibovitz titled "Travel back in time". Photos show LV campaigns with celebrities including Angelina Jolie, Catherine Deneuve, Sean Connery, Pale, Maradona, Zidane, Michael Phelps, Ali Hewson, Bono, Muhammad Ali, Steffi Graf, Francis Ford Coppola. Photos focus both on travel in the literal sense and on spirit travel and life travel. In mid-May, the LV Cine Club begins through which brand ambassadors (Sophie Turner, Alicia Vikander, Lea Seydox, Cloe Grace Moretz) share their own film selections for anyone who respects self-isolation and stays in their own homes (Louis Vuitton, Twitter-a). To mark the reopening of certain Louis Vuitton boutiques such as those in Frankfurt and Milan, the brand paints rainbow showcases as a symbol of hope in difficult times, shares images on social media such as Instagram, Facebook and Twitter (Louis Vuitton, Twitter-b,c). In mid-June, Louis Vuitton unveils a new Instagram filter inspired by the rainbow and reopens a boutique on Fifth Avenue in New York City (Louis Vuitton, Instagram-c).

*4.2.2. Chanel*

To help reduce the spread of COVID-19, help medical personnel and infected patients, Chanel decided to provide assistance to those in need during the pandemic. The brand announces its inclusion in the fight against the pandemic on March 29th via Instagram and Facebook alongside the publication of photos showing Gabrielle Chanel, Heidi Mount-Whitworth, Gaspard Ulliel and Diana Kruger (Chanel, Instagram). France, Italy, England, China and South Korea are some of the countries where Chanel has made donations to healthcare non-profits. At the end of March, they published a "The Sound of Chanel" music list on the Apple Music platform on Instagram, Facebook and Twitter to make it easier for customers to stay in homes during isolation (Chanel, Instagram-a). With the same goal on April 1, Chanel and Belgian singer Angela are organizing a live concert called "Stay Home with Chanel & Angele", everyone interested could follow the concert via Instagram story. During April, certain Instagram and Facebook posts invite customers to stay home, among other things, the brand presents a new line of cosmetic products (Chanel Beauty) with a description of „Mademioselle Stays Home", thus urging all followers/customers to stay home for their own safety and the safety of their loved ones (Chanel, Instagram-b). From April 10th on Instagram, Facebook and Twitter, Chanel begins sharing "The Sound of Chanel" music on the Apple Music platform selected by celebrities such as actress Margaret Qualley, brand ambassador Soo Joo Park, singer Angela, model and music producer Caroline de Magret, music group Ibeyi, musician and brand ambassador Sebastien Tellier and Michael Gaubert famous music creator for fashion events (Deeny, 2020). Chanel fights the pandemic in different ways, so part of the employees make masks and hospital robes/coats that are the most needed equipment for doctors and medical personnel working directly with infected patients (Chanel has donated more than 50 thousand medical masks to the competent French authorities, which are not enough due to high demand) (Joseph, 2020). The United States is one of the countries affected the most by COVID-19, so Chanel donated $2 million to help with medical emergencies and those communities most affected by the virus. During the first wave, the fashion label made contributions to the CDC (Centers for Disease Control), New York City hospitals (to help patients and medical personnel

in the city area), New York City-area public schools (supporting 1.1 million children in public schools, focusing in particular on the 114,000 children without their own home), non-profits that provide food, provide employment and shelter to those in need. Also Chanel has made it clear that it will not lay off its own employees due to the difficult economic situation that arose from the pandemic, but will preserve all jobs even if the fashion label gets into a disadvantaged financial position (Algar, 2020). Chanel is one of the fashion manufacturers that responded best to the emergence of the pandemic to help patients, medical staff and vulnerable communities while promoting itself as a fashion label that did not disobey people's needs during the pandemic and thus showed its humanity (Chanel, 2020).

*4.2.3. Gucci*

Gucci showed involvement in the fight against COVID-19 virus in late March when it announced via Instagram, Facebook and Twitter a donation of 1.1 million medical masks and 55,000 medical overalls to Italian hospitals and its medical staff. At the end of March, it announces a $1m donation to the World Health Organization and $1m to the Italian Civil Protection, and calls on the community to donate funds to stop the spread of the virus under the motto "We Are All In This Together" (Gucci, Instagram). By the end of March, Gucci is sharing several World Health Organization posts focusing on preventing the spread of the virus and maintaining physical activity during the pandemic. In early April, the brand also shared advice from the World Health Organization, which promotes physical distance and expressions of empathy for fellow human beings, among other things (Gucci, Instagram-a). On April 7th, the Luxury Group Kering celebrates World Health Day and on April 8th the group shows solidarity with medical personnel and doctors and donates $1 million to the Centers for Disease Control (Gucci, Instagram-b). Almost daily, it shares advices from the World Health Organization and promotes funding donations to help prevent the spread of the virus. In mid-April, they expressed support for medical workers #TogetherAtHome. Gucci invited its own followers/customers to dedicate themselves and develop hobbies during their home isolation. In mid-April, the brand showed support for medical workers by publishing a photo of a medical glove and yellow rose representing happiness and health (Gucci, Twitter). Collaborates with several artists from various fields of art, so through Instagram and Facebook the brand organizes a performance of the song "Il mio canto libero" with the singer Benedette Porcaroli, who encourages her own companions to togetherness, empathy and show support (Gucci, Instagram-c; Gucci, Facebook). On May 20th, expressed support for women over whom the amount of violence has increased since the epidemic began under the motto "We Stand With Women" (Gucci, Instagram-d). Its action against the spread of COVID-19 and providing financial assistance, Gucci leaves an extremely positive impression in customers and thus promotes itself on the market.

*4.2.4. Burberry*

Burberry, as a brand, is one of the most organized in terms of fighting COVID-19. This fashion manufacturer operates in a wide area to help medical workers, infected and at-risk groups. Burberry engages in the fight against the pandemic on March 28th when it announces via Instagram that the brand has donated 100,000 medical masks to the U.K. National Health Organization, funding the find, i.e. finding it. Developing vaccines against Covid-19 virus in collaboration with Oxford University, it also donates financial aid to charities that provide food to communities and individuals who cannot afford it, especially in this difficult time of the pandemic (Burberry, Instagram; Burberry, Instagram-a;b). Since the beginning of April, the brand has been collaborating with artists such as Rubber Legz, Helin, Colin Young, Elanor Johnson and Maria Seijn, Casper Wackerhausen-Sejersen, Luca Mastroianni, Deb Never, Olan Monk, Mal Devis who, with their art, tell Burberry followers/customers to stay home for their

own safety and the safety of their loved ones (Burberry, Instagram-c;d;e;f). Burberry also collaborates with artist Lisa Daley Ward, whose poetry is published with a message #StayHome (Burberry, Instagram-g). Burberry, like most fashion brands, did not disobeyed the needs of medical workers and infected patients, it is one of the fashion manufacturers that most preparedly welcomed the pandemic. Burberry has organized its assistance in a wide area to help as many of those in need as possible in various ways, thus leaving a very positive impression with existing and potential buyers on the market.

## 5. CONCLUSION

Luxury fashion market in recent years became highly competitive and therefore, it was already necessary to use new and innovative types of promotion in order to be able to attract customers in a creative and different way and thus achieve greater financial gain and a positive reputation of the product and the brand itself. Luxury fashion brands used celebrities and influencers in promotional activities to attract adolescents and young customers, but is this strategy still effective in COVID-19 crisis period? The answer is yes. Also in pandemic period, luxury fashion brands continue to communicate with their followers on social media with the use of celebrities. Interesting was, that they focused on the same message that is important for pandemic period (stay and home and self-isolate) but they communicate their message differently. In Table 1 it is shown that while communicating, during 3 observed months in 2020 (March, April and May), all four fashion brands focused on different types of communication media. Louis Vuitton communicated with photographs for promoting idea of staying at home with their campaign „Travel back in time "included pictures of celebrities. Chanel promoted the same idea with music selection and their campaign „The sound of Chanel "was available on the Apple Music platform and brand also organised live concert over social media. Gucci had the motto "We Are All In This Together" and collaborated with several artists from various fields of art to organize a performance of the song "Il mio canto libero" with the singer Benedette Porcaroli, who encourages her own companions to togetherness, empathy and show support. Burberry was one of the fashion manufacturers that most preparedly welcomed the pandemic and the brand spread important message of #stayhome using the poetry as a media. All four observed luxury fashion brands focused their communication strategies in fight against COVID-19. They all reacted very fast and started supporting communicating about fight against COVID-19 in March 2020 on their social media platforms. All four luxury brands immediately transformed their facilities for production of medical masks and they donated it to hospitals and to medical workers. Burberry started to financially support vaccines development with Oxford university, while Chanel made contributions to the CDC (Centres for Disease Control), New York City hospitals (to help patients and medical personnel in the city area), New York City-area public schools (supporting 1.1 million children in public schools, focusing in particular on the 114,000 children without their own home), non-profits that provide food, provide employment and shelter to those in need ana Chanel also highlighted that they will preserve jobs for their employees. Gucci announced a $1m donation to the World Health Organization and $1m to the Italian Civil Protection.

*Table following on the next page*

*Table 1: Summarized communication activities*

| | Communication focused fight against COVID-19 since March | Production / Donation of medical masks and coats to hospitals | Supporting vaccines development with Oxford university | Campaign on social media for urging followers/customers to stay home | Celebrity engagement in campaign for supporting self-isolation and to stay at home | Organizing a live concert via social media | New cosmetics line called „stay at home " | Campaign focused on photography (celebrities) | Campaign focused on music (celebrities) | Campaign focused on poetry | Campaign with artists from various fields to perform one song (celebrities) | Campaign for raising awareness for domestic violence | Promise to preserve jobs |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Louis Vuitton | + | + | | + | + | | | + | | | | | |
| Chanel | + | + | | + | + | + | + | | + | | | | + |
| Gucci | + | + | | + | + | | | | | | + | + | |
| Burberry | + | + | + | + | + | | | | | + | | | |

*Source: authors*

It can be concluded that all four luxury fashion brands regularly posted on all observed social media during first three months of COVID-19 period. They posted the same content on all social media. Differences between them were obvious and their new ways of communication were highlighted. In the first plan came their humanitarian engagement and their support to fight against COVID-19. Their celebrity's engagement was not targeting their promotion but supporting people to respect self-isolation and social distancing, and they used different types of media to stay connected with their customers and to build strong brand reputation.

**LITERATURE:**

1. Allaire, C. (2020), LVMH Will Use Its Perfume Factories to Produce Hand Sanitizer. Vogue, available at: https://www.vogue.com/article/lvmh-to-produce-hand-sanitizercoronavirus.
2. Algar, E. (2020), More good news: Luxury house Chanel is set to produce protective gear, Grazia, available at: https://graziamagazine.com/articles/chanel-to-produce-protective-masks/
3. Anasari, B. & Ganjoo, M. (2020), Impact of Covid-19 on Advertising: A Perception Study on the Effects on Print and Broadcast Media and Consumer Behavior, UGC CARE Journal 31(28), p. 52-62
4. Baird, H. C., Parasnis, G. (2011), From social media to social customer relationship management, Strategy & leadership, vol. 39 (5), p. 30-37.
5. Bosanac, T. (2017), Utjecaj online marketinga i društvenih mreža na promociju i prodaju proizvoda i usluga – master thesis. Univerzitet Singidunum, Beograd
6. Burberry, Instagram, available at: https://www.instagram.com/p/B-RltARgtT2/
7. Burberry-a, Instagram-a, available at: https://www.instagram.com/p/B-RlzH5AwYs/
8. Burberry-b, Instagram-b, available at: https://www.instagram.com/p/B-Rl6XsAsAn/
9. Burberry-c, Instagram-c, available at: https://www.instagram.com/p/B-e3LbYgvbo/
10. Burberry-d, Instagram-d, available at: https://www.instagram.com/p/B-utJcqAU2q/
11. Burberry-e, Instagram, available at-e: https://www.instagram.com/p/B-cirKtAw9x/
12. Burberry-f, Instagram, available at-f: https://www.instagram.com/p/B-9176EAhuD/
13. Burberry-g, Instagram-g, available at: https://www.instagram.com/p/B_ZZM5VAURB/
14. Cabiddu F., Dessì C. & Floris M. (2020), Social Media Communication Strategies in Fashion Industry. In: Lazazzara A., Ricciardi F., Za S. (eds) Exploring Digital Ecosystems. Lecture Notes in Information Systems and Organisation, vol 33. Springer, Cham.
15. Chanel, Instagram, available at: https://www.instagram.com/p/B-U7BtcJ6Fj/

16. Chanel, Instagram- a, available at: https://www.instagram.com/p/B-XRjSnIOou/
17. Chanel, Instagram-b, available at: https://www.instagram.com/p/B-l3AoCIvuk/
18. Chanel, official Web page (2020), available at: https://www.chanel.com/us/covid19-global-relief-efforts/
19. Deeny, G. (2020), Chanel to host live Angèle performance on Instagram, Fashion Network, available at: https://ww.fashionnetwork.com/news/Chanel-to-host-live-angele-performance-on-instagram,1204328.html
20. Faria A.P., Providência B., Cunha J. (2021), The Foreseeable Future of Digital Fashion Communication After Coronavirus: Designing for Emotions. In: Martins N., Brandão D. (eds) Advances in Design and Digital Communication. Digicom 2020. Springer Series in Design and Innovation, vol 12. Springer, Cham.
21. Granskog, A., Lee, L. & Magnus, KH et al. (2020), McKinsey Survey: Consumer sentiment on sustainability in fashion, available at: https://www.mckinsey.com/industries/retail/our-insights/survey-consumer-sentiment-on-sustainability-in-fashion#
22. Gucci, Facebook, available at: https://www.facebook.com/watch/?v=942563999532767
23. Gucci, Instagram, available at: https://www.instagram.com/p/B-NARHjCLkD/
24. Gucci, Instagram-a, available at: https://www.instagram.com/p/B-hQZ74qs_5/
25. Gucci, Instagram-b, available at: https://www.instagram.com/p/B-uoZzFJKJd/
26. Gucci, Instagram-c, available at: https://www.instagram.com/p/B_PgaO1iVpe/
27. Gucci, Instagram-d, available at: https://www.instagram.com/p/CAazdbZKmkL/
28. Gucci, Twitter, available at: https://twitter.com/gucci/status/1251131369213870082
29. Hamilton, R., Thompson, D., Bone, S. et al. (2019), The effects of scarcity on consumer decision journeys., J. of the Acad. Mark. Sci. 47, p. 532–550
30. Han, Y. J., Nunes, J. C., & Drèze, X. (2010), Signaling status with luxury goods: The role of brand prominence. Journal of Marketing, 74(4), p. 15–30.
31. Interbrand: Best Global Brands (2020), available at: https://interbrand.com/best-global-brands/
32. Joseph, S. (2020) Chanel joins the fight against COVID-19, Bazaar, available at: https://www.harpersbazaararabia.com/coronavirus/the-luxury-french-fashion-house-joins-the-fight-against%C2%A0covid-19
33. Kim, A. J., & Ko, E. (2010), Impacts of Luxury Fashion Brand's Social Media Marketing on Customer Relationship and Purchase Intention, Journal of Global Fashion Marketing,1(3), p. 164–171.
34. Kohrs, K. (2020), The language of luxury fashion advertising: technology of the self and spectacle, Journal of Fashion Marketing and Management, Vol. ahead-of-print No. ahead-of-print.
35. Kramarić, C. (2019), Oglašavanje na društvenim mrežama, Algebra, Zagreb
36. Langer, D. (2020) 3 critical steps luxury brands must take to rebound from COVID-19, Jing Daily, available at: https://jingdaily.com/china-luxury-brands-rebound-covid-19-dior-gucci/
37. Larchenko, V. (2020), A Fashionable Mask: Branded Value Proposition during the Coronavirus Pandemic. European Journal of Medicine and Natural Sciences, [S.l.], 4(2), p. 42-50.
38. Lockrem, S. (2013), Impacts of the Financial Crisis on Luxury Apparel and Mass Apparel Companies from 2008 to 2011, Open Access Master's Theses. Paper 51., available at: https://digitalcommons.uri.edu/theses/51
39. Louis Vuitton, Instagram, available at: https://www.instagram.com/p/B99GOnzqCM4/
40. Louis Vuitton, Instagram-a, available at: https://www.instagram.com/p/B-HIir8Awhz/
41. Louis Vuitton, Instagram-b, available at: https://www.instagram.com/p/B-ujhP_K-We/
42. Louis Vuitton, Instagram-c, available at: https://www.instagram.com/p/CBfZnrwqw4O/

43. Lois Vuitton, Spotify, available at: https://open.spotify.com/playlist/7dmaX7h0UK3KxDVWWuOq8d?si=41Ra3Dq-S-Cwrdgdu5gOiw
44. Louis Vuitton, Twitter, available at: https://twitter.com/LouisVuitton/status/1247936656059097099
45. Louis Vuitton, Twitter-a, available at: https://twitter.com/LouisVuitton/status/1261616143992852481
46. Louis Vuitton, Twitter-b, available at: https://twitter.com/LouisVuitton/status/1263454512972513282
47. Louis Vuitton, Twitter-c, available at: https://twitter.com/LouisVuitton/status/1263545102384979970
48. Mirbabaie, M. & Marx, J. (2020), Breaking' news: uncovering sense-breaking patterns in social media crisis communication during the 2017 Manchester bombing, Behaviour & Information Technology, 39:3, p. 252-266.
49. Nakić, A. (2017), Uloga društvenih mreža u obavljanju marketinških aktivnosti –master thesis, Sveučilište Jurja Dobrile u Puli, Fakultet ekonomije i turizma
50. Pantano E., Pizzi G., Scarpi D. & Dennis C. (2020), Competing during a pandemic? Retailers' ups and downs during the COVID-19 outbreak, J Bus Res. Aug; 116, p. 209-213.
51. Statista (2020), Global Instagram influencer market size from 2017 to 2020, available at: https://www.statista.com/statistics/748630/global-instagram-influencer-market-value/
52. Statista (2020), Facebook & Facts, available at: https://www.statista.com/topics/751/facebook/
53. Statista (2020), Number of Instagram user worldwide from 2016-2023 available at: https://www.statista.com/statistics/183585/instagram-number-of-global-users/
54. Tobin S. (2020), How to match your mask to the rest of your look: four stylish outfits to try now. The Telegraph, available at: https://www.telegraph.co.uk/fashion/style/match-mask-rest-look-four-stylishoutfits-try-now/?li_source=LI&li_medium=liftigniter-rhr.
55. Zavišić, S. & Mijatović, A. (2015), Društvene mreže u funkciji povećanja prodaje, Suvremena trgovina Stručni časopis za trgovinu, Mettler-Toledo, Zagreb

# CLUSTER ANALYSIS APPLICATION IN EXPLORING ECONOMIC INDICATORS DIFFERENCES AMONG BALKAN COUNTRIES

**Presiana Nenkova**
*Finance Department,*
*University of National and World Economy (UNWE),*
*Sofia,8th December str., 1700, Bulgaria*
*pnenkova@unwe.bg*

**Milena Kovachevich**
*Finance Department,*
*University of National and World Economy (UNWE,)*
*Sofia,8th December str., 1700, Bulgaria*
*mkovachevich@unwe.bg*

***ABSTRACT***

*More than ten years after the 2008 global financial and economic crisis, the world's economies recovery is uncertain and vulnerable. The global crisis has also affected Balkan countries. Although the overall social and economic impact was negative, the crisis influenced the economic performance of Balkan countries in different ways. The cluster analysis we applied suggested two distinct groups of countries. The first cluster includes countries with significantly lower GDP per capita, higher GDP growth, higher inflation and current account deficit, which is covered by FDI inflows. The second cluster includes countries that are already part of the Eurozone. After 2008 almost all indicators for both clusters deteriorated. However, unemployment rate and FDI decreased for the first group of countries and increased for the second group. The indicators that were meaningful for the classification of the groups differred before and after the year of 2008. The indicators that remained significant in both clusters before and after the crisis was GDP per capita and exchange rate regime.*

***Keywords:*** *Balkan countries, Cluster analysis, Economic indicators*

## 1. INTRODUCTION

Balkan countries present an interesting case study in terms of the dynamic of the processes in their economies and the continually changing development conditions. In socioeconomic terms, partly due to the different economic backgroung, the Balkan region is very diverse. Unlike Greece and Turkey, during the 90s some of the Balkan countries, the former socialist countries transitioning to a market economy, faced the difficult task of restructuring and reforming their national economies. Political instability during this period and the adverse effects of armed conflicts in the region, have hampered and slowed down the necessary structural reforms in the Western Balkans. The deepening integration of the European and global economy has given a strong impetus to investment and consumption in all Balkan countries, hence the robust GDP growth rates at the beginning of the new millennium. Overcoming economic and political shocks and a strong pro-EU orientation have improved the economic situation in countries lying on the Balkan peninsula. After a period of intensive economic growth until 2008, Balkan countries, in keeping with EU Member States, experienced a slowdown in economic activity. The aftermath of the crisis saw a significant outflow of foreign investment, a drop in capital expenditure, freezing of certain current costs, etc. The attractiveness of the idea of future membership for countries that are not yet part of the EU, is the main driving force and incentive for reform and problem solving. In 2004, Slovenia joined the EU as part of the large-scale enlargement of the Union in Central and Eastern Europe.

It was followed by Bulgaria and Romania in 2007 and Croatia in 2013, which became the first country in the Western Balkans to complete the onerous journey to becoming a full Member State of the EU. In 2020, Albania, North Macedonia, Montenegro, Serbia and Turkey have the status of candidates for full EU membership, and Bosnia and Herzegovina and Kosovo are potential candidates for membership. These countries have concluded stabilisation and association agreements with the EU, which create conditions for free trade and investment. In addition, some of the Balkan countries have already adopted the Euro as their national currencies, and others plan to do so in the future. Greece and Slovenia are members of the Economic and Monetary Union (EMU) of the EU and in the summer of 2020 Bulgaria and Croatia adopted the Exchange Rate Mechanism (ERM II) as a step towards joining the Eurozone. After gaining independence, Kosovo and Montenegro unilaterally adopted the Euro as their national currency, although they are not officially part of the EMU. Bulgaria and Bosnia and Herzegovina have established currency boards, which tie their national currencies to the euro. In addition, Balkan countries have taken on an obligation to comply with the quantitative convergence criteria established by the Maastricht Treaty, respectively the stability and growth pact, and most of them, except for North Macedonia and Turkey, have introduced additional fiscal discipline rules into their national legislation. The similarities and differences between the Balkan countries mean that an analysis of their macroeconomic indicators should involve an effort to group the countries, depending on the dynamics of certain economic variables. In geographical terms, the Balkan region includes both the countries situated within the borders of the Balkan peninsula per se. i.e. Bulgaria, Greece, North Macedonia, Albania, Bosnia and Herzegovina, Kosovo and Montenegro, and those whose territory is mainly or partly situated in the Balkans, such as Slovenia, Croatia and Serbia. Although only a very small part of Turkey is lying on the Balkan peninsula, the country has its influence on all other countries in the region and the same applies to Romania.This paper aims to fill the gap for lack of comparative studies of Balkan countries as a region. The next section presents methodology used and the prerequisites for the use of cluster analysis in comparing the Balkan countries. Section three presents the results of clustering the Balkan countries and the final section concludes.

## 2. METHODOLOGY OF THE STUDY

Cluster analysis is a method which allows the studied population to be divided into homogenous groups called clusters on the basis of several (typically more than two) variables. The economic variables used in current analysis are gross domestic product (GDP, growth rate), GDP per capita, inflation (%), gross sovereign debt (% of GDP), budget balance (% of GDP), unemployment (%), foreign direct investment (% of GDP) and current account balance (% of GDP). The exchange rate regime has also been used in the cluster analysis. We used the data of The World Bank, International Monetary Fund (IMF), National Statistics and Eurostat. The analysis covers the period 2004-2018. In order to track the changes in the indicators of the individual clusters and the countries in each cluster before and after the onset of the financial and economic crisis of 2007-2008, a non-hierarchical cluster analysis has been applied to the input data for 2007 (pre-crisis) and 2018 (ten years after the crisis) used in the analysis. The data has been analysed using the SPSS v.26 statistical software.

### 2.1. Prerequisites for the use of cluster analysis

The reasons for the use of a cluster analysis become apparent upon closer examination of the dynamics of some key macroeconomic parameters of the Balkan countries. For example, the analysis of the indicator GDP per capita warrants the division of the countries into two groups — countries with a significantly higher GDP per capita (Greece and Slovenia), which is closer to the EU average, and the second group which includes all other countries with GDP per capita between USD 5 000 and USD 15 000 (Fig. 1).

After the onset of the crisis in 2008, all countries recordes a drop in this indicator, which lasted for the entire duration of the next period of almost ten years. It was only in mid-2018 that the countries rebounded to the pre-crisis levels. The greatest drop in GDP per capita was registered in Greece where in 2018 the levels of the GDP per capita indicator were still lower than in 2004. Although in the period 2008-2009 the indicator also dropped in high-income countries, they saw recovery at a much faster pace and, at the end of 2018, GDP per capita was 11 % higher than in 2008. The analysis of available data on economic growth per country also supports the division of the countries into two groups — those with high average economic growth of approximately 5 % (Albania, Turkey and Romania) and the rest which registered lower economic growth rates during the period (Fig. 2). Bulgaria, North Macedonia, Serbia and Kosovo also registered relatively high economic growth rates (approximately 3 %), so they can be grouped separately. Average growth in all countries was higher than the EU average, except in Croatia where economic growth was the same as in the EU and Greece, the country which was most strongly affected by the Eurozone debt crisis and registered negative growth by 0.8 % during the period.

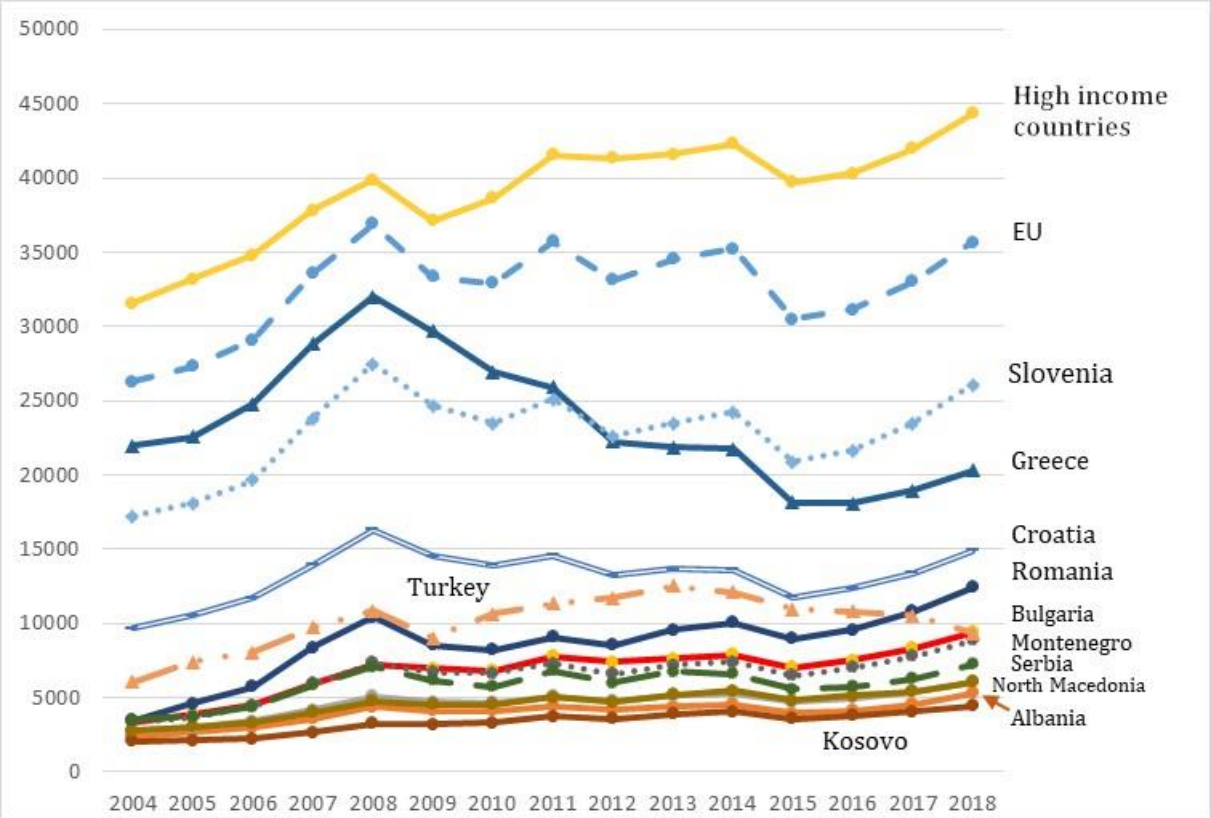



*Figure 1: GDP per capita*
*(Source: World Bank Database)*

*Figure following on the next page*

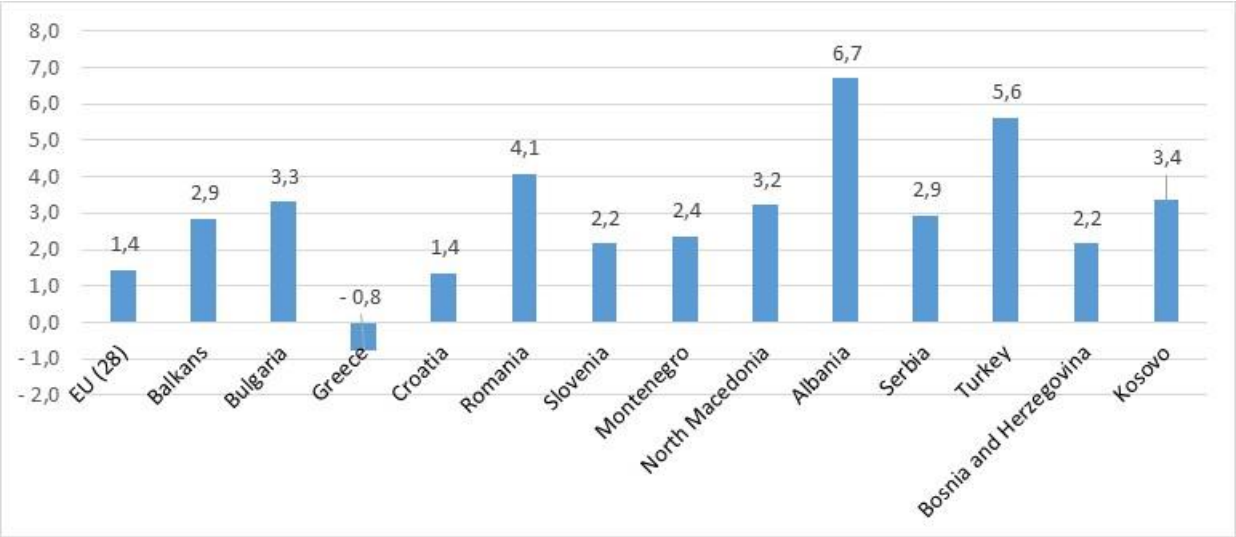



*Figure 2: Average economic growth rate, 2004-2018, ( %)*
*(Source: Eurostat, IMF, World Economic Outlook, April 2020 National Statistics)*

During the period 2004-2018 the Balkan countries also registered higher inflation rates compared to the EU average. Except for Greece and North Macedonia, where inflation was lower than the EU average, all other countries in the region registered inflation rates that were higher than the EU average (Fig. 3). Here, the countries can also be divided into two groups — those with high inflation (Romania, Serbia, Turkey) and all other countries with lower inflation, although the latter include several countries in which inflation rates were very close to the EU average (Slovenia, Kosovo, Croatia, and Bosnia and Herzegovina). In Bulgaria, Albania and Montenegro, average inflation remained relatively low but was still higher than the EU average and close to the average in other Balkan countries.

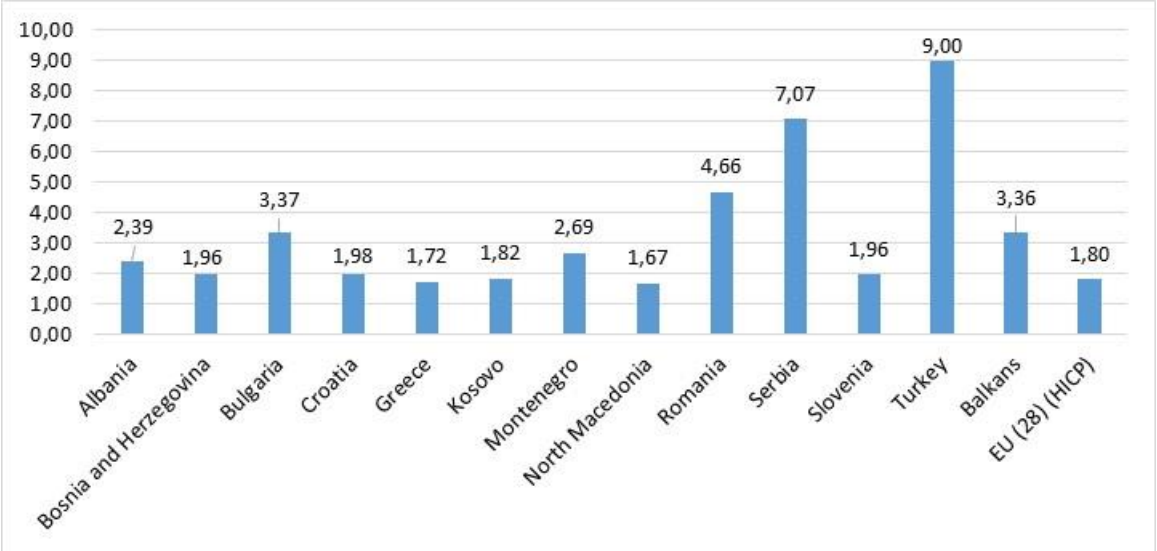



*Figure 3: Average inflation rate, 2004-2018, (%)*
*(Source:Eurostat, IMF, World Economic Outlook, April 2020; National Statistics)*

Unemployment in the Balkans remained relatively high throughout the period under review. The average unemployment rate was approximately 17 % with significant variations between the different countries (Fig. 4). The countries with the highest unemployment were Bosnia and Herzegovina, Kosovo, Montenegro, North Macedonia and Serbia.

The average unemployment rate in the other countries was lower but remained high compared to that in developed EU Member States.

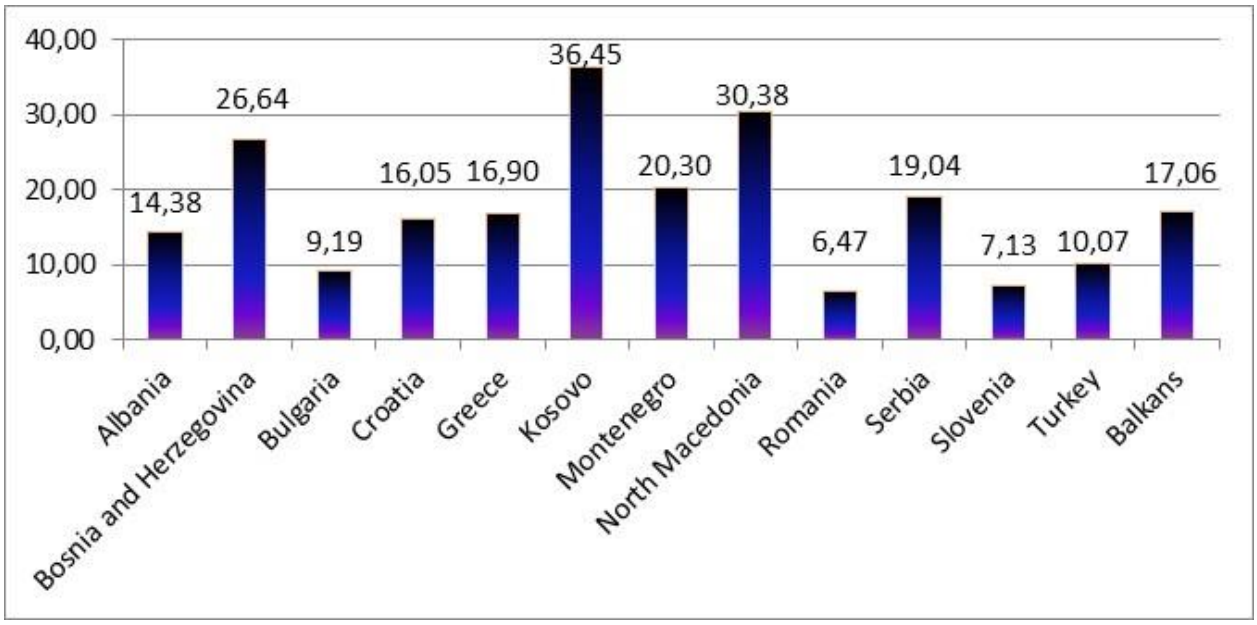



*Figure 4: Average unemployment rate, 2004-2018, ( %)*
*(Source:Eurostat, IMF, World Economic Outlook, April 2020; National Statistics)*

The emergence of two groups on the basis of these indicators signals the appropriateness of applying a cluster analysis. The exchange rate regime has been added as an indicator for the grouping of the countries for the purpose of a cluster analysis. The choice of the exchange rate regime and the subsequent movement of the local currency against the foreign currencies of trading partners can have a significant impact on the import and export of a country and thus on its foreign trade balance, GDP, inflation, investment and the economy as a whole. Domestic currency depreciation stimulates export and makes imports more expensive thereby increasing GDP while domestic currency appreciation causes a decrease in export and an increase in import. This is why countries with free-floating exchange rates are more flexible compared to all other currency exchange regimes, meaning that in the case of a negative shock on the economy, the shock is first absorbed by the exchange rate (which depreciates) and is only then felt in the real economy. This is the reason why countries with free-floating exchange rate regimes usually register higher than average GDP growth rates, but also higher inflation. Figures 2 and 3 clearly show the same trend in Balkan countries — countries with free-floating exchange rates (Romania, Turkey, Albania, Serbia) have the highest average GDP growth rates but also the highest inflation. According to the classification of the International Monetary Fund (IMF) published annually in the *Annual Report on Exchange Arrangements and Exchange Restrictions* the Member States of the Fund are divided into several groups, depending on their currency exchange regimes:

- Countries with hard pegs, including the countries with currency boards and the countries using foreign currencies as legal tender;
- Countries with soft pegs, which includes countries with fixed exchange rates, countries with crawling pegs and exchange rates fixed within a certain range, and countries with stabilisation agreements with the IMF;
- The group of countries with a floating exchange rate;
- The group of countries with other exchange rate regimes.

Table 1 sets out the classification of the countries according to exchange rate regime applied.

| **2018** | |
|---|---|
| ***Exchange rate regime (number of countries)*** | ***Countries*** |
| **Hard pegs (Currency Board (2) and No separate legal tender (2)) (4)** | Bosnia and Herzegovina, Bulgaria, Kosovo, Montenegro |
| **Soft pegs, managed floating and Stabilized arrangement (3)** | Croatia, North Macedonia, Serbia |
| **Floating (3)** | Turkey, Romania, Albania |
| **Eurozone countries (2)** | Greece, Slovenia |
| **2007** | |
| **Hard pegs (Currency Board (2) and No separate legal tender (2)) (4)** | Bosnia and Herzegovina, Bulgaria, Kosovo, Montenegro |
| **Soft pegs, managed floating and Stabilized arrangement (2)** | Croatia, North Macedonia |
| **Floating (4)** | Turkey, Romania, Albania, Serbia |
| **Eurozone countries (2)** | Greece, Slovenia |

*Table 1: Countries grouping according to the exchange rate regime*
*(Source: IMF, Annual Report on Exchange Arrangements and Exchange Restrictions 2007 and 2018)*

Although originally the countries did not have stabilisation agreements with the IMF, in certain periods (mostly after the 2007-2008 crisis) some of them, and more specifically Serbia, Albania, Turkey, Greece, Romania, Croatia, Kosovo, Bosnia and Herzegovina and North Macedonia, concluded stabilisation agreements with the Fund. For most countries, this did not involve a change in the original exchange rate regime used before the agreements were concluded. Out of the countries covered by the study, Bulgaria, Slovenia and Montenegro were the only countries that did not conclude agreements with the IMF during the period under review.

### 2.2. Literature Review

There are several studies examining different aspects of the application of cluster analysis to Balkan countries. Develioglu and Kantarci (2012) examine the competitiveness indicators of The World Economic Forum's Global Competitiveness Index, which takes into account factors such as institutions, infrastructure, macroeconomic environment, financial market development, market size, innovations etc., and conclude that the countries can be grouped into two clusters. The first cluster includes Bulgaria, Croatia, Greece, Romania, Serbia and Turkey. The second one includes Albania, Bosnia and Herzegovina, North Macedonia and Slovenia. The results show that the only statistically significant factor for differentiation between the clusters is market size, with the first cluster having a competitive advantage. Stanišić, Leković and Stošić (2019) consider the link between competitiveness and the quality of training, applying a cluster analysis to the second indicator. Balkan countries can thus be grouped into two clusters. The first cluster includes Greece and Slovenia in which the quality of training is significantly better than in the other countries (Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Montenegro, Romania and Serbia) as compared to the second cluster. Ivanovska (2020) examines the bank system of North Macedonia, EU Member States and the Balkan countries, using two cluster analyses. The results of the first cluster analysis of the banking sector show that North Macedonia is grouped first with Slovenia and then with Croatia, which reveals that its banking sector is most similar to the banking sectors of Slovenia and Croatia, respectively.

Regarding the results of the second cluster analysis of the financial brokerage indicators, North Macedonia is grouped together with Montenegro in the penultimate cluster and then together with Serbia, which confirms that financial brokerage services in these Balkan countries are less common as compared to the levels in other EU Member States. Kittova and Steinhauser (2018) apply a cluster analysis in which West Balkan countries are placed in predefined clusters of EU Member States, depending on the values of the Index of Economic Freedom. The results show that Albania, North Macedonia and Bosnia and Herzegovina are in the same cluster determined on the basis of Croatia; Montenegro is in the same cluster with Slovenia; and Serbia and Kosovo are in the cluster of Greece. Dumičić, Bahovec, Čeh Časni, and Palić (2014) examine consumer behaviour and online shopping in the countries in Central and Eastern Europe. According to one of the research hypotheses put forth by the authors the countries in Central and Eastern Europe display similarities in terms of the variables analysed and can probably be grouped in the same cluster. The cluster analysis has been applied to 30 countries and shows two distinct groups within the CEE. The first group includes five less developed countries (Bulgaria, Romania, North Macedonia, Serbia and Turkey) and the second four more developed countries (Greece, Cyprus, Slovenia and Croatia), which join the cluster together with several other EU Member States. Milošević, Žeželj, Gorton and Barjolled (2012) examine the food habits of people and the food selection in the countries in the Western Balkans and Gorton, Ness and White (2013) discover five groups of users for the Western Balkans characterised by significant differences in food consumption models both in terms of food consumption and demographic and social and economic characteristics.

## 3. RESULTS OF THE APPLICATION OF A CLUSTER ANALYSIS

The results of the application of the cluster analysis show that the countries can be divided in two clusters (Table 2). In 2007, out of the 2 clusters, the second one includes Greece and Slovenia (the countries are members of the Eurozone), while the first cluster includes all other ten countries.

| **Cluster centers for 2007** | | | **Cluster centers for 2018** | | |
|---|---|---|---|---|---|
| | Clusters | | | Clusters | |
| | 1 | 2 | | 1 | 2 |
| Exchange rate regime | 2,00 | 4,00 | Exchange rate regime | 1,90 | 4,00 |
| GDP | 17,37 | 9,12 | GDP | 5,47 | 4,47 |
| Inflation rate | 4,97 | 3,33 | Inflation rate | 3,56 | 1,25 |
| Budget balance | 0,52 | -3,38 | Budget balance | -0,92 | 0,86 |
| Debt | 27,88 | 62,91 | Debt | 45,06 | 127,65 |
| Current account balance | -13,89 | -9,03 | Current account balance | -4,38 | 1,30 |
| Unemployment rate | 19,07 | 6,62 | Unemployment rate | 13,97 | 12,21 |
| GDP per capita | 6425,55 | 26307,49 | GDP per capita | 8405,82 | 23189,42 |
| FDI | 11,21 | -0,86 | FDI | 3,93 | 1,81 |

*Table 2: Cluster centers*
*(Source: Authors' calculations)*

The first cluster includes countries with a significantly lower GDP per capita and, in keeping with general trends in developing countries, with higher GDP growth, higher inflation and current account deficit covered by the inflow of FDI. The countries in this cluster have, on average, lower sovereign debt and balanced budget accounts. However, unemployment is several times higher than the corresponding rates in developed countries (Figure 5). In 2018, more than 10 years after the beginning of the economic crisis in 2008, the number and the countries in the two clusters remain the same — ten countries in the first cluster and two countries in the second.

A deterioration in almost all indicators is observed in both clusters — higher sovereign debt and a slowdown in GDP growth. The inflation rate is decreasing in both clusters. In terms of FDI indicators, an increase was registered in the two countries in the second cluster (i.e. the developed countries in the Eurozone). The decrease in FDI in the countries in the first cluster indicates that almost ten years after the onset of the financial crisis in 2008, investors remain reluctant to invest in developing countries against a trend of increasing investments in the developed countries from the second cluster, despite the fact that they were most strongly affected by the debt crisis in the Eurozone. During global economic crises, FDI are among the first indicators registering a decrease across developing countries, regardless of whether the crisis was triggered by a developed or a developing country. As a result of the economic and debt crisis in the Eurozone, both average sovereign debts and unemployment rates increased almost twofold in the second cluster, Greece being among the most severely affected EU Member States. This has also had an impact on GDP per capita figures — for the developing countries from the first cluster, regardless of the economic crisis in 2008, in 2018 GDP increased by approximately 30 % while registering a decrease by approximately 12 % in Eurozone countries.

*Figure following on the next page*

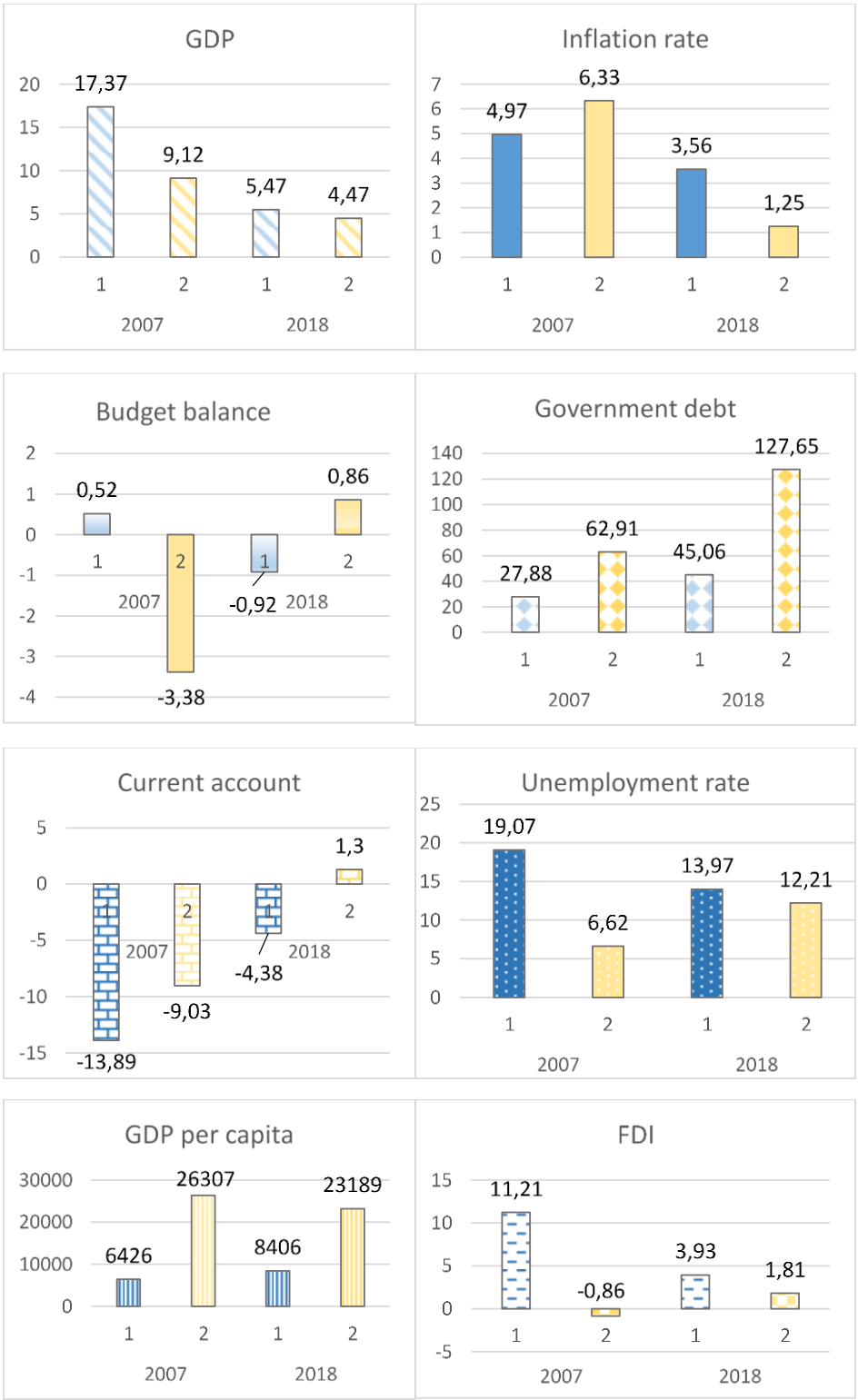



*Figure 5: Cluster centers*
*(Source: Authors' calculations)*

Table 3 sets out which of the nine variables are statistically significant for cluster determination. Those that are statistically significant contributed to the differentiation between the two groups of countries. In 2007, these were Exchange rate regime and GDP per capita. In 2018, the public debt was also a statistically significant variable serving to distinguish between the two groups of countries.

| Cluster analysis for 2007 | | | Cluster analysis for 2018 | | |
|---|---|---|---|---|---|
| | F statistics | Sig. Level | | F statistics | Sig. Level |
| Exchange rate regime | 4,231 | **0,016** | Exchange rate regime | 16,224 | **0,009** |
| GDP | 3,841 | 0,157 | GDP | 0,026 | 0,848 |
| Inflation rate | 2,561 | 0,313 | Inflation rate | 0,807 | 0,511 |
| Budget balance | ,466 | 0,191 | Budget balance | 0,033 | 0,267 |
| Debt | 5,341 | 0,064 | Debt | 12,568 | **0,009** |
| Current account balance | 0,430 | 0,563 | Current account balance | 1,079 | 0,220 |
| Unemployment rate | 3,837 | 0,169 | Unemployment rate | 0,378 | 0,778 |
| GDP per capita | 87,912 | **0,000** | GDP per capita | 51,875 | **0,000** |
| FDI | 4,088 | 0,068 | FDI | 0,469 | 0,323 |

*Table 3: Cluster analysis results*
*(Source: Authors' calculations)*

## 4. CONCLUSION

Depending on the main macroeconomic indicators – GDP growth, rate of inflation, GDP per capita, exchange rate regime, etc. – Balkan countries may be grouped into two clusters. The first cluster includes the developing countries, which are characterised by high GDP growth rates, relatively high inflation and unemployment, current account deficits covered by FDI, and low GDP per capita. The second cluster includes developed countries, which are also members of the Eurozone. These countries typically have lower levels of inflation and unemployment, lower GDP growth compared to the countries in the other group, higher sovereign debts but also the highest GDP per capita. During the post-crisis period, a drop in GDP growth rates and lower inflation levels coupled with higher sovereign debt were registered in both clusters. However, a decrease was registered in both unemployment and FDI in the developing countries from the first cluster while in the second cluster, i.e. in more developed countries, both unemployment and FDI inflow increased, mostly as a result of the higher risk in the global economy after the 2008 crisis, although more than ten years had elapsed since its onset. Despite this, GDP per capital registered an increase in the countries from the first cluster and a decrease in those in the second cluster. GDP per capita and exchange rate regime remain a statistically significant indicators for cluster determination both before and after the crisis. The remaining variable used to differentiate between the two groups in 2018 is sovereign debt.

## LITERATURE:

1. Develioglu, K., Kantarci, K. (2012). Clustering Balkan Countries Based on Competitiveness Factors: A Strategic Perspective, *Journal of Economic and Social Studies*, vol.2., no. 2. (pp.5-8). Sarajevo: International Burch University.
2. Dumičić, K., Bahovec, V., Čeh Časni, A., Palić, I. (2014). Internet Purchases in South-East European Countries: Cluster Analysis Approach, *Proceedings, International Conference SMEs and Innovation: Building competitive future of South-Eastern Europe*, Ohrid, 3-4 October, Macedonia. (pp. 171-183). Prilep: Faculty of Economy.
3. *Eurostat Database.* (2020). Retrieved 1.10.2020 from https://ec.europa.eu/eurostat/data/database.
4. Gorton, M., Ness, M., White, J. (2013). *Segmenting Consumers Using Cluster Analysis: An Application to Food Motivations in the Western Balkan Countries*, In book: Food Consumer Science (pp.43-55), Dordrecht: Springer.

5. *IMF, Annual Report on Exchange Arrangements and Exchange Restrictions for 2007 and 2018. (2018*). Retrieved 1.10.2020 from https://www.imf.org/en/Publications/Annual-Report-on-Exchange-Arrangements-and-Exchange-Restrictions/Issues/2020/08/10/Annual-Report-on-Exchange-Arrangements-and-Exchange-Restrictions-2019-47102.
6. *IMF, WEO Data April 2020.* (2020). Retrieved 1.10.2020 from https://www.imf.org/en/Publications/WEO/weo-database/2020/April.
7. Ivanovska, E. (2020). Cluster Analysis of Separate Indicators of the Banking Systems of North Macedonia, the EU Member States and the Balkan Countries, *Journal of Contemporary Economic and Business Issues*, Issue No: 1. (pp. 77-90). Scopje: Економски факултет - Скопје, Универзитет „Св.Кирил и Методиј“
8. Kittova, Z., Steinhauser, D. (2018). The International Economic Position of Western Balkan Countries in Light of their European Integration Ambitions. *Journal of Competitiveness*, 10(3). (pp.51–68). Zlin: Tomas Bata University
9. Milošević, J., Žeželj, I., Gorton, M., Barjolled, D. (2012). Understanding the motives for food choice in Western Balkan Countries. *Appetite*, Volume 58, Issue 1. (pp.205-214). Amsterdam: Elsevier.
10. Stanišić, T., Leković, M. & Stošić, L. (2019). Relationship between the quality of higher education and Balkan countries' competitiveness. *International Journal of Cognitive Research in Science, Engineering and Education*, 7(3). (pp. 49-59). Serbia: CEES
11. *World Bank Database.* (2020). Retrieved 1.10.2020 from https://data.worldbank.org/indicator/NY.GDP.PCAP.CD.

# AN ALTERNATIVE Q-THEORY FOR THE EXAMINATION OF THE HOSTILE TAKEOVERS PHENOMENON

**Eduardo Manuel de Almeida Leite**
*CiTUR, ESTG, University of Madeira, Funchal, Portugal*
*eduardo.leite@staff.uma.pt*

**Humberto Nuno Rito Ribeiro**
*GOVCOPP, ESTGA, University of Aveiro, Portugal*
*hnr@ua.pt*

**Sandra Raquel Alves**
*CEOS.PP, ESTG, Polytechnic Institute of Leiria, Portugal*
*raquel.alves@ipleiria.pt*

**Amelia Ferreira da Silva**
*CEOS.PP, Porto Accounting and Business School, Porto Polytechnic, Portugal*
*acfs@iscap.ipp.pt*

**Jose Manuel Pereira**
*IPCA-Polytechnic Institute of Cávado and Ave, CICF, Barcelos, Portugal*
*jpereira@ipca.pt*

***ABSTRACT***

*Despite the hostile takeover phenomenon being a current practice in nowadays business environment, it was, however, once classified as a "deviant innovation" (Hirsch, 1986, p. 800). Several hypotheses have been examined to explain the occurrence of corporate takeovers. These include synergies, exploitation of market power, reductions in employee welfare, hubris, among others (Shivdasani, 1993). However, little is known about the hostile takeovers prior to the capital market advent. This paper attempts answering this existing gap in literature. It examines one of the major problems in the business world, the issue of proper evaluations of potential threats. In a world of ever-lasting possible conflicts, businesses must constantly evaluate their own organization's strengths and weaknesses, together with potential opponents that may arise. These evaluation' needs are not new. The need to evaluate properly has been a part of the world of business ever since the very beginnings of business. While the need to evaluate has not changed, many of our tools-at-hand have. Sixteenth century Portuguese entrepreneurs may not have had modern statistical tools, but they found other, and no less valid, ways to evaluate their situation and make business decisions. By applying the concepts and principles of the alternative Q-Theory proposed in this paper, we believe it is possible to predict a takeover attempt, the course of business, as well as the success or failure of such events.*

***Keywords:*** *Takeovers, Alternative Q-Theory, Business Family, Business Conflicts, Businesswoman, Hostile Environment*

## 1. INTRODUCTION

Despite the hostile takeover phenomenon being a current practice in nowadays business environment, it was, however, once classified as a "deviant innovation" (Hirsch, 1986, p. 800). Several hypotheses have been examined to explain the occurrence of corporate takeovers. These include synergies, exploitation of market power, reductions in employee welfare, hubris, among others (Shivdasani, 1993).

However, little is known about the hostile takeovers prior to the capital market advent. This paper attempts answering this existing gap in literature. It examines one of the major problems in the business world, the issue of proper evaluations of potential threats. In a world of ever-lasting possible conflicts, businesses must constantly evaluate their own organization's strengths and weaknesses, together with potential opponents that may arise. These evaluation' needs are not new. The need to evaluate properly has been a part of the world of business ever since the very beginnings of business. While the need to evaluate has not changed, many of our tools-at-hand have. Sixteenth century Portuguese entrepreneurs may not have had modern statistical tools, but they found other, and no less valid, ways to evaluate their situation and make business decisions. In this paper we examine the business dealings of one particular Portuguese businesswoman, Beatrice de Luna, known in the literature as Doña Gracia Nasi. Traditionally, academics have studied business takeovers from financial perspective (Powell, 2004; Owen and Yawson, undated). In reviewing the business literature, it also becomes apparent that modern scholars often study these hostile actions from the perspective of the aggressor, i.e. the bidder, or from the perspective of the attacked, i.e. the target (vid. e.g. Ribeiro and Cravo, 2004; Ribeiro et al. 2012, Ribeiro, 2012). These studies provide us with a good sense of rational behaviour and pattern analysis, as it is the case of the Mergers & Acquisitions (M&A) waves phenomenon (vid. e.g. Ribeiro, 2010, 2012). However, such approaches neither examine or even deal with relevant "soft-data", such as as motivation, commitment to a specific ideology or organizational loyalty. In order to reach a deeper level of understanding, this paper focus on the issue of the hostile takeover not only from the perspective of business, but as an historical treatise that provides the researcher with a comprehensive combination of sociological, psychological and philosophical insights. In terms of methodological approach, we positioned as qualitative researchers, who, unlike the quantitative researcher, recognize that there is no full objectivity (Rossman and Rallis, 2012). We adopted the view of a qualitative research that recognizes the problems of validity within statistical research and seeks to compensate for these potential research problems by triangulating multiple sources and non-statistical methodologies (Yin, 2009). By examining the life of Doña Gracia from a distance of centuries, the authors believe that are able to observe her life with greater objectivity, allowing to examine her business decision-making model within its historical context. Furthermore, making use of the literature analysis, the authors use a number of hermeneutic tools to examine not only what the parties expressed, but also what may be the hidden, underlying "text behind the text.".

## 2. HOSTILE TAKEOVERS AND THE Q-THEORY

To develop this meta-analysis, we assume that there may be certain similarities between the military and the business' world. For example, militaries live in a world of zero-sum games, i.e., when someone wins, other one loses (Washburn and Wood, 1995; Dresher, Karlin, and Shapley, 1950). As such a military must be prepared for both defensive and aggressive situations. In a likely way, we assume business as a world based on a zero-sum game. To accomplish this analysis a number of new assumptions must be outlined, namely:

1. All businesses being groups are subject to conflict (Hobbes, 1991; Piirimäe, 2006; Marx, 1977).
2. No business can survive without a system of internal and external control (Walsh and Seward, 1990).
3. Organizations resist to change (Hannan and Freeman, 1984).
4. Decision-makers rarely have all of the necessary information with which to develop a final determination (Miller, 1956; Payne, 1976).

Therefore, based on these assumptions and inspired by classical sociological perspectives, we constructed a social theory in order to accomplished and test Kam's principles in the world of business. Scientists and scholars recognize that no theory is complete. In fact, starting with Einstein, physicists have worked for years to create what is now called "the theory of everything" in which one single theory would explain the totality of reality. So far, the theory of everything has eluded scientists as such there are no grand theories, but only those of the mezzo level. In reality, the attempt to produce a grand theory would result in a tautological error in which the theory proves itself by itself. As such we must work with theories of the mezzo or micro level. These mezzo-level theories provide the analytical tools that are needed for a meta-analysis of Kam (1988) thoughts and how they apply to the non-military world. Durkheim (1982) states that a social fact is "any way of acting, whether fixed or not, capable of exerting over the individual an external constraint, or which is general over the whole of a given society whilst having an existence of its own, independent of its individual manifestations" (Durkheim, 1982, p. 59). This concept interface with the ideas expressed by Kam (1988). In order to better understand the social context in which business must operate we have created a theory that we call Q. This theory permits historical reconstruction and allows the researcher to fill in missing lacunae. The theory argues that at times reconstruction may be more valuable than primary or even secondary data analysis as it permits the researcher to examine not only the data per se, but also the way the data appear, and permits the researcher to examine what data may have been omitted from the record. In this work we use the letter Q to represent any living organism (a real or social construct), or combination of organisms into a new social organism. We then begin by assuming that all organisms, be they concrete or social constructs, have certain similar characteristics and that these assumptions exist on some level within all forms of social life. These are:

- *Q's desire to survive.* If a Q does not seek its own survival than some form of social suicide will occur. What is true of biological sociology is also true of business sociology. Thus, businesses must either grow or begin to decline. They must take in more than the output if they are to survive. In the world of finance a business that does not perform the task of seeking its own survival chooses bankruptcy.
- *Q's may unite to form new Q's.* The smallest Q is the individual, who may join with another Q to form a dyad. Q's can become parts of multiple Q's (as seen in the diagram below) and these Q's may be exclusive, contained in one another or share some commonality. In the world of business, these Q's may be employees and employers, new joint ventures, business relationships etc.
- *A newly formed Q becomes independent of its mother Q*. That is to say that once a Q unites with another Q it enters into its own social reality. The older (mother Q) and the new Q's (daughter Q's) then live parallel existences. The formation of a new Q does not necessarily means the destruction of the older Q. For example, this means that in business employees may fight owners on one level while at the same time working to keep a company competition.
- *Q's consistently enter and exist relationships with other Q's, thus all Q's live in an unstable and always changing social environment.* Because Q's are dynamic social facts, they exist in a highly unstable world. This insight means that business is never stable, that not only are businesses going through consistent internal changes, but that the environment is also continuously in a state of change.
- *Q's are both expandable and contractible.* This statement means that Q's live in a hostile environment in which some Q's will seek to "consume" other Q's. This constant lack of stability means that business can never rest. Like a shark they must be in continual motion, neither resting nor sleeping.

- *Conflict is ubiquitous within and between each Q.* Not only are Q's unstable and exist in an unstable environment, but they are in constant competition for resources with each other. This competition may be conscious or unconscious, quiescent or active, but like static electricity it always has the potential to be activated.
- *The more complex the Q the greater the need for a clear division of labour (Durkheim, 1893) within the Q*. This means that large Q's not only need a way to distribute tasks, but also require ethic and economic regulation to hold a Q together.
- *To maintain stability between Q's each sub-Q must receive, or believe it is receiving, more than it is giving*. Therefore, Q's live within the realm of social balance. When social balance ceases to exist then the Q's sub-Q's will begin to spin apart one from the other. The social balance need not be the same on both sides of the scale. Thus, Q's can be held together by psychological, economic or physical rewards.

Q's are not, however, one-dimensional. Instead, within each Q are different forms of energy that interact and create a dynamic that allows the Q to be held together. Just like the atom in which there are sub-atomic factors that are constantly in motion, so too are there sub-Q principles that never cease. In the world of atomic physics these sub-atomic particles are called, neutrons, protons and electrons. These particles are never still but rather they are in a state of constant interaction. In a like manner, Q's have their sub-Q's. We call these sub-Q energy particles: P's, E's and I's. These letters are merely social constructs used for the purpose of evaluation and analysis. As noted above these sub-Q dynamics produce evolving energies. Below is an analysis of these energies and how they interact within the Q. Figure 1, shown below, is an example of a Q within a Q.

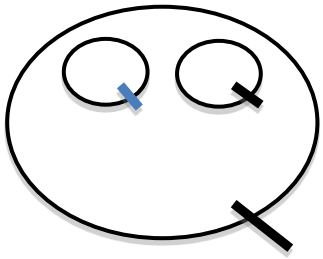


*Figure 1: A Q within a Q*
*(Source: Adapted from Leite, 2013)*

Social groups have multiple aspects that we will call for purposes of this research as PIE. PIE is composed of the follow assumptions and parts:

- All social organisms, such as a business, have needs represented by the letter E (economics). No social organism can exist without needs and all social organisms must identify their needs. For example, social organisms have the need to "take in" more than they "put out." That is to say, that any social organism must either grow or begin to die. For purposes of this work, we represent these needs by the letter "E" which stands for economics. Failure to identify these needs may lead to misevaluations, military defeat or business failure. At times Q's are unaware of their needs and this lack of understanding may lead to false conflict or non-satisfactory resolutions of a problem.
- All organizations must find a way to satisfy these needs. An organization may know its needs (P), but if it cannot satisfy these needs then organizational death occurs. We have classified the act of satisfying an organization's need by the letter "P". In our social theory we understand P (politics), as the means through which an organization satisfies its wants and needs, be these means legal or illegal, moral or immoral. In the political world, a

government is a means to satisfy a nation's needs, but is in itself a sub-Q that has both needs and methods.

- The E of one Q may be a separate Q unto itself. Thus, a business may be that E that permits a Q to earn money, but once established becomes its own Q with a full set of sub P's, E's and I's'.
- Organizations must function in both a world beyond themselves and within themselves. Because organizations do not exist in isolation, they must justify their needs (P) and needs fulfilment methodologies (E) to others and to themselves. We call this justification process the "I" (ideology). Ideologies move people and permit organizations to justify their actions to their constituents and to themselves. We hypothesize that without the proper organization ideology, no group can survive. Furthermore, while few Q's are willing to sacrifice themselves for another Q's P, many Q's may share a common I and thus sacrifice itself/themselves on behalf a common I. Examples of I's range from emotions such as love or hate, to forms of human expressions such as marketing or propaganda.

It is essential to remember that each Q is a social organism unto itself and is at the same time part of multiple Qs, and that each sub-Q will have its own PIE. We may then state that: Q = P + E + I plus the sum of its sub Q's. All evaluations reflect the E of a specific Q's P as represented by its I. If the evaluation does not encompass the proper I then no matter how correct the evaluation's mathematics may be, the evaluation will not be accepted by the defining Q. As previously stated, Q's bond with other Q's to form new Q's. This bonding, however, does not mean that the first Q ceases to exist or that its own particular PIE ceases. Thus, we have not only Q's and sub-Q's, but also PIE's and sub-PIE's. Furthermore, a Q may have multiple P's, E's and I's. P's E's and I's however do not exist in a vacuum. Instead they must have human beings who turn these ideas into realities or social facts. We represent this humanization of the P, E and I by the letter H. Accordingly, we can have a PH1, PH2, etc. That is to say these are the person(s) in charge of determining necessities or who create necessities. In a like manner, we can hypothesize the concept of an EH and an IH. In an organizational structure the PH may be the person(s) who set(s) the agendum, the EH may be the staff, and the IH may be the marketers or human resource management. It should be stated that H's can mutate, thus in one situation an H may be a PH and then in another situation transition into an EH or IH role. However, each PH, EH, and IH is part of multiple dynamic Q's, and lives within an infinity of Q's. This multiplicity of Q's means that not only is the Q unstable, but that competition is ever present. Thus, we can predict that within the PH, EH and IH exists a competitive ranking, that is to say PH1, PH2, PH3 and so on, along with an EH1, EH2, EH3, IH1, IH2, IH3, etc. It should be noted that the I provides the 'social glue' to hold the Q together and that with few exceptions, real power lays within the realm of the Q's I. That is to say that within an organization the IH will dominate even if it does not have authoritative power. As stated above, we assume that a Q's leaders and leadership are never totally stable. This means that competition for power may exist within the Q just as the Q must fight for survival within a greater Q. Power is never one-dimensional. Instead, there are different forms of power. Two of these forms we will call "Authoritarian Power" (AP) and "Influential Power" (IP). By AP we refer to power enshrined into a position such as a president of a company, or a CEO. Authoritarian Power may also lie within the realm of the "I". For example, a religious leader or a judge may have authoritarian power by dint of their position within the Q. Authoritarian power may also cross the lines of a Q. Thus, the PH, PE and/or PI may be the same person as the person who has AP. The person(s) who hold AP power holds specific rights and duties and it is assumed that these people will exercise their power for the good of the larger Q and for their personal Q's, should that be needed. The term IP refers to power not necessarily enshrined in a job description, but rather by the informal use of influence.

For example, a secretary may have a great deal of influence on their boss, or may be able to control a situation by becoming a gatekeeper or a controller of information. As such the person of AP becomes dependent on the person with IP. All organizations must deal within the confines of the social world. How an organization chooses to see that world is dependent on its theoretical perspective. For example, a Q's leadership may choose to see the nature of people as totally good (e.g. *Candide, ou l'Optimisme,* Voltaire, 2011) or from a highly defensive nature. The assumption about the nature of humans leads to the following working hypotheses:

- Openness to a surprise attack against one's business may be related to the negative or positive worldview that a Q's leadership holds.
- Business CEOs and presidents may be either powerful or merely figureheads.
- Internal conflicts may so outweigh the need to protect a business that it becomes vulnerable to surprise attacks due to misevaluations.

Although not stated overtly numerous social thinkers throughout the ages have contributed to the ideas behind the Q. For example, Weber (1930; 2003) developed the concept of "Symbolic Interaction". Symbolic Interaction assumes that the value of any action is determined by the way we choose to view (examine) any particular action of set of actions. For example, a child may slap a father and we interpret this slap as nothing more than cute, a slap between angry lovers may not be liked but will be tolerated, while the same slap between two men who are not friends can be a call to battle. Weber argues that things are defined within a social context. What is acceptable in one context may not be acceptable in the next. Weber as such worked in the realm of the Q's I. Q's are consistently examining the symbolism of other Q's. Symbolic interaction argues that evaluations fail when one Q assigns a meaning to an action that is different from what the other Q meant. A failed analysis does not necessarily result in conflict. It does, however, open Q1 to a surprise attack (misevaluation) by Q2. Although the P and E are essential, the real work of evaluation almost always occurs in the realm of the I. The work of the early XX century philosopher Martin Buber provides us with further insights into the realm of the I. Buber (1958) hypothesizes that all inter-Q relationships can be viewed on two planes. The first plane he calls: "I-Thou". Buber (1958) wrote "to man the world is twofold in accordance with his twofold attitude. The attitude of man is twofold, in accordance with the twofold nature of the primary-words that he speaks. The primary-words are not isolated words, but combined words. The one primary word is the combination I-Thou. The other primary word is the combination I-It; wherein, without a change in the primary word, one of the words he and she can replace the it. Hence the I of man is also twofold. For the I of the primary I-Thou is a different I from that of the primary word I-It" (Buber, 1958, p. 3). The author expresses the idea that no Q exists in isolation, rather we judge a Q by its various primary-shared-relationships, so that a Q changes its nature not by what it is but rather with whom/what it interacts. In order to interact, a Q must judge the other Q's within its frame of reference. Thus, in business, a Q that poorly judges its interactive fellow Q's is liable to both a surprise attack and to destruction. In mathematical terms, Buber (1958) is referring to weighing factors within multivariate equations, in which each evaluator must determine the importance of each sub-Q relationship within the realm of a Q or of competitive Q's. Durkheim (1893; 1982), Weber (1930; 2003) and Buber (1958) provide the following insights:

- Business must deal with social facts.
- Businesses are in a continual set of change.
- Businesses are open to misinterpretations by interpreting the symbolism of an event (social fact) incorrectly.
- Businesses may misdiagnose or chose not to diagnose an event and thus open themselves to a surprise attack.
- These surprise attacks may be due to internal conflicts or to external conflicts.

Buber's model then adds depth to that of Weber's. Weber looks at how a Q interprets another's actions, while Buber looks at how symbolism interacts within the dynamic of the Q's. Marx may be seen as a mélange of Hobbes and Hegel (Worsley, undated). Hobbes (1651) viewed society as a world of internal conflict. In his work "*The Leviathan*" Hobbes (1651) accepted the idea that to live is to be in a state of battle and that each entity competes for resources. The author extended this idea even to the world of botany. For example, Hobbes (1651) argued that trees compete for sunlight and that the roots of plants compete for water. Hobbes (1651) argued that all Q's are in a perpetual competitive state of war. Hegel (1817) saw the world as a dynamic in which ideas created facts and that these ideas would be part of an eternal pattern of growth and rebirth. In his work *The Encyclopedia of the Philosophical Sentences in Outline*, Hegel (1817) called this process the interaction of the thesis (idea) with its counter idea, called the antithesis from which a new idea was borne, the synthesis, which in turn would become a new thesis. Worsley writes of Hegel: "In Hegel's thinking, the progress of humanity was seen in terms of the gradual refinement and realization of the uniquely human capacity to understand not only the natural world of which human beings were a part, but also to understand the principles which underlay the development of both the natural world and of society" (Worsley, undated, p. 23). From Hegel's perspective, this growth and rebirth pattern would continue into infinity. Hegel's conceptualized Q's are borne from ideas; the Q goes through a lifecycle and in the end another Q absorbs it. In the world of business examples of action such as these may be called a hostile takeover or a government takeover. Worsley goes on to state: "…Hegel argued that there was no separate real world out there, beyond and quite apart from our mental categories. The world rather can only be known through our mental activity, and the concepts we use to make sense of the world are constantly changing: historical, not fixed categories. Knowledge was relative, not absolute" (Worsley, undated, pp. 23-24). Hegel's analysis tells us a great deal about Q's and their relationship position to each other. If we assume that Kam (1988) is writing about attacks between two Q's and an analysis is nothing more than a snapshot of reality taken at a specific time, then Hegel's analysis means that all business evaluations are merely transitory and never fully accurate. Marx (1977) synthesized these two philosophers into one. From a Marx perspective, conflict is ever present, but Marx places certain provisos on his ideas of conflict. Firstly, Marx turns Hegel on his head. Instead of ideas creating realities, Marx argued that ideas are the results of realities. Thus, realities adjust their ideas as a form of self-explanation. Furthermore, Marx took a messianic view of the world and of the nature of mankind. Like Buber, Marx argued that Q's relationships are twofold. However, Buber defined the Q by relationship theory, while Marx defined the Q by theo-economic theory. That is to say, Marx argues that there are two groups of people that inhabit the world, the proletariat and the bourgeois. Marx argued that the bourgeois is by nature cruel and seeks to exploit the proletariat. The proletariat, on the other hand, is pure goodness. As such, once a revolution is to occur, the nature of the Q changes and conflict ceases (See George Orwell's books such as: *Animal Farm* and *1984*.) From Marx' perspective, all conflict between Q's occurs due to the bourgeois' desire to dominate and to control the proletariat Q's. In business, this means that there can be no sense of morality or ethics, but instead a state of constant warfare until the system self-destructs. In a contrary position to Marx lies the philosophy of the American economist Adam Smith. In his work *The Wealth of Nations*, Smith (2003) argues that a Q succeeds by means of competition with other Q's. From Smith's perspective competition not only determines which Q's will dominate and which Q's will fail, but also Q's define themselves by their competitive nature. This precursor to Social Darwinism then argues that societies need competition and that the more a Q is allowed to compete with other Q's the greater its chance for success. Meanwhile, a hostile takeover seen from a Marxian perspective is a step backwards. A Marxist would argue that hostile takeovers represent capitalist greed and the lack of morality within the bourgeois.

From the perspective of Adam Smith, a hostile takeover represents the pinnacle of success. It is the ability of the strong to eliminate the weak and strengthens a society by vanquishing the less strong. We now turn to the research of Parsons (1937, 1960). In many ways the Parsons perspective on theory is very close to that of quantum physics, in that Parsons believed that everything is connected to everything else in both the social world and that of finance. That is to say that even the slightest change in the social system can provide unexpected changes at a later date. The chaos theoretician, physicist Lorenz (1993) famously called this the "butterfly effect". "… Chaos theory attempts to explain the fact that complex and unpredictable results can and will occur in systems that are sensitive to their initial conditions. A common example of this is known as the Butterfly Effect. It states that, in theory, the flutter of a butterfly's wings in China could, in fact, actually affect weather patterns in New York City, thousands of miles away. In other words, it is possible that a very small occurrence (sic) can produce unpredictable and sometimes drastic results by triggering a series of increasingly significant events" (vid. e.g. http://library.thinkquest.org/3120). Likewise, any change in the financial/social structure may produce unexpected consequences. From the Parsons perspective the asking then of the question "why" is a methodological mistake, as the true answer to why may never be known. Instead, why provides us with only partial answers to partial questions. Parsons thought also connects nicely with another principle found in Kam, which is: Evaluations often fail due to information overload, and this evaluation failure may lead in a like manner to a business failure. Kam (1988) argues that analytical groups often suffer not from a lack of information, but from too much information that leads to an analysis paralysis. Kam (1988) shows how military organizations often miss a threat due to the fact that they were not able to establish a protocol for prioritizing data. In the same way, this work seeks to see what protocols businesses use to separate "needed information" from useless information. This work then seeks to look at some of the reasons behind business evaluation failures and their results: from bankruptcy to hostile takeovers. It understands that persons in a leadership position (AP power) never have all of the data, but rather methodologically, it seeks to create hypotheses that will allow for both insights and further research. What is the relationship between the interactions of Q's? How does this create 'group-think' or sabotage that may result in a business failure? These above statements mean that to apply Kam (1988) thought against the background of business theory, we begin with an additional series of assumptions. Among these are:

- In the best Hobbes terms, conflict is ubiquitous. If social life has an ever-present conflict component, then the world of business is not socially stable. No business can ever rest on its laurels but rather must be constantly on-guard against some form of attack, be that attack foreseen or by surprise.
- Organizations can range from dyads (two people) to highly complex organizations. In all cases, the same social phenomena occur. The only difference being that the bigger the organization the more complex it becomes and the less easy it is to see both internal and external threats.
- Businesses are social groups with both internal and external conflicts. According to Hobbes theory as reinterpreted by Marx, any social group has the potential for both internal and external conflict. In the world of business, we call this conflict "competition". Competition, however, is nothing more that organized conflict. Businesses must compete for resources, and opportunities.
- Business can die or be defeated. If conflict exists, then both products and businesses have life cycles. Life cycles indicate that death (called failure, closure, bankruptcy, or takeover) can exist.
- Businesses desire to dominate their competition. Marx's theory would predict that wherever there are two social groups that must occupy the same space; one will try to dominate or

destroy the other. Domination may manifest itself in multiple ways, from outright destruction to marginalization.

- Businesses must deal with both centrifugal forces and centripetal forces.

## 3. THE APPLICATION OF THE Q-THEORY TO THE HOUSE OF MENDES

Doña Gracia Nasi, also known by her Portuguese name of Beatrice de Luna, was born into a crypto-Jewish family sometime in 1510 in Lisbon, Portugal. The early 16th century was a time of great economic expansion in Portugal as well as a period of political, economic, and ideological turmoil. From all indications, Beatrice de Luna (Doña Gracia) came from an upper class crypto-Jewish entrepreneurial Lisbon family. She married well (1528). The marriage would be a short one in that with the death of her husband Francisco, she became a widow in 1538. After becoming a widow she chose not to hand her business interests over to her husband's brothers, but rather in a period in which few women entered the world of business and finance, become a major businesswoman of the times. Her husband's death (along with multiple political factors in Portugal) may have been one of the reasons that she moved (or fled) to Antwerp where her brother-in-law, Diogo, had already established a branch office of their bank, the House of Mendes. In 1542, Doña Gracia's brother-in-law died, and she assumed control of the Mendes commercial empire. Doña Gracia was not only a highly successful businesswoman. Her enormous wealth put her into a position to influence kings and popes. She also used her wealth to confront major powers in the protection of her people. What makes Doña Gracia so important to the world of finance is that she was able to develop international businesses in a time of poor communications, coupled with intolerance. The application of the Q-Theory to the Doña Gracia's House of Mendes is summarized below in Table 1.

*Table 1: The House of Mendes and the Q-Theory*

| E (Economics) | P (Politics) | I (Ideology) |
|---|---|---|
| Economic Success | Create relations with the government officials, international relations and networking | The House of Mendes' success is good for the country in which it is located and that country's economy |
| Win the public's approval | Provide business capital | Business improves people's lives |
| Grow business in stable climate | Use bribes and good networking | All Christians are equal in the eyes of God |
| Loyal staff | Use family of crypto-Jewish community | Family is central in the eyes of the Church |
| Have alternative locations should the need arise | Maintain business offices around Europe, have a way to move money quickly | International banking is good for the host country |
| Protect money from kings and church | Use of bribes and codes | What the bank made, belongs to the bank, primitive capitalism |
| Maintain a double appearance, on the outside Christian and on the inside Jewish | Use of Christian symbols and foods, refusal to be Jewish in public. Residence in Christian neighbourhoods | One who is born a Christian is a Christian Transmigration of blood/ one is always a Jew |

*(Source: authors' creation)*

Analysing the Table 1's content, we can conclude that:

- From the P side perspective, we note that Doña Gracia and the Mendes family were:
  - Part of a wealthy crypto-Jewish family.
  - Marriage alliances were extremely important.
  - Women were usually not part of the governmental/administrative elite.
  - Business relationships often stayed within the family structure.
  - In the case of Doña Gracia, she had to work as a double minority (gender plus religion).
  - Due to Portuguese law, half of her husband's assets belonged to her daughter, exposing her to potential hostile takeovers.
  - As head of the Mendes family, she was able to use her wealth to be known at court.

- From a "drash" perspective (or "derash", meaning for Jews the reading of what is not written, but is implied by the text), we can infer that:
  - Doña Gracia and crypto-Jews formed a despised minority group and therefore were at a disadvantage in doing business. Creating a despised class was helpful for those who were classified as old Christians. Additionally, she was a woman in a man's world and therefore had to work harder to win respect. Her money may have provided her certain advantages or protection. Her money also made her a target, she could not fly under the radar. In order to survive, the House of Mendes under her leadership had to develop networks and develop interactive boards. These boards provided leadership, but also created new political difficulties. As in any multi-layered group, there were divergences of opinions and often the personal was confused with the business relationship.

- Finally, from a "Remez-sod" (or "hint-secret" in Jewish hermeneutics) perspective, we can draw conclusions from both the P and E levels of analysis. From this perspective we are able to draw the following conclusions in our financial history of Doña Gracia and the House of Mendes:
  - It is to the Q's advantage if its personnel come from a wealthy family (families) or from high social prestige families. Although there are those who may have broken the wealth barrier, starting out with money can make entrance into the world of finance much easier.
  - Interfamily networking may have extremely positive or negative repercussions.
  - Networking may be one key to financial success.
  - The world of finance need not be gender specific.
  - Business in-group Qs often resist those from outside of the Q.
  - In a tolerant society being a minority may be a favourable factor in business due to group hegemony, but in an intolerant society minority, status may become a business liability.
  - Entrepreneurial success or decisions may be a function of the legal system in which the Q lives.
  - Successful businesses require persistence and a sense of commitment within the I of the Q.
  - Money may buy power and/or entrée into the right Q's that form upper classes. However, money without the proper I is only a temporary entrance into power.
  - Money is a major motivation.
  - Money often determines policy.
  - The more complicated the business Q the more technical business acumen is needed.
  - Success or failure in a business Q may be determined by the business leaders' ability to evaluate others, both from within and from without.

- A business is a Q and all Q's may be in conflict with other Q's. Business is a strategic set of battles with given rules of war.
- The willingness to assume risk is essential for business.
- The more risk adverse a business is the less well it may grow in a capitalist I oriented Q.
- There is always tension within the world of business; to be in business is to be in a constant war.
- Business leadership qualities are essential in a business that has many sub-parts.
- Business battles are won or lost in the realm of the I.

## 4. CONCLUSIONS

Following the outlined principles and characteristics of the Q proposed in this paper, it is possible to conclude that, although the Q is not a linear analysis, ultimately, the success or failure of a business may be examined through it, namely concerning the analysis of potential business hostilities and takeovers. By applying the concepts and principles of the proposed Q-Theory, we believe it is possible to predict a takeover attempt, the course of business, as well as the success or failure of the same. On the other hand, following Kam, with his studies of the military, one may conclude that Q it is unlikely to provide a preparation for a surprise raid. In this paper we assume a different position from most previous research in literature, where qualitative approaches are broadly missing, being the few existing ones mostly developed under military views. What distinguishes this study from previous studies is that it uses a biographical-qualitative approach (through a case study of Doña Gracia) allowing in-depth analyses that are often lacking in quantitative academic research. The Q-theory therefore serves to fill in the missing analytical lacunae even when much of the data is missing. The ability to examine business organizations from a qualitative approach permits academic predictions based on a lack of quantitative data. In this research we could observe how with a minimal amount of information we can predict the outcome of Doña Gracias journeys in the Catholic anti-business countries. Indeed, knowing that as in quantum physics, protons and ions and their negative and positive poles attract or repel, depending on the type of energy they contact, using the theory of Q and PIE analysis, we can also predict the cycle life energy (Q), and its route and end, by Catholics and non-Catholics countries, some repelling and others attracting businesses. The social facts indicate that the probability of Doña Gracia's ultimate business success in the Catholic countries ranged from extremely low to nil. The hostilities towards Doña Gracia resulted from a variety of factors, including the lack of social integration. This preponderance of society over the individual must allow his/her fulfilment, assuming you can integrate in this structure. In the Doña Gracia's case, both for religious reasons (ideological), and professional (economic) and personal (psychological), this integration was never achieved. The reasons for this lack of social integration can be summarized as follows:

1) Jewish ancestry in an anti-Semitic milieu.
2) Being a woman in a male dominated culture.
3) The need to do business in a rural economy.
4) A weak economy that was anti-business.

All these factors constituted a challenge to the "moral" authority force, which translated into the attacks, culminating in her departure from the Catholic nations and the subsequent end of her business in such hostile environment. Therefore, we may conclude that hostile takeovers were justified, not due to financial reasons, but due to social and political motivations. The takeovers were partly successful, but did not have the desired practical results, therefore we may conclude that they were not successful.

The desired effect of these hostile takeovers was social control over individuals, but in many cases the results were a brain and monetary drain of national resources. In the case of Portugal, these policies may have contributed for a social and economic decline, leading to financial difficulties and questioning the domestic power to the point of a loss of the national independence.

**LITERATURE:**

1. Buber, M. (1958). I and Thou. New York: Charles Scribners & Sons Ltd.
2. Dresher, M., Karlin, S., & Shapley, L. S. (1950). Polynomial games. Santa Monica, California: Rand Corp.
3. Durkheim, É. (1893). De La Division du Travail Social. Presses Universitaires de France.
4. Durkheim, É. (1982). The rules of sociological method and selected texts. New York: McMillam Press.
5. Hannan, M. T., & Freeman, J. (1984). Structural inertia and organizational change. American sociological review, 149-164.
6. Hegel, G. (1817). Encyclopaedia of the Philosophical Sciences in Basic Outline. Part 1: Logic, translated and edited by Klaus Brinkmann and Daniel O. Dahlstrom, Cambridge: Cambridge University Press, 2010.
7. Hirsch, P. M. (1986). From ambushes to golden parachutes: Corporate takeovers as an instance of cultural framing and institutional integration. American journal of Sociology, 800-837.
8. Hobbes, Thomas (1991). Leviathan [1651]. Richard Tuck, ed. Cambridge: Cambridge University Press.
9. Kam, E. (1988). Surprise Attack. Cambridge, MA: Harvard University Press.
10. Kerdeman, D. & Kushner, Rabbi L. (1986). The Invisible Chariot: An Introduction to Jewish Mysticism and Spirituality. Denver, CO: Alternatives in Religious Education.
11. Leite, E. M. A. (2013). An academic contribution toward qualitative evaluations of surprise business takeover attack: an historical perspective. Ph.D Thesis, UTAD.
12. Lorenz, E. N. (1993). The Essence of Chaos. Washington. University of Washington Press.
13. Marx, K. (1977). Capital. New York: Vintage Books.
14. Miller, G. A. (1956). The magical number seven, plus or minus two: some limits on our capacity for processing information. Psychological review, 63(2), 81.
15. Orwell, G. (2007). A Revolução dos Bichos. Companhia das Letras.
16. Orwell, G. (2009). 1984. Companhia das Letras.
17. Owen, S. & Yawson, A. (undated). Post-IPO corporate life cycle and takeovers School of Banking and Finance. University of New South Wales, Sydney Australia, Unpublished article.
18. Parsons, T. (1937). The Structure of Social Action. McGraw-Hill, Boston.
19. Parsons, T. (1960). Structure and Process in Modern Societies. Glencoe, Illinois: The Free Pres
20. Payne, J. W. (1976). Task complexity and contingent processing in decision making: An information search and protocol analysis. Organizational behavior and human performance, 16(2), 366-387.
21. Piirimäe, P. (2006). The explanation of conflict in Hobbes's Leviathan. 10(60/55), 1, 3–21.
22. Powell, R. (2004). Takeover Prediction Models and Portfolio Strategies: A Multinomial Approach. SSRN Scholarly Paper No. ID 622101. Rochester, NY. Accessed on http://papers.ssrn.com/abstract=622101.
23. Ribeiro, H. & Cravo, D. (2004), Some evidence about how corporations perceive the success in M&A, 27th European Accounting Association Proceedings, Prague, Czech Republic

24. Ribeiro, H. (2010), The Missing Links of Mergers & Acquisitions Waves, The IUP Journal of Business Strategy, 7(3), 7-25.
25. Ribeiro, H. (2012), New Business Combinations Accounting Rules and the Mergers and Acquisitions Activity. Saarbruckën, Germany: AV Akademikerverlag.
26. Ribeiro, H., Carvalho, P., Pereira, J. & Silva, A. (2012). Post-merger & acquisitions (M&A) returns: are buyers winners? Evidence from Portugal, 5th Annual EuroMed Academy of Business Proceedings, 1189-1199.
27. Rossman, G. & Rallis, S. (2012). Learning in the Field: An Introduction to Qualitative Research. Thousand Oaks: Sage Publications.
28. Shivdasani, A. (1993). Board composition, ownership structure, and hostile takeovers. Journal of Accounting and Economics, 16 (1–3), 167-198.
29. Smith, A. (2003). A Riqueza das Nações. Martins Fontes, Brasil.
30. Voltaire (2011). Candide. Belin, France.
31. Walsh, J. P., & Seward, J. K. (1990). On the efficiency of internal and external corporate control mechanisms. Academy of management review, 15(3), 421-458.
32. Washburn, A., & Wood, K. (1995). Two-person zero-sum games for network interdiction. Operations Research, 43(2), 243-251.
33. Weber, M. (1930). The Protestant Ethic and the Spirit of Capitalism, Unwin Hyman, London & Boston.
34. Weber, M. (2003). The Protestant Ethic and the Spirit of Capitalism. Translated by Talcott Parsons originally published Scribner New York 1958, Library of Congress.
35. Worsley, P. (undated). Marx and Marxism. Chichester, England: Ellis Horwood Limited.
36. Yin, R. (2009). Case Study Research: Design and Methods (4th ed.). Thousand Oaks: Sage Publications.

# NEW APPROACH TO ASSESSMENT OF THE APPLICATION OF A NEW TECHNOLOGY IN DAIRY AND MEAT CATTLE BREEDING

**Irshad Abdul Oghlu Kerimli**
*Azerbaijan State University of Economics (UNEC)*
*Baku, 6, Istiqlaliyyat str., AZ1001, Azerbaijan*
*irshad.karimli@unec.edu.az*

**Ramal Karimov Irshad**
*Azerbaijan National Academy of Scienses (ANAS)*
*Baku, Huseyn Javid Avenue. AZ1000, Azerbaijan*
*87ramal@mail.ru*

**Rauf Gunduz Oglu Safarov**
*Azerbaijan University of Cooperation*
*Baku, Najaf Narimanov str., AZ1000, Azerbaijan*
*safarovrauf@gmail.com*

***ABSTRACT***
*It should be noted that in agriculture, too, the quantitative expression of technological progress is determined primarily by the result of the production function. In this sense, it is worth noting that the direction of modernization of machinery and technology in agricultural livestock farms is reflected in the process of gradual concentration of milk and meat production. From the point of view of natural climate condition, natural grass covers of the soil, fodder supply in the administrative regions of Azerbaijan, there is not much improvement in the manufacturing areas for dairy raw materials and thus concentration. This paper finds out that as a result, the technical and economic justifications presented as a part of this research must be taken into account for the optimal position of small and medium-sized dairy farms and dairy plants in region.*
***Keywords:*** *dairy farms, diary production, milk production, a new technology*

## 1. OPPORTUNITIES FOR THE NEW TECHNOLOGY IN THE DIARY PRODUCTION

Not any structure of the agriculture is capable for entirely renewing an existing technology and simultaneously following each scientific-technical achievement. But, quality parameters of management of funds, technology and production used in each structure should be necessarily reflected on the sequence of technological advancement in agriculture. It should be noted that quantitative expression of technological advancement in agriculture is also determined with the output of the function of production. In this view, it's much more important to ensure the application of new techniques and technologies in cattle breeding fields of the agriculture in the process of gradual concentration of dairy and beef production (Babayev, 2019; Babayev, 2020).It allows correct determination of the further development direction of the sector, contributing to the increased economic efficiency of additional expenditures. For this reason, the importance of the determined direction is dependent of elements of resources required for dairy and beef production, which can be reflected on the assessment of the increase of production attributed to the share of relevant resources. For this, the calculation of multiple regression methods should determine the average annual growth rate for each resource type based on the elasticity coefficient. To find the average annual growth rate, we can use the index method, which evaluates the main direction of technological innovation in the field, as the formula for the Index method is as follows.

$$D_{ki} = \frac{E_i K}{\sum_{i=1}^{n} EK_i}$$

Here, $D_{ki} -$ is the efficiency index; i–is the type of animal husbandry; $E_i$– is the coefficient of elasticity; $K_i$- is the average annual growth rate.

Based on the above-mentioned formula, the milk and meat production efficiency index of Azerbaijan for 2010-2015 is calculated by 0.5% (excluding livestock), 0.28% for livestock and poultry and 0.58% for fodder. It means that the technological innovation is an effective way for improving the productivity of one herd (which contributes 7% of all product growth). At the same time, modernization of feed structure was 7.7%, introduction of more productive varieties of cultural feed and improvement of feed production technology was 14.6%. Indicators-describing the efficient utilization of labor resources should be of particular interest. During the period under review, the average annual number of employees in dairy and dairy livestock farms was over 25% of total product growth, and overall share in labor resources was more than 35%, including 15.5% due to an increase in the number of employees, the share of skilled labor increased by 7.0%, and the cost on scientific research for improving technology of organization and management of production increased by 14.5%. The proposed method of approach allows for a reliable and accurate assessment of the main trends in the utilization of technological innovations in livestock production in Azerbaijan, which is very important for the selection and stimulation of the most effective directions.

## 2. CYCLIC SYSTEM TECHNOLOGY OF MILK PRODUCTION

There is a need for the reconstruction of livestock products, including the milk production cycle - and the rapid application of new technology for this production in Azerbaijan. This system should be implemented based on the utilization of local raw resources. The cattle-breeding farms should make better utilization of existing local opportunities to gradually improve the supply of Azerbaijani consumers to milk and dairy products (Todaro, 1997). The dairy and dairy-meat agricultural cattle-breeding farms, the dairy industry, the milk processing industry, auxiliary production and specialized vehicles are included to the milk production cycle of Azerbaijan. One of the main stages of such a system is the provision of fodder resources. Precious fodders are considered as fodder produced by agricultural fields and by nature. Dairy farms in the milk production cycle take the special place, where milk is produced for sale in these farms. The number of such farms in Azerbaijan is about 150, with their production volume accounting for 25-30% of the total agricultural output. Experience shows that specialized economies have higher economic and ecological effectiveness of milk production than multi-sectorial economies. This is confirmed by the cost of milk production per 100 hectare of agricultural areas and the average annual milk yield indicator per cow yielding. For example, between 2005 and 2015years, on average, 500 quintals of milk produced on 100 hectare of productive agricultural areas, and more than 350 quintals of milk on multi-sectorial economies. At present, the demand for dairy products of the population of Azerbaijan is not in the required level. In 2017, 2024143 tons of dairy products were produced at the expense of local resources and 344018 tons were imported from abroad. In 2017, at the expense of local resources, 225 kg of dairy products (including milk) accounted for per person of population, which is 31.5% below the rational physiological norm. The figures show that in the long run, the industry needs to have a rapid growth rate to meet the needs of the Azerbaijani population in dairy and dairy products. If the provision of the population with milk and dairy products will improve at the level of physiological norms, taking into consideration the efficiency of local production, import substitution of these products will happen, thus the import will reduce. For this purpose, there is a need to make fundamental changes at all stages of the milk production cycle.

Based on the establishment of efficient balancing at all stages of the milk production cycle, it is necessary to set up a cycle system so that the local production of milk and milk products can replace not only the same products, but more to have a chance to enter foreign markets with these products. The central part of milk production is concentrated mainly in rural areas, with large farms and peasant households, which their share favorably accounted for 68.1 and 31.9% of total milk production in 2017. The size of milk production in Azerbaijan increased from 1,536,000 tons to 2,024,000 tons in 2010-2017, which has led to an average growth of 1.3% over the same period. It should be taken into consideration that 1.3% growth over 8 years couldn't be considered economical. Because during that period milk and dairy products per capita for the population of Azerbaijan increased from 190 kg to 210 kg. This is a very small indicator. (See Table 1)

*Table 1: Milk production in Azerbaijan[1] in 2010-2017*

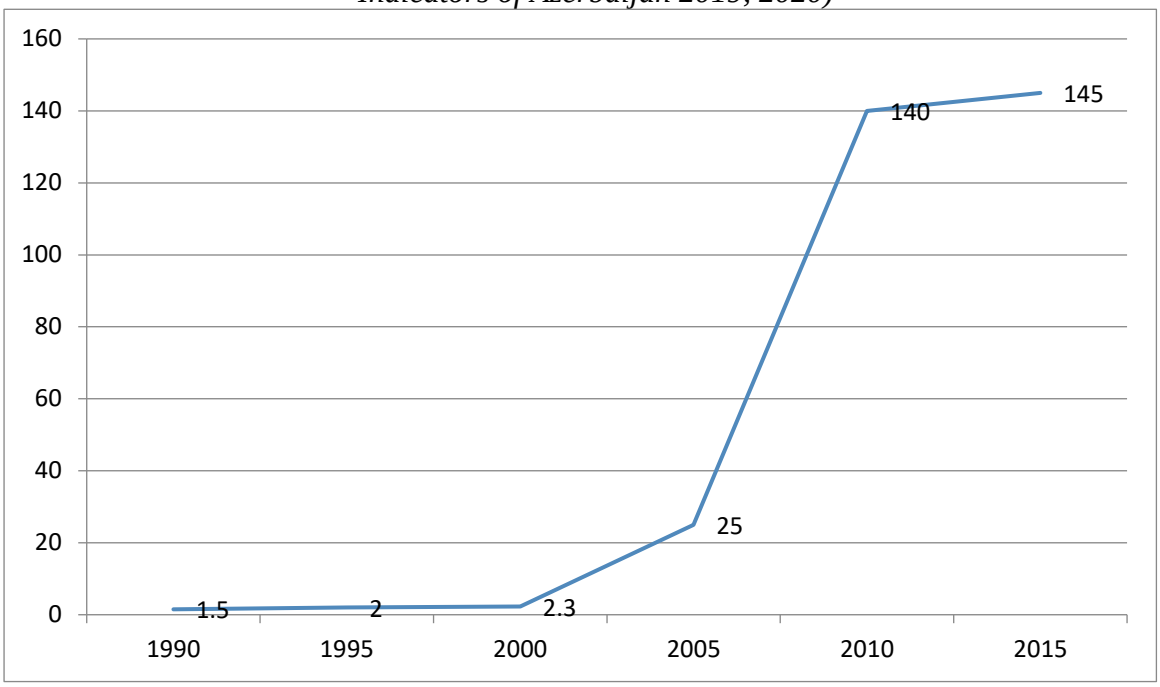
| YEARS | 2005 | 2010 | 2015 | 2017 |
|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 |
| Milk production (thousand tons) | 1251,8 | 1535,8 | 1924,5 | 2024,1 |
| Cheese production (thousand tons) including | 311,4 | 357,0 | 399,4 | 444,5 |
| Butter | 350,7 | 458,1 | 524,1 | 960,3 |
| Yogurt | 129,7 | 130,2 | 125,8 | 126,6 |
| Sour cream 320 | 320,0 | 410,8 | 888,4 | 960,0 |
| Other products 5 | 5,0 | 8,5 | 14,0 | 11,6 |

In addition to increasing the systematic organization of different stages of milk production, further limitation of its seasonal nature is very important. At present, seasonal milk production level (coefficient) on months and quarters throughout the Republic are in the range of 45-50%. It means that the population of the country is not able to meet their actual demand for local milk and milk products, and at the same time the ineffective use of production facilities of milk processing enterprises.

*Graph following on the next page*

[1] The table is calculated on the basis of statistical datas of Azerbaijan . Baku 2018, page 504

*Graph 1: Production capacity of milk processing plants (thousand tons) (Statistical Indicators of Azerbaijan 2019, 2020)*

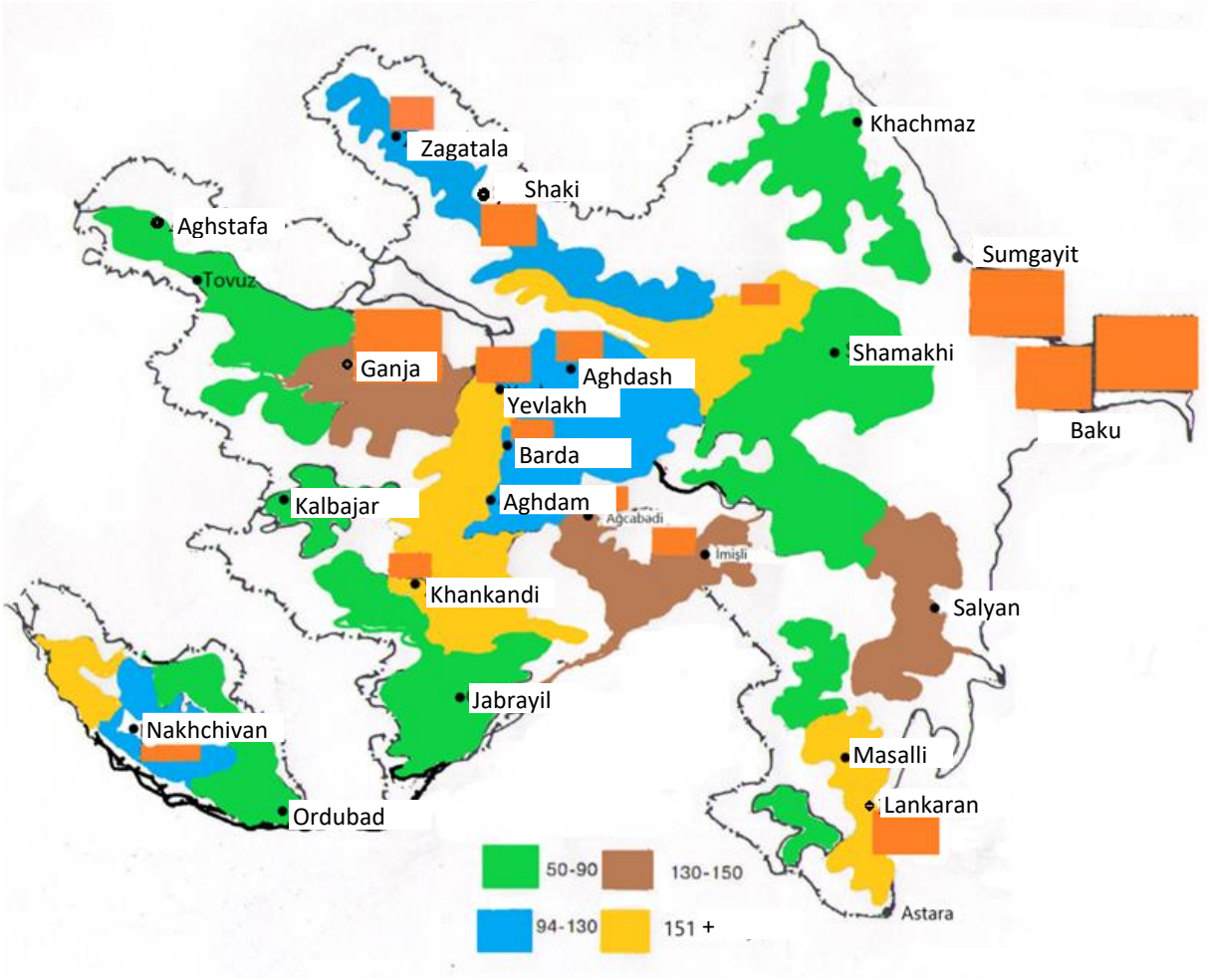



## 3. ANALYSIS

The current position of the milk and dairy products market of Azerbaijan shows that the buyer increases demand for milk products faster in comparison with the local milk. Based on this growth, it is necessary to pay particular attention to the effectiveness of milk production cycle, thus procurement and delivering of milk to the processing facilities. Refrigerating the quality of milk, reduction of losses, and increasing dairy production according to the market requirements, milk needs to be cooled at $10\text{-}12^0$ after the milking stage. But unfortunately, this process is not yet fully implemented in the republic. Only 25-30% of procured milk delivered in the cooled form. For comparison it must be pointed out that 90-95% of the procured milk in Belarus, Estonia and such other republics is being delivered to the processing facilities in the refrigerating form. Reception of refrigerating cooled milk, especially by centralized transportation, and delivering to processing facilities is considered more efficient from the economic efficiency point of view. About 35-40% of provision of the population with milk and dairy products in Azerbaijan have been carried out on the account of imported products from abroad or manufactured goods under the license of foreign countries. For the replacement of such imports in the near future, it is necessary to raise the average annual milk yield from per cow to 2000-2500 kg. Taking into account that currently 1.2 million cows would be breed in the livestock sector of Azerbaijan. In this case, milk production in the country can be increased to 2300 x 1200000 = 2.8 million tons, which is close to the effective rate (3.5 million tons) to meet the population's demand. For the acceleration of this approach, intensive technology must be applied in dairy-husbandry farms, not less than 300 kg of milk per cow should be yielded. To this end, for the production of 1ton of milk there is a need for 1,3 – 1,5 center of em unit and 5,5 – 6,0 man power /hour, and for the milking of 5000 kg of product there is a need for 1,1 – 1,2 center of em unit and 4,0-4,5 man power/hour resources. At present, the development of dairy farming in several foreign countries and transforming practice of these farms to a more industrialized households are of particular interest.

The industrial technology dairy production applied in USA, Canada, Germany, Netherlands etc. countries, is differed by high intensity and yields more than 5000 kg per cow. It should be noted that such technology can be successfully applied in Azerbaijan, in its high-intensity dairy breeding zones.

*Figure 1: Milk production per 100 ha of agricultural field (per 1 ha of centner)*




The specialized husbandry complexes consisting of 500, 700 and 1200 cows should be established based on the gradual reduction of existing small and medium-sized dairy farms, focusing on zoning on the map of the natural-climate and soil cover features of Azerbaijan. It would be better to breed 100 and 120 dairy cows in each dairy farm suitable for the conditions of Azerbaijan for the application of above mentioned new technological devices. After all, at least 20 cows with 3,000 kg of milk yield can be breed in per 100 hectares of farmland, which means 650-700 center of milk per day. Taking into consideration the existing current natural-climate and vegetation-soil cover conditions and perspectives of Azerbaijan, the establishment of dairy and meat -dairy breeding zones in accordance with the feasibility study for the construction of specialized dairy farms with high economic indicators should be considered advisable (Materials of the republican meeting of non-oil exporters of Azerbaijan, 2017).

*Table following on the next page*

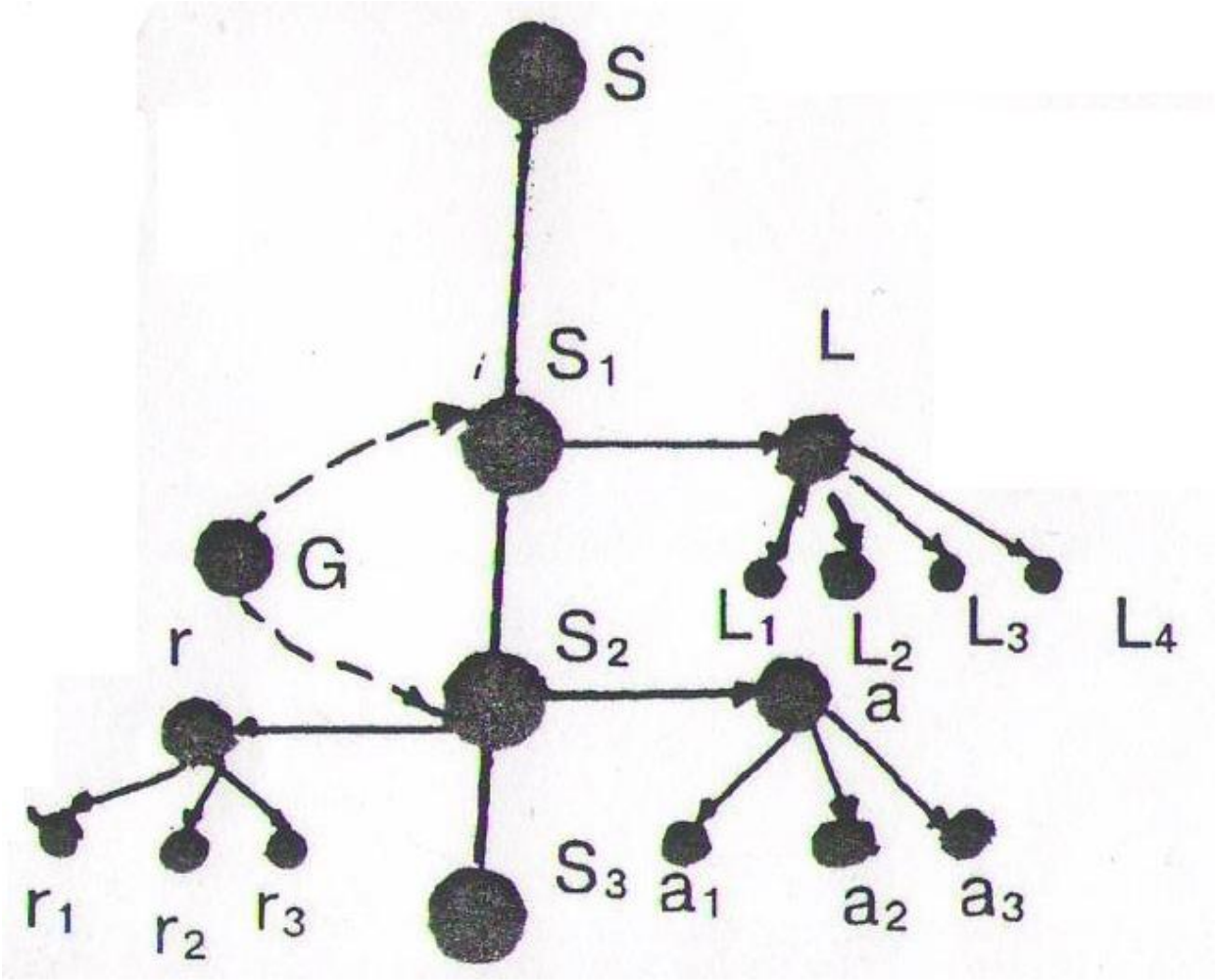
*Table 2: Economic indicators of individual farmers by natural and economic regions of Azerbaijan for 2010-2017 (Report materials of the Ministry of Agriculture of Azerbaijan for 2019, 2020)*

| Dairy farmers | | Number of cows and buffaloes | milk for per cow and buffalo in kg-s | Farm land area of households in hectare | Household direction | Name and surname of farmer |
|---|---|---|---|---|---|---|
| "Agro Industries" LTD Shaki district | | 569 | 5397 | 250 | Dairy | Rafael Rahimov |
| "Zabrat" Apsheron district “ | | 110 | 1000 | 0,5 | Dairy | Rahib Pashayev |
| "Afadli" Agstafa district | | 293 | 2927 | 100 | Dairy | Fuad Ayubzade |
| “Shiyakaran” Lankaran District | | 150 | 148 | 20 | Dairy | Akif Aliyev |
| “Yasamal” Shamakhi District | | 65 | 960 | 180 | Dairy | Guloghlan Hasanov |

If the biotechnology, including genetically and cellular engineering achievements of new directions of biology could be used more effectively in dairy husbandry households, the field would achieve great perspectives and high-yield productive dairy farms could be established in future. Based on the experience of various countries, the most productive breeds of animals adapted to the different climatic conditions of the country should be considered as the most feasible way to bring the breeding potential to a different, yet appropriate, country. This experience is also unique for Azerbaijan, and it should be further expanded within specialized farms in the country. For this purpose, it is necessary to continue the creation of more productive breeds based on the hybridization of highly productive breeds of Russia, Belarus, the Netherlands and other countries with local breeds of Azerbaijan. This way can yield 6,000 to 7,000 kg of milk from per cow with 4.5 to 5.0% fat content. Formation and concentration of the milk production cycle on the territory of Azerbaijan and the specialization of livestock at any stage should be inextricably linked. This enables farmers to produce dairy products from a wide range of milk resources. This process can be clearly seen from the cyclical structural model of milk production from milk resources. (See photo 2)

*Figure following on the next page*

*Figure 2: Cyclic model of milk production from milk resources*




*S - milk production; $S_1$- - annual milk processing; $S_2$ – composite milk processing; $S_3$ - finished product production; L - lean milk; $L_1$-substituted milk; $L_2$- drinking milk; $L_3$-dry fat milk; $L_4$- curds; a- buttermilk; $a_1$ - cheese, curds; $a_2$ - dry buttermilk; $a_3$- drinking; r - protein; $r_1$ - milk sugar; r $r_2$- protein contained in milk; $r_3$ - protein substance; G – yeast(leaven) production*

## 4. CONCLUSION

As can be seen from the structural model, milk-resource turnover continues from low networks to the final and ready-to-use products of dairy factories. The sale of final and ready-to-use dairy products by the dairy factories should be qualitative and continuous, the factories located in regional centers and major cities can freely make decisions for the realization of products available through flexible private, local (municipal) and state-owned trading networks. In this sense, the specialization of the enterprises on the production of these products should be expanded both width and deep, as a great deal of raw materials were used for the production of butter, cheese, dry milk, curd, cream, milk sugar and other types of dairy products. Changes in the production places of dairy raw materials and their concentration in terms of natural and climatic conditions of the administrative regions of Azerbaijan, natural grass cover and feed delivery are not considered. As a result, the feasibility study provided in this project should be taken into account for the optimal location of small and medium-sized dairy farms and dairy plants across the country.

**LITERATURE:**

1. Babayev, B. (2020). Main Directions of the Non-Oil Export Sector in Azerbaijan. Journal of Economic Sciences: Theory & Practice, 77(1).
2. Babayev, B. (2019) "Studying the Case of the UAE in Economic Diversification and Non-Oil Export Growth: Public Policy Lessons for Azerbaijan." Journal of Economic Sciences: Theory & Practice 76, No. 2
3. Materials of the republican meeting of non-oil exporters of Azerbaijan (2017) p. 27
4. Michael P. Todaro Economic Development, New York University (1997) p.671.
5. Report materials of the Ministry of Agriculture of Azerbaijan for 2019 (2020) Baku.
6. Statistical Indicators of Azerbaijan 2019 (2020) Baku, available at Stat com.

# BUSINESS CAREER IN THE FRAMEWORK OF LABOUR MARKET COMPETITIVENESS: CHALLENGES, APPROACHES, AND SOLUTIONS

**N. Z. Sotnikov**
*Novosibirsk State University of Economics and Management, Russia,*
*56 Kamenskaya Street, Novosibirsk, 630099, Russian Federation*
*n.z.sotnikov@edu.nsuem.ru*

***ABSTRACT***
*The article is focused on the on-going challenge of developing a system of balanced business career indicators, identifying its prospects in order to ensure the competitiveness of the company labour market. The article offers a system of balanced business career indicators, which includes four groups of indicators, which are independent, correlated and interlinked. The presented system of indicators does not only facilitate the assessment of the level and dynamics of a business career at any time, but can also quickly and accurately analyse its state with a view to making reasoned management decisions. In general, the proposed system of balanced business career indicators is able to evaluate a career through its infrastructure criterion, technological, marketing and financial; determine the contribution of its individual stakeholders to achieving the competitiveness of the labour market; identify business career indicators that negatively affect the competitiveness of the national labour market; take a more reasonable approach to the development of organizational strategies, plans and career programmes.*
***Keywords:*** *Business career, Company labour market, Labour market competitiveness, System of balanced indicators*

## 1. INTRODUCTION

In a situation when the socio-economic environment is highly complex, uncertain and dynamic, and the a 'transparent' world market is developing, the rationalization and automation of business processes, the use of internal reserves of the working time, improvement of the production management, labour and management do not always result in a qualitative increase in the competitiveness of the labour market. It should be recognized that "Russian organizations have come close to their maximum capacity of dealing with challenges of the economy and management of the labour processes, having constructed a foundation in the form of sufficiently advanced organizational and economic systems in the social and professional sphere" [25, p. 80]. The competitiveness of the labour market increasingly depends on the qualification of personnel, the degree of their involvement into the process of attracting resources required for a business development, creative activity, willingness to take responsibility for decisions, etc. Not only should the employees be highly qualified and accept the executive discipline, but they also should seek the reserves for their own development. "The development of competition in the economy presents a challenge to everyone who is striving for personal success and outperforming other competitive employees who aspire for identical goals" [23, pp. 1302-1303]. As a result, the focus of employers' attention is shifting to encouraging their employees to achieve a self-conscious competitive advantage over other competitive employees in order to ensure their well-being throughout their working life, i.e., to a business career. A comprehensive study of a business career and factors that influence its development, progress, and destruction is one of the components of managerial decision making, adapted to the challenges of the internal and external environment, with a view to ensuring the competitiveness on the internal labour market. In this regard, it is extremely important to have a complete system of indicators that can be used to measure and evaluate a business career in the company, identify

its least developed elements, determine the necessary tools for its development and analyse the effectiveness of management decisions. Hence, *the focus of the study* is to built a foundation for an integrated system of indicators, measuring and evaluating a career in the company, identify its vulnerable positions, determine the necessary measures for its development and analyse the effectiveness of management decisions in the context of ensuring the competitiveness on the internal labour market. *The objectives of the study* are to clarify the essential characteristics of the modern business career concept in the context of ensuring the competitiveness of the labour market of organizations, to study the possibilities and limitations of using business career indicators in modern conditions, to systematize the principles of constructing a system of its indicators in accordance with the current requirements, to build a system of business career indicators. *The hypothesis of the study* is that the system of business career indicators creates the foundation for an effective system for managing the competitiveness of the internal labour market, which ultimately enables the capitalization of a business career management and, as a result, to enhance the efficiency of organizations in the current market conditions. *The scientific novelty* lies in the fact that one of the key problems of scientific and methodological support for a business career of personnel has been solved, namely, the theoretical and methodological imperatives of an integral system of its indicators in the context of ensuring the competitiveness of the internal labour market have been developed. A complex of basic *methods of theoretical research* (analytical abstraction, interpretation, classification and typology) is effectively used in the article. *The subject matter of the research* is quantitative characteristics of stable and regular socio – economic relationships within business career processes.

## 2. CONCEPTUAL FOUNDATIONS OF A BUSINESS CAREER: SOCIO-ECONOMIC ESSENCE

The modern concept of a business career, while retaining elements of technocratic and humanistic concepts, is based on completely different values. It proceeds from the understanding that "while a person sees their career as a development and promotion in the organization, the organization regards it, first of all, a question of the completeness and integrity of this space" [12, p.220]. A career is "the progress of an individual up the career ladder in their professional improvement, corresponding to their values, and at the same time satisfying the interests of society to the full extent" [13, p.23-24]. It is "the progress of the individual towards competitiveness in society in order to meet personal and organizational labour needs, based on a subjectively conscious position, taking into account factors of the external and internal environment" [11, p. 9]. Thus, a career within the framework of the market concept is a way to achieve dialectical equivalence (balance) of socially different work interests of the employer and employees, based on the labour sale and purchase relationships. The interests of the employer and employees in the national labour market are closely interrelated, which is circular in nature. The employer is interested in the creation of the demand for such price and quality characteristics of the labour force, which increase the utility of labour. In other words, "the employer's strategic interests appear to be focused on preserving and developing key knowledge and competencies the organization requires" [3, p. 12-15]. Employees are interested in such labour offers that will allow them to have an acceptable (desirable) quality of working life in the form of all kinds of material and non-material benefits (including the promotion up the hierarchical ladder). "In the flow of social life, the results of personal achievements and outperforming other competitive employees is to surpass and increase the quality of working life achieved by the employee at the moment" [22, p.190-200]. The understanding of a business career as a way to achieve dialectical equivalence (balance) of socially different work interests of the employer and employees enables us to state that the "desirable" or "typical" state of the

internal labour market is an equilibrium (i.e., when the interests of the employer and employees match), and in case of imbalance, the labour market tends to restore it through a business career. The labour market is certainly experiencing cyclical fluctuations, and the balance of interests in the national labour market is relative, it is dynamic and changeable. These interests can change quite widely, responding to the scientific, technical and socio-economic progress, the reproduction of human resources, the dynamics of market demand for goods and services, personal development and changes in its needs, the actions of employers, etc. It appears that certain market situation may occur, when, firstly, employers experience the deficit of labour force, and therefore the employer faces the need for extra outsource labour force, or, on the contrary, the number of employees is higher then actually needed, which implies excess labour force. Secondly, the employee, as the owner of the labour force, seeks to increase the profit from participation in the production and commercial activities, taking into account their existing or advanced professional aptitudes, in which case the employee is not inclined to stay long with the company. In these cases, career mechanisms, establishing a broken concordance *in terms of the quantitative characteristics*, step in. At the same time, achieving a balance of work interests does not mean that career opportunities are exhausted. A situation is possible when the existing personnel structure (by category, division, functional and professional groups of employees) does not meet the needs of the organization or the interests of employees. In this case, career mechanisms, establishing a broken concordance in terms of *the quality characteristics*, step in. So, in the national labour market, there are three key types of imbalance of work interests that activate the mechanisms of a business career:

- *recessionary gap* is when the key problem is the company labour demand, lagging behind the total supply of labour;
- *expansion gap* is when the problem of aggregate labour supply, steadily lagging behind its aggregate demand, is crucial,
- *depression gap* is when the structure of the total labour supply does not coincide with the structure of its total supply in the conditions of a quantitative equilibrium of labour supply and demand.

A business career as a whole develops through the interaction of three types of imbalances of work interests mentioned above, reducing or increasing the gap between the volumes and structures of company labour demand and supply. The career develops, first, via the model of *intra-organizational careers* related to the advancement up the hierarchical ladder in order to achieve a certain social status, a specific position; second, via the model of *inter-organizational career*, followed by a transfer from one organization to another within the same industry or different industries; third, via the model of *professional career*, coupled with the development of competencies (competitive advantages), and professional development. It should be noted that each type of interests imbalance in the labour market requires its own business career logic, which has certain vulnerabilities that should to be carefully and comprehensively measured and evaluated. A career driver under the circumstances of one type of imbalance is a career barrier under the circumstances of another type of imbalance. Thus, a business career in the *recessionary imbalance* manifests itself primarily in the intensification of an inter-organizational career, while the *depressive imbalance*, on the contrary, hinders it.

## 3. BUSINESS CAREER AS AN OBJECT OF STATISTICAL RESEARCH: APPROACHES AND PROBLEMS

A career as an object of statistical research is defined as a way to achieve the balance of work interests of an employer and employees. It has clearly expressed stages distributed over time and is characterized by a certain set of statistical indicators. Statistical studies of business careers involve a creative study of the features of personal/professional and service and post

types of personnel positioning in various types of imbalance of work interests in the internal market by comparing the absolute and relative values of business careers, its time series, variations, sample observations, measurements, relationships, etc. These studies are required to determine the most effective ways of positioning personnel in a dynamic market stratified system of the division of labour, taking into account the competitive advantages and vulnerability of the position of the national labour market, in accordance with the features of internal and non-organizational realities. The objectives of studying a business career as an object of statistical research are:

- the study of the career system as an integral set of resources for achieving a dialectical balance of interests in the domestic labour market, i.e., the infrastructure of a business career;
- the study of determinants, elements, sources, driving forces and mechanisms of formation, development and destruction of a business career, i.e. technologies of a business career;
- the development of a system of reasoned ideas about the directions of the development of quantitative characteristics and the future state of a business career and its environment, i.e. the consumer value of a business career;
- Identifying the conditions under which intangible assets of a business career bring tangible outcomes, i.e., the conditions for its capitalization.

The issues of measuring a employee business career cause numerous discussions in the Russian and foreign works due to the multi-aspect character and novelty of the task of a business career indicators systematization. At the moment, there is no generally accepted system of indicators that makes it possible to quantify the personnel career. Contemporary studies of business careers usually use two basic approaches to measuring it: objective and subjective. *An objective approach* to measuring a business career primarily employs the results of socio-psychological tests and statistical personnel reporting of organizations. In recent years, a significant contribution to the development of *socio-psychological career indicators* has been made by Russian and foreign scientists. The peculiarity of these systems is the measurement of business career mainly through a set of attributive socio-psychological indicators: professional types of personality and environment [7, pp. 87-102], career anchors [19], career potential [6, p.117-131], type of promotion [21], styles of organizational leadership [30; 10]; coping strategies [18]; perception of the other [17]; career motives and values [15], and how an individual interacts with the space and time of their life [28, p. 325-328; 27, p. 13-24], etc. As a rule, these systems are characterized by weak formalization, fuzzy classification of indicators, the predominance of qualitative measurement methods, and most importantly, the so-called synergistic effect of interaction and interdependence of these indicators is not taken into account, which presents a certain problem for statistical career analysis. *Statistical observation indicators* used in Russian statistical practice provide the information about a business career measured by quantitative methods. The properties of a business career are defined through:

- objective *spatial parameters* of an employee career. This is the career range, its lowest and highest point, inter-career ratios, "career bottleneck", an indicator of potential mobility [2; 24; 26];
- *temporary characteristics* of labour mobility. This is the time of transition from one stage (position, production level on the "social hierarchical ladder") to another, the period of work in the same position [12, p. 210-221], the number of employees been promoted, including after training, and following the assessment [8, p. 832-84], as well as the number of employees included into the personnel reserve [21];
- *cost indicators* of investment into the personnel career. These are return on investment (ROI), income from the implementation of training programs, and total training costs [21].

It is not uncommon for indirect statistics to be used to measure careers. These are the characteristics of the personnel structure by age, category, length of service, level of education [20, pp. 327-330], job levels [6, p. 109], as well as indicators for evaluating the competitiveness and achievements (labour outcomes) of employees [31; 26, pp. 195-197]. *Indicators of statistical observation* of business careers are often considered either as the state of a spatial set of individual careers, or as a dynamic sequence that characterizes the development of this set over time. In other words, a business career is described at a certain point in time – in this case, it is about its level (state) at the current time, and in dynamics – when it is about assessing changes in its level (status). It is easy to see that the use of such indicators for statistical personnel reporting of organizations is characterized by limited opportunities for a productive career research in the context of labour market competitiveness, since these indicators are often not functionally related. But this aspect does not take into account the new qualitative career characteristics that are generated by the synergy effect of employee individual careers in the process of joint work, their mutual influence on each other (including on the success of the careers of others). If the interrelation of career indicators is being neglected, the career dynamics tend to develop along such a trejectory, when the improvement of some indicators leads to the deterioration of the other, and hence, reduces the competitiveness of the labour market. Moreover, such indicators cannot be used by managers when making career related decisions, since they do not have any informative value regarding career prospects, development and destruction. *The subjective approach* to measuring a business career is based on the results of sociological surveys that reflect opinions and judgments of various individuals regarding motivation and satisfaction with the aspects of a business career [1; 16, pp. 201-212]. This type of data is mainly processed through the methods of expert assessments or self-assessments, associated with insufficient reliability of the information required for the evaluation, and the use of semantic measures for measurement and evaluation. So, at present, due to its novelty and multidimensional nature, the urgent task of the classification of business career indicators, expressed in a numeric form, has not found proper coverage in Russian and foreign studies. However, the development of an integrated system of such indicators is preconditioned by the need for a comprehensive statistical study in order to identify unique conditions, causes and factors that ensure the competitiveness of the internal labour market, and to achieve a higher level of competition. This system will serve as an information base for the development of company career policy with a focus on the increase of competitiveness on the internal market, taking into account the company development vector.

## 4. THE SYSTEM OF BALANCED BUSINESS CAREER INDICATORS: METHODOLOGICAL AND METHODICAL FOUNDATIONS

The system of business career indicators is a set of variables used to measure and evaluate through digital data the properties (attributes) of a business career in its development. This is a set of simplified, mandatory quantitative statements that determine the characteristics of personnel positioning in the labour market. The developed system of business career indicators is based on the systematized results of analysis of foreign and national experience in developing a system of indicators [5; 9, pp. 162-166; 4, p. 31]:

- *the principle of the indicator meaningfulness,* i.e. its ability to cover the most significant aspects of the person's activity;
- *the principle of quantative measurements* – all indicators used in the assessment should be quantifiable;
- *the principle of sensitivity to changes*, i.e. the ability to detect changes in a timely and sufficient manner;

- *the principle of dynamism* determines the need to consider changes in the person's goals and requirements, as well as changes in the external and internal environment of the organization;
- *the principle of simplicity and accessibility* requires an information system that is comprehensible, simple, and accessible for the end user;
- *the principle of uniqueness* is the need to consider the specific features of the person's activity and mandatory construction of a unique indicators vector;
- *the principle of compliance* is a compliance of the evaluation goals, forms, methods and techniques with the goals and principles of effectiveness;
- *the principle of tailor-made ways of information transmission, i.e.* complex relationships and processes can be reflected through indicators in a relatively simple way.

Since a business career is a complex and multi-faceted category, no system of indicators and evaluation model is able to perfectly reflect this socio-economic phenomenon. Thus, to solve a specific practical task, it is advisable to consider it in a specific target context, enabling the development of the most effective system for a certain case, which probably does not consider all its features, but is ultimately adapted to solve specific practical tasks. The current system of reporting in Russian statistical practice, based on common methodological principles, concepts and classifications and constituting an interconnected system of annual statistical monitoring of the labour market, employment and wages, enables the development of a system of business career indicators that provides the establishment of cause-effect and functional relationships between resources and career capitalization in order to achieve the equilibrium of the labour market. Business career is viewed through the prism of infrastructure $(I)$, technology $(T)$, marketing $(M)$ and financial $(F)$ criteria:

$$BSCC = f(F; M; T; I).$$

Hence, we have four external criteria, each affecting and measuring the quality of a business career in its own way.

- *indicators of the financial* prospects of a business career $(F)$, which characterize the measure of its capitalization and contain indicators of career performance, a career marginal income, and marginal investment into a career;
- *indicators of marketing prospects* $(M)$ set the value of a business career for individual stakeholders (employees, entrepreneurs, employers, and society as a whole), especially the consumer value of a career. Indicators of this prospect include indicators of career satisfaction in general (including professional and intra-organizational careers), and complementarity between professional and organizational careers.
- *indicators of technological prospects* $(T)$ determine the conditions and ways to accelerate a business career (including professional, intra-organizational and inter-organizational), creating conditions for its development, progress and destruction. This prospect is measured by the following indicators: time in office; speed and range of business careers; the intensity of intra-organizational, inter-organizational, professional careers; intensity of changing the career types, as well as complementarity between the intra-organizational career and inter-organizational career;
- *indicators of infrastructure prospects for a business career* $(I)$ determine the nature and content of the resource provision of a business career, i.e. a set of interrelated intangible assets that form the basis for the functioning of a career as a system.

This is a real and potential scale of a business career, intra-organizational, inter-organizational, and professional career.

The above system of a business career indicators covers the simplest, but at the same time very important statistical indicators that are able to directly assess the contribution of a career to the competitiveness of the internal labour market. Undoubtedly, this list is absolutely not perfect and needs to be clarified, supplemented, specified, etc., which will provide an opportunity to get a more complete and adequate description of the conditions, causes and factors of a career that allow you to achieve a higher level of competition in labour.

## 5. CONCLUSION

The considered methodological approach to the construction of a system of business career indicators can ensure: firstly, high mobility and flexibility of indicators in relation to the goals of its study; secondly, balanced consistency of interests of different stakeholder groups; thirdly, balance between short-term and long-term goals, financial and non-financial indicators, quantitative and quality characteristics, main and auxiliary parameters, as well as external and internal career factors; fourth, predictive value for the development of a unique analytical system for each person, taking into account the specifics of their work interests. And, finally, the balance of interests of an employee business career, the possibility of making better investment and management decisions by identifying, analysing and systematizing business career problems. Moreover, based on the proposed system of indicators, it is possible to track the effectiveness of measures taken to develop, advance and destroy a business career, both at the organizational level and in the context of the development of other organizations. In general, the proposed system of indicators is quite transparent and logical and can be introduced as an easy to use basis for managerial decisions regarding business careers in the context of ensuring the competitiveness of the company's and regional labour market of the organization and the region.

## LITERATURE:

1. Ambalova, A. B. (2006). *Upravlenie kar'eroi gosudarstvennogo grazhdanskogo sluzhashchego : (Sotsiologicheskii analiz*) [Civil Servant Career Management: (Sociological Analysis)]: Dis. ... kand. sotsiol. nauk: 22.00.08, Moskva, 2006, p.22
2. Bazarov, T.Yu., Eremin, B.L. (2002). *Upravlenie personalom: Uchebnik dlya vuzov*. M: YuNITI, 2002, p.560
3. Eremina, I.Yu., Toderash, V.A. (2016). *Upravlenie kar'eroi v Rossii i za rubezhom* [Career management in Russia and abroad]. Problemy ekonomiki i upravleniya neftegazovym kompleksom [Problems of oil and gas complex economy and management], pp. 12-15.
4. Fal'ko S., Brizhan' A. (2018). Sist*eme sbalansirovannykh pokazatelei 25 let: est' li perspektiva stat' klassikoi?* [The system of balanced indicators of 25 years: is there a prospect of becoming a classic?]. Vestnik Evroaziatskogo transportnogo soyuza. 16. 31.
5. Gorshkova Yu.O. (2006). *Nauchno-metodicheskie podkhody k formirovaniyu sistemy indikatorov ustoichivogo razvitiya: Kaluzhskaya oblast'* [Scientific and methodological approaches to the formation of a system of indicators of sustainable development: Kaluga Oblast]. Na puti k ustoichivomu razvitiyu Rossii [Towards sustainable development of Russia], pp.16-21.
6. Guseva A.S., Iglin V.A., Lytov B.V. et al. (1998). Sluzhebnaya kar'era [Business career] ed. E.V.Okhotskii. M.: OAO «Izd-vo «Ekonomika»
7. Holland, J. L., & Holland, J. (1999). Why interest inventories are also personality inventories. In M. Savickas & A. Spokane (Eds.), Vocational interests: Meaning, measurement, and counseling use. Palo Alto, CA: Davies-Black., pp. 87-102

8. Ivanovskaya L.V. (ed.), Kashtanova, D.K., Zakharov, E.S. et al. (2018). *Razvitie personala: monografiya* [Development of personnel: monograph]. Moscow: Izdatel'skii dom GUU, p. 219
9. Izotova T.G. (2006). *Razrabotka metodiki vybora pokazatelei otsenki effektivnosti deyatel'nosti khozyaistvuyushchikh sub"ektov* [Development of a methodology for selection of performance indicators of economic entities]. Izvestiya vysshikh uchebnykh zavedenii. Geodeziya i aerofotosemka [News of higher educational institutions. Geodesy and aerial photography], pp.162-166.
10. Karpov A.V., Markova E.V. (2016). *Stilevye osobennosti protsessa prinyatiya upravlencheskikh reshenii* [Stylistic Characteristics of the Decision-Making Process]. Vestnik Yaroslavskogo gosudarstvennogo universiteta im. P.G. Demidova. Seriya Gumanitarnye nauki. [Vestnik Yaroslavskogo Gosudarstvennogo Universiteta im. P.G. Demidova. Serija Gumanitarnye Nauki]. № 3 (38), pp.80 –86
11. Kozlova O.P. (2010). *Organizatsionno-ekonomicheskie osnovy regulirovaniya kar'ery nauchno-pedagogicheskikh rabotnikov vysshei shkoly* [Organizational and Economic Basis of Regulation of Career of Higher School Scientific and Pedagogical personnel]: Avtoref. diss. …kand. ekon. nauk. Omskii gosudarstvennyi universitet im. F.M. Dostoevskogo. Novosibirsk
12. Manukhina S. Yu., Karmanov M. V. (2010). *Metodologicheskie voprosy statisticheskogo issledovaniya kar'ery rabotnikov* [Methodological issues of statistical research on the career of employees]. Uchenye zapiski Rossiiskoi Akademii predprinimatel'stva. Vypusk XXIII. [Scientists notes of the Russian Academy of Entrepreneurship ], pp.210-222
13. Mikhailova G.B. (1997). Pony*atie kar'ery v psikhologicheskoi nauke* [Definition of career in psychological science]. Psikhologicheskie problemy professional'noi deyatel'nosti kadrov gosudarstvennoi sluzhby [Psychological problems of professional activity of public service personnel]. M.NITI
14. Mogilevkin E.A. (2008). *Tekhnologiya upravleniya kar'eroi* [Career Management Technology]. Moscow. Retrieved from: www.careerbook.ru
15. Moll, E.G. (2012). *Upravlenie delovoi kar'eroi menedzhera* [Manager's Business Career Management]. SPb.: Piter
16. Plaksa, J. V. (2019). Key aspects of effective career development. Servis v Rossii i za rubezhom [Services in Russia and Abroad], 13(2), pp. 201-212.
17. Povarenkov, Yu.P., Slepko, Yu.N. (2014). *Predstavleniya uchashchikhsya, roditelei i metodistov ob osobenno-styakh lichnosti effektivnogo uchitelya* [Ideas of Pupils, Parents and Methodologists about Features of the Effective Teacher's Personality]. Yaroslavskii pedagogicheskii vestnik. 2(4), pp. 25-30
18. Saporovskaya, M.V., Kryukova, T.L. (2017). *Zhiznennyi stil' sovremennika v kontekste sovladaniya s trudnostyami* [Contemporary life style in the coping with everyday stress context]. Vestnik Omskogo universiteta. Seriya: Psikhologiya [Herald of omsk university. series: psychology], pp.12-18.
19. Schein, Edgar H, (1996). Career Anchors (discovering your real values), Jossey-Bass Pfeiffer
20. Shalaev I.A., Bocharova V.A., Borodina M.S. (2017). *Sovremennaya statistika upravleniya delovoi kar'eroi personala v rossiiskoi federatsii* [Modern statistics of management of business career of personnel in the Russian Federation]. Vestnik kafedry statistiki Rossiiskogo ekonomicheskogo universiteta imeni G.V. Plekhanova Materialy i doklady [Journal of Statistics of the Russian Economic University named after G.V. Pleanov], pp.327-330

21. Skopina I.V. (2008). *Metodika otsenki effektivnosti upravleniya kar'eroi menedzherov* [Methodology for Evaluating the Efficiency of Management of Managers 'Careers]. Upravlenie ekonomicheskimi sistemami: elektron. nauchn. zhurn [Management of Economic Systems: Electron. Science]. 2 (14). Kirov: uecs.mcnip.ru
22. Sotnikov N.Z. (2015). *Delovaya kar'era kak metamodel' upravleniya konkurentosposobnost'yu naemnogo personala* [Business career as metamodel of management of competitiveness of the hired personnel]. Vestnik NGUEU, pp. 190-200
23. Sotnikov N.Z., Sotnikova S.I., Mikhailova E.M. (2018). Business career personel: modern man-agement models of Russian banking organizations: GCPMED 2018 - International Scientific Conference "Global Challenges and Prospects of the Modern Economic Development". Vol. LVII The European Proceedings of Social & Behavioural Sciences, pp. 1302-1315
24. Sotnikova S.I. (2016). *Upravlenie personalom: delovaya kar'era: Ucheb. posobie*. [Human resources management: business career]. Moscow: RIOR: INFRA-M, p. 332
25. Sotnikova S.I., Milyaeva L.G., Chulanova O.L. et al. (2020). *Upravlenie konkurentosposobnost'yu personala na osnove kontseptsii Performance management (Upravlenie effektivnost'yu): monografiya* [Personnel competitiveness management based on Performance management: monograph]. Novosibirsk: NGUEU.
26. Sotnikova S.I., Nemtseva Yu.V., Kozlova O.P. (2011). *Upravlenie proforientatsiei kadrov v innovatsionnoi ekonomike: monografiya* [Personnel guidance management in innovation economy: monograph]. M-vo obrazovaniya i nauki Rossiiskoi Federatsii, Novosibirskii gos. un-t ekonomiki i upr.. Novosibirsk
27. Tolochek, V. A. (2020). *Professional'naya kar'era: sinergeticheskii podkhod. Chast' 1* [Professional Life: Synergetic Approach. Part 1]. Izvestiya Saratovskogo universieta. Novaya seriya: Akmeologiya obrazovaniya. Psikhologiya razvitiya [Izvestiya of Saratov University. New series. Series: Educational Acmeology. Developmental psychology]. 9-1 (33), pp. 13–24.
28. Tolochek, V.A. (2018). Professional'naya kar'era: issledovaniya, rezul'taty, vozmozhnye perspektivy issledovanii [Professional career: research, results, possible research prospects]. Sistemogenez uchebnoi i professional'noi deyatel'nosti Materialy VIII vserossiiskoi nauchno-prakticheskoi konferentsii. Pod red. Yu.P. Povarenkova. [Systemogenesis of Educational and Professional Activity Materials of the VIII All-Russian Scientific and Practical Conference], pp. 325-328.
29. Vyrupaeva, T.V. (2018). *Kar'ernyi profil' kak instrument upravleniya kar'eroi gosudarstvennykh sluzhashchikh* [Career profile as the instrument for managing career state employees]. Omskie nauchnye chteniya, 2018, pp. 904-906
30. Zankovskii, A.N. (2015). *Psikhologiya organizatsionnogo liderstva: v poiskakh korporativnoi sinergii*. [Psychology of Organizational Leadership: in Search of Corporate Synergy]. Moscow: Izd-vo Litera, p. 360
31. Zhelaevskaya N. F.. (2010). *Professional'naya otvetstvennost' lichnosti kak determinanta kar'ernogo prodvizheniya* [The professional responsibility of the individual as a determinant of career advancement]: Avtoref. dissertatsiya ... kand. psikh. nauk : 19.00.01. Sochi

# THE (POST) LIBERAL NEW WORLD ORDER: OPPORTUNITIES AND CHALLENGES IN A COVID-19 AFFECTED WORLD

**Bostjan Peternelj**
*Doctoral candidate, University of Ljubljana, Faculty of Social Sciences, Slovenia*
*peternelj.bostjan@gmail.com*

**Petar Kurecic**
*University North, Department of Economics, Varazdin, Croatia*
*pkurecic@unin.hr*

***ABSTRACT***

*The study of liberal internationalism and peace, composed by Ikenberry, promotes a new world order values that should replace the Wilsonian liberties for the sovereignty of states. A new liberal model constituted post Westphalian principles, laid on Wilsonian obligations that should be replaced with integrationists' model of regional hegemony under a neoliberal regime, whilst sorely Wilsonian mechanism are no longer adequate to support a liberal international order. The US unipolarity could be replaced with integrationists' model under multipolarity fusion of regional superpower states, to them are reintegrated smallest states under collective defence mechanisms. The new US President-elect Joseph Biden, according to the announcements, seeks to recalibrate the "America First" design of the world order, into a more multipolar stable world, through working with allies, if agreed with the democratic pole to change its foreign strategy to avoid confrontation, and turn it into a polycentric post neoliberal globalized world order. The paper represent a product of a mentor-doctoral student cooperation. It discusses various scenarios, more or less certain, for the development of the future relations between great powers in the light of the events following the defeat of America First foreign policy and the COVID-19 pandemic affected world.*

***Keywords:*** *globalization, new world order, alliances, post neoliberal world order*

## 1. INTRODUCTION: THE NEOLIBERAL (DIS)ORDER AND GLOBALIZATION

New world order in a globalized world represents a new era for creating new geopolitical paradigm, more volatile towards the so-called neoliberal states. The question has to be posed; what consequences shall suffer the ideas of sovereignty of states under these "Post-Westphalian principles". The Westphalian principles of states might become outdated and could be replaced with post-liberal order principles of free borders. Globalization implies a certain erosion of national boundaries (Slaughter, 1997: 192) spreading ideas of free flows of capital, money, weapons etc. Globalist, neoliberal regime took control over national regulators and changed them with transnational limitless instruments by controlling of national resources, still controlling riots and movements. If globalization leads to internationalization or transferring regulatory authority from the national level to international institution (Slaughter, 1997: 192 and Sutter, 2006), then it may restore dismantled and outdated national institutions especially into outdated armies those had lost operative facilities many years ago under dismantling defence capabilities for defending national values. This failure shall be replaced within sustained common military management architecture laid on robotics supports and artificial intelligentsia networked on G5 net hyperlink connection to control movements to tame sovereignism. Trans-governmental defence networks system could empower its function by putting C4I on two-sided cable track as to headbanded defence management operations system shall run uninterrupted from the core to the periphery, all put on hyperlink ordering communication to local elites those are following decision makers at capitol hill or get suffering from regime change mechanisms sticks and carrot method used to discipline or leave them as

the reasoning for the disobediences of local elites. A new era of defence architecture of globalists is sustaining under the COVID-19 disease. The new net network system, from sky like Skynet hyperlink command communications system, should cover the entire globe for using at main cable for following globalists order those are given to global army at maritime and air capabilities by lending on the prompt hypersonic global strike facilities to carry out at most strikes at non-sight from everywhere to hit all targets on the globe. A credible example presents the fact, if we compare liberal internationalists and neoconservative realists those had fallen within the same discursive formation like a Euro-American hegemony (Gathii, 2000; Motaharnia and Salehi, 2017), but is still into divorcing period while Trump effect was recorded. EU-centric approach toward resetting neoliberal global agenda pushed toward international option to create confederal world order. In opposite, European cohesion shall be ruined into disintegration process within collisions of nations, such as BREXIT. In comparison to the rather disunited African union, Arab Union, ASEAN etc., the European community is much more integrated than other regional communities. Prosperity for regional security turns toward regional armies. Deeping defence integrations attempts to transform NATO forces and EUBG into the European army under supreme command of Pax Brussels. Security holes into grey shades of de-stability Pax Brussels interventions might contribute to more efficient de-escalation process in Africa and Asia to accomplish EU global strategy goals.

## 2. POST-NEOLIBERAL WORLD ORDER PRINCIPLES

The US study of liberal internationalism and peace (Ikenberry, 2009) is promoting of new world order values that shall replace Wilsonian liberties for sovereignty states. A new Liberal model constituted post Westphalian principles those laid on the Wilsonian obligations shall be replaced with integrationists' model of regional hegemony under neoliberal regime, while Wilsonian mechanisms are no longer adequate to support a liberal international order. US dominated unipolarity could be replaced with integrationists' model under multipolarity fusion of regional superpower states, to them are reintegrated smallest states under collective defence mechanisms. The US foreign policy does not fully respect sovereignty of coalition states if it neglects the principles of the Westphalian sovereignty (Sutter, 2006), that leads to new power global struggle over supremacy toward authority that prevailed inside the international community as NATO did many years ahead ago. It is also important to study how a neoliberal order has affected the US foreign policy, and what the still sitting US president Trump had done to the transatlantic relationship. Whether it was in Canada, France or Germany, president Trump's words and actions over the past four years have tarnished America's reputation on the world stage: "He has insulted our allies and embraced our enemies, seemingly having more of an affinity for Putin and Kim Jong Un than Merkel and Macron" (Laufgraben, 2020). The question is if a US President-elect Joe Biden can fix this spoiled relationship after disaffected American society that is sinking into multifaced socio-economical dimension of internal disorder. President Biden will probably spend the next four years to consolidate the US society by leaving behind NATO relationship and put aside NATO centric states to take care for its own national security. He can not give promise to invest more money into defence spending for Europe protection. The mistakes that were made those was used as advantage for China to rise up military power into the ASEAN community and at geopolitical approach have panicking some European allies which some insist that NATO cannot survive any bickering at the top, as it is already under strain from European leaders who hope to build a competing European Union military alliance: "But allowing NATO's destruction from within is simply a quieter way to allow the organization to collapse" (Pletka, 2020). It is time for a new world order that would fuse a Eurasian community from Lisbon to Vladivostok more intertwined after Chinas push toward western hemisphere by the Pearl and Strings strategy, as "One Belt, One Road", had flattened the entire continent into a hyperlink highway by avoiding maritime points of

instability from SE Asia to the Mediterranean basin. China, in turn, has begun to consistently build up and modernize its nuclear and conventional weapons and launched programs for developing armaments capable of overcoming the U.S. missile defence and those that can compete with U.S. precision-guided conventional systems: "China has challenged neighbouring countries and the U.S. military domination in the seas west and south of its shores and claimed access to natural resources in Asia and Africa and to control sea lanes used to transport these resources in the Indian and Pacific Oceans" (Arbatov, 2018). China builds up a surface strategy to avoid maritime confrontation with the US dominance at sea lanes and its strengths Rimland al land especially with Iran, Pakistan Turkey to reconnect Eurasian with African community along Rimland belt by pushing out the US troops. China is sending military aid to the anti-US coalition states in the Middle East. The most eminent critical facilities to defend its territory that opened trajectory of offensive strike within China's anti-access/area denial (A2/AD) strategy in the Asia-Pacific region by using boosted ballistic trajectory anti-ship rocket DF-21D to limit the US blue water navy's freedom of movement what exploits operational vulnerabilities. That put US navy into protentional risk as being sunk, especially if was fitted nuclear warhead on DF-21D that could endanger the entire US pacific fleet. China's navy took advantage to limit the US free movement at the seas close to its maritime interests. Russia will no longer be seen as a threat as NATO enlargement will cease while any military support for Ukraine and Georgia will be curtailed. Security arrangements will be created with the United Kingdom outside NATO. Should the European Union resist U.S. economic pressures, the president will bring leverage through diminished American support for NATO (Clark, 2020). If Biden returns back to the isolationist US foreign policy as Trump did, that it may open opportunity to Russia that exploits politically, economically, or informationally US weakness for further creeping not only NATO but also the EU. Europe unprotected will be opened for deeper geo-economic penetration by Russia and China toward Western hemisphere at multiple axis of deepening multiple dimensions of interests into vital regional zones of EU community. In the Middle East, the U.S.-Israeli-Saudi anti-Iran alliance is crippling while the US forces are leaving Iraq and Syria (and Afghanistan) under strengthening Turkey's expansionist tendencies. President Trump was blamed for failures that he made in the US foreign policy, by neglecting unipolarity while the president has not made America great(er) again. Some argue that he has made it weaker than it has ever been since the beginning of the World War II. The USA has become disrespected, ridiculed, and now even pitied, as it struggled to grapple with the coronavirus pandemic: "President Trump has failed to rebalance relations with China, failed to deal with North Korea, failed to end the endless wars in the Middle East, failed to cow Iran, failed to stop European free-riding, and even failed to improve relations with Russia. And that's before one considers his record of undercutting or destroying international treaties on climate change, trade, and nuclear weapons" (Mc Tague and Nicholas, 2020). It is however true that President Trump stopped military campaigns by pulling out the US troops from NATO states and hot spot areas to reinvest more money for opening new jobs for US workers, while foreign policy was not his priority. Nevertheless, Russia remained the only true nuclear opponent, to US after postponed START II Agreement; China exploits the US weakness, and the Middle East became pretty much a disaster for NATO policy etc. Trump had inherited the US foreign policy in a rather bad condition, somewhat compromised. Trump however did not execute grand strategy in the Middle East to appease Arabs, he did not eliminate the ISIS in Syria, he did not succeed with coercion policy against Iran to reduce Iranian attacks on American interests and its allies. Biden has less opportunity to win after those debacles as only chance is left him to step into reconciliation process as to re-join to the deal that could be signed soon with China, Russia and several European powers, and the USA would have the effect of improving frayed multilateral cooperation with those nations for accepting multipolar policy, meant as signed capitulation of a unipolar US foreign policy from previous president mandates.

Saudi Arabia saw the US pressure on Iran as a key component of its strategy to contain Iranian influence beside to protect Israeli interests (Khan, 2020) but "big brother" has been giving up to defeat Iran that has increased its military potential into Persian gulf after lifting embargo and sanctions of UN since 2020. If Biden will steadfastly supports Trumps aggressive policies in the Israeli-occupied West Bank and Gaza territories and still accepting his odd decision by declaring Jerusalem for capital of Israel, then Arab nations will be certainly uprising against infidelity of US Arab-Israeli policy for betraying Arabs confidence. Arab states will certainly be waiting on the possible decision of Biden to refuse Trump decision among Israel deal for Jerusalem, otherwise Arab NATO will collapse after distrust from Arab states by supporting peace solution that could be averted against Israel. Joseph Biden's brand policy in geopolitics theory momentum is capable to face with decentralized balancing of power and the resultant "sub-balances put into new world order. If he tries to understand new circumstances after Trump doctrine do not poke into hornet nest to avoid consequences in the Middle East state to intervene in Egypt, Iran, Israel, Qatar, Saudi Arabia and Turkey—joined by the religious non-state Sunni and Shi'ite movements—have now come to dominate regional affairs, with the USA either helpless or settling for an auxiliary role. "Another timely case in point is the reorientation of American foreign policy to Asia and the Pacific basin, focusing attention at one level on the US-China relationship, and at another level on the manoeuvrings of a number of local actors, among them Indonesia, Japan, the Philippines, Singapore and Vietnam" (Klieman, 2015: 25). Biden's recalibration of the US policy needs a longstanding preoccupation with competitive arms race, multidimensional shifting alliances, anti US sentiment buffers, army race partitions etc. to catch up entire gamut of diplomatic activity from normalization to estrangement during dynamic calculations between imperial rivalries and bargaining with spheres of influence. That means that unipolar pursuit does not have a chance of succeeding and that the USA has to face with the new dilemma of a polycentric world. He needs to understand the new balance of power, as an updated doctrine for a changing world and approved evidence how is changing the international system, as proof is ambivalent relationship between Germany and its European Union partners; the adjacent Turkey-Russia-Iran and Iran-Saudi Arabia-Pakistan triangles; Sino-American rivalry; the Sunni-Shi'a divide within the Islamic world in competition for position, prestige and possession of partial maritime East Asia aggravation points. If select group of players into globalised world as Big Five + 1 (China, Britain, France, Russia, US and joined Germany) did ignore the smaller state into pivotal areas of interests particularly in the EU, ASEAN and the Middle East, rising those regional medium powers. What prospects for local and regional states into pivotal zones of Rimland affected on balancing of power to sustain regional stability and equilibrium in coming years by the BRICS countries (Brazil, Russia, India, China and South Africa) and other semi powered stats in uprising (Indonesia, Japan, South Korea and Turkey) brought to rebalancing global multipolar stability. Applebaum (2009) had described what happened in Afghanistan, Iraq, Syria, Libya etc. during NATO campaigns. Separatists, terrorist, fifth column, paramilitary units, renegades, gangs etc. served as tools for supporting at ground NATO operations by leading from behind. Eccentric approach to the Global War on Terror (GWOT) doctrine was lend on latest doctrine for massive resistance of armed people under militia formations behind the enemy lines of interstate wars. Paramilitary formations such partisans' groups were regrouped from behind front lines to conduct sporadic attacks on enemy infrastructure within overstretched supply lines and hubs more eastward from homeland. Fabricated and updated modern GWOT doctrine was studied from the Soviet style of asymmetric warfare to being effective for regime change scenarios into "coloured revolutions", but NATO planners had included into war gaming evaluations and predictions more speculative expectations for outcome of wars. The international community from post Neoliberal aspect neglects sovereign principles, were outside the scope of the accepted rule that any limitation of sovereignty must be followed by the establishment of real legal titles of

cooperation and solidarity (Dimitrijević and Vučić, 2016). It is difficult to assert that sovereign states are going to accept all conditions at legal basis of internationalisation. Pax Americana referred on geopolitical and geo-economic protectionism into the western part of Europe after US had integrated into NATO alliance (Kupchan, 1998). Regional integration from bipolarity in Europe was transformed into multipolarity of European NATO pillar of the Big Four (United Kingdom, France, Germany, and Italy). Post neoliberal ambitions of Pax Brussels are seen logic to hold together international regime from EU members to survive volatile times of insecurity in the world after collapsing the US unipolar world order. World order, power and liberalism are much more potent mixture than simply the exercise of crude material power alone. But the question remains whether the resulting American-led order is an empire (Ikenberry, 2005). European NATO pillar participated to global dominance after used military power against non-liberal states. Behind neoliberal hegemony are staying US ambitions by seeking broader support inside alliance to prevent multipolar creation of global community, as managing the global system within Washington rules and institutions. New global government projection consists of five states (EU, US, Russia, China and India) into pentomic structure that may form the confederation council for global governance. Confederation council could replace the UN global government and included into the new global peace-making plan. Those powerful states at world with economic, financial and military power could drive neoliberal unipolar de-stability order into more stable and peacefully post-liberal order. If we the globe tailored on five regional centres of power those are formed from small and smallest states around the powerful biggest states. We constitute regional regimes of powers managing inside regional communities, where the periphery is connected with a capitol. Global geopolitical projection includes those regional centres of power Pax Brussel, Pax Russia, Pax China, Pax India, and Pax Americana to rebalance global stability that moves from unipolarity to multipolarity as shaped new pentomic global form of stability. Confederal council deals with divided and imperia to fix grey zones of instability inside African Union, Arab Union, and South America within multidimensional assistance from Pax Brussel, while Pax China covers ASEAN states, Pax Russia previous vital zones of Soviet Union (Eurasian and Central Asian states), Pax Americana returns us back to the Monroe doctrine, and Pax India covers South East Asia states. Other states out of control from regional superpowers became a bargain chip in cases both Australia and the UK may belong to Pax Americana, Turkey and Iran participated to Pax Russia etc. Pax vital zone of interests shall determinate regional multipolarity toward more stable global order by mutual respect that was seen from Westphalian peace for Europe. Parity of power presents security measures that avoids confrontations for interstate affairs and it is unlikely to resume local conflicts toward inter regional conflicts among Oceanian and Eurasian powers. Oceanian powers then would lose control for unipolarity that is creeping under Eurasian link toward more stable, interconnected, cooperated and complemented world island.

## 3. CONCLUSION

NATO states are pulling out own troops from hot spot areas. The UK hoped to reinvigorate NATO alliance after BREXIT, but German – French EU-centric approach toward EU sovereignty had crossed legs to the UK, while defence integration of EU deepened EU-centric ties toward more independent CSDP against the UK-US Anglo-Saxon alliance. Federalist ambitions of EDU under French geopolitics sponsorship had complicated interrelated positions inside transatlantic link at the most recent NATO summit held in London (2019). Pax Brussels is looking to accomplish EU integration process toward federal states of Europe under a parliamentary control, from Brussels. BREXIT had opened door to German – French EU centric hub to reinforce its positions to Eurasian integration within connection of Pax Russia and Pax China. Pax Brussels is participating to the China's One Belt, One Road initiative, that will increase tensions against Oceania power that consists of Pax America with Pax Britannica.

Global peace-making model (4 plus 1) runs toward more stable and secured global governance under multipolarity. President's Biden policy needs to be accustomed to multifaced polycentric world order or the US foreign policy will collapse if does not change its post liberal principles toward polycentric states. For the US policy are only two options, where Trump put aside intact foreign policy into a delicate situation at the previous point of turbulence that Biden must recalibrate or fix it for the US benefit.

**LITERATURE:**

1. Arbatov, A. (2018). The Emergence of a polycentric world and its challenges. Available at: https://eng.globalaffairs.ru/articles/collapse-of-the-world-order-2/
2. Applebaum, A. (2009). The New New World Order America and the New Geopolitics. Available at: https://www.hoover.org/sites/default/files/uploads/documents/0817939024_1.pdf
3. Clark, W. (2020). Can the Liberal World Order Survive Another Four Years of Trump? Available at: https://washingtonmonthly.com/magazine/april-may-june-2020/can-the-liberal-world-order-survive-another-four-years-of-trump/
4. Dimitrijević D., Vučić, M. (2016). Globalisation and the New World Order. Available at: https://www.researchgate.net/publication/323812397_GLOBALISATION_AND_THE_NEW_WORLD_ORDER
5. Khan, M. (2020). Opinion: Trump altered the geopolitics of the Middle East — how would Biden policies compare? Available at: https://www.marketwatch.com/story/trump-altered-the-geopolitics-of-the-middle-east-how-would-biden-policies-compare-11603203959
6. Ikenberry, J. (2005). Power and liberal order: America's postwar world order in transition. Available at: https://scholar.princeton.edu/sites/default/files/gji3/files/power_and_liberal_order.pdf
7. Ikenberry, J. (2009). Liberal Internationalism 3.0: America and the Dilemmas of Liberal World Order. Available on https://www.jstor.org/stable/40407217?seq=1
8. Slaughter, A.-M. (1997). The Real New World Order. Available at: https://books.google.si/books?hl=en&lr=&id=WzG5qJM0AekC&oi=fnd&pg=PR1&dq=new+world+order+AM+Slaughter+&ots=KdARAy9a7G&sig=ooDCVMKgA-bEMpEPPuP5i7tkFDA&redir_esc=y#v=onepage&q=new%20world%20order%20AM%20Slaughter&f=false.
9. Gathii, T. (2000). Neoliberalism, Colonialism, and International Governance: Decentering the International Law of Government Legitimacy. Available at: https://repository.law.umich.edu/cgi/viewcontent.cgi?article=3071&context=mlr
10. Klieman, A. (2015). Great Powers and Geopolitics International Affairs in a Rebalancing World. Available at: http://www.springer.com/series/10201
11. Kupchan, C. (1998). After Pax Americana: Benign Power, Regional Integration, and the Sources of a Stable Multipolarity. Available at: https://www.jstor.org/stable/2539379?seq=1 (accessed November 25, 2020)
12. Laufgraben, J. (2020). Trump abandoned the New World Order, Biden will rejoin it. Available at: https://www.dailycardinal.com/article/2020/11/trump-abandoned-the-new-world-order-biden-will-rejoin-it (accessed November 25, 2020)
13. Mctague, T. and Nicholas, P. (2020). The World Order That Donald Trump revealed. Available at: https://www.theatlantic.com/international/archive/2020/10/donald-trump-foreign-policy/616773/ (accessed November 25, 2020)
14. Motaharia M. and Ensiyeh, S. (2017). The New World Order in the Twenty – First Century. Available at: https://www.researchgate.net/publication/314169421_The_New_World_Order_in_the_Twenty-First_Century (accessed November 27, 2020)

15. Pletka, D. (2020). It's time for a new world order. Available at: https://www.aei.org/opeds/its-time-for-a-new-world-order/ (accessed November 28, 2020)
16. Sutter, K. (2006). Globalisation and New World Order. Available on http://www.global-directions.com/Articles/Business/Globalization1.pdf (accessed November 29, 2020)

# THE IMPACT OF ECONOMIC POLICY UNCERTAINTY ON INDUSTRIAL PRODUCTION IN GERMANY

**Dejan Romih**
*University of Maribor, Slovenia*
*dejan.romih@um.si*

**Alenka Kavkler**
*University of Maribor, Slovenia*
*alenka.kavkler@um.si*

***ABSTRACT***
*There is a growing interest among politicians and policymakers in economic policy uncertainty (EPU) in major economies. In this paper, we examined the impact of EPU on industrial production in Germany, which is a major European industrial power. We found that a positive EPU shock leads to a decrease in industrial production, which points to the need to prevent EPU in Germany.*
***Keywords:*** *economic policy uncertainty, industrial production, Germany*

## 1. INTRODUCTION

There is a growing interest among politicians and policymakers in economic policy uncertainty (EPU) in major economies such as the US, which is a major North American industrial power. In this paper, we examined the impact of EPU on industrial production in Germany, which is a major European industrial power. Many analysts agree that EPU in major European and North American economies contributed to a slowdown in their economic recovery after the Great Recession. In addition, studies have shown that the recovery period was accompanied by a rise in EPU (Baker, Bloom & Davis, 2016). There is a growing need among politicians and policymakers to measure and monitor EPU in the US and other major economies. Baker, Bloom and Davis (2016) developed a daily and monthly newspaper-based index of EPU for the US, and a monthly newspaper-based index of EPU for Canada, China, France, Germany, India, Italy, Japan, Russia, South Korea, Spain and the UK. In this paper, we use a monthly newspaper-based index of EPU for Germany, which is based on the monthly number of newspaper articles in two major German newspapers, namely the Frankfurter Allgemeine Zeitung and the Handelsblatt. These articles contain the terms *Wirtschaft* or *wirtschaftlich, Ausgaben, Bundesbank, Defizit, EZB, Haushalt, Haushaltsdefizit, Regulierung, Steuer, Wirtschaftspolitik* or *Zentralbank* and *unsicher* or *Unsicherheit* (Baker, Bloom & Davis, 2016, Appendix A, p. 2). The website https://www.policyuncertainty.com/ provides data on the newspaper-based index of EPU for 24 countries, namely Australia, Brazil, Canada, Chile, China, Colombia, Croatia, France, Germany, Greece, Hong Kong, India, Ireland, Italy, Japan, Mexico, the Netherlands, Russia, Singapore, South Korea, Spain, Sweden, the UK and the US. There is a growing body of literature on the impact of EPU on industrial production in the US and other major economies. Baker, Bloom and Davis (2016) and Curth (2018) examined the impact of EPU on industrial production in the US. They found that a positive EPU shock leads to a decrease in industrial production. Curth (2018) also found that a positive EPU shock leads to a decrease in industrial production in both recessions and expansions. Istiak and Serletis (2018) examined the impact of EPU on industrial production in Canada, France, Germany, Italy, Japan, the UK and the US. They found that a positive EPU shock leads to a decrease in industrial production, while a negative EPU shock leads to an increase in industrial production. They also found that EPU is countercyclical. Piano (2013) examined the impact of EPU in Europe on industrial production in France, Germany and Italy.

He found that a positive EPU shock in Europe leads to a decrease in industrial production. Belke and Kronen (2017) examined the impact of EPU on industrial production in Germany and Greece. They found that a positive EPU shock leads to an increase in industrial production in Germany and a decrease in industrial production in Greece. As this literature review shows, there is conflicting evidence about how EPU affects industrial production in Germany. Therefore, the purpose of this paper is to provide additional evidence on this subject.

## 2. METHODS

In this paper, we used vector autoregression (VAR) as advocated by Sims (1980) to study the impact of EPU on industrial production in Germany. We took a similar approach to that of Baker, Bloom and Davis (2016) for the US. As pointed out by Sims (1980), VAR models describe the dynamic structure of the variables better than multivariate simultaneous equations models and the distinction between endogenous and exogenous variables does not have to be made a priori. Lütkepohl (2013) emphasizes that VAR models are a natural tool for forecasting. In VAR models, current values of the set of variables under observation are explained by their past values. VAR models thus describe the dynamic evolutions of a set of variables from their common history (Verbeek, 2008). VAR models were postulated for stationary variables without time trends. After the concept of cointegration was developed in the 1980s, several authors (including Granger, 1981; Engle and Granger, 1987; Johansen, 1995) extended the use of this type of models to include variables with stochastic trends (Lütkepohl, 2013).

A VAR with an lag-order $p$, denoted by VAR($p$), is

$$y_t = c + A_1 y_{t-1} + A_2 y_{t-2} + \cdots + A_p y_{t-p} + e_t,\ t = 1, \ldots, T,$$

where $y_t$ is a $k \times 1$ vector of endogenous variables, $c$ is a $k \times 1$ vector of constants, $A_i$ is a time-invariant $k \times k$ matrix of coefficients and $e_t$ is a $k \times 1$ vector of error terms.

In this paper, we used a VAR($p$) with five variables. These are the newspaper-based index of EPU for Germany at time $t$, denoted by $epu_t$, the logarithm of the DAX at time $t$, denoted by $dax_t$, the short-term interest rate for Germany at time $t$, denoted by $i_t$, the logarithm of the unemployment rate for Germany at time $t$, denoted by $un_t$ and the logarithm of the index of industrial production for Germany at time $t$, denoted by $ip_t$. Unlike Baker, Bloom and Davis (2016), we used the unemployment rate instead of the employment rate. We obtained monthly data on the EPU from https://www.policyuncertainty.com/, data on the DAX from Yahoo! Finance and data on the short-term interest rate, the unemployment rate and the index of industrial production from OECD. In this paper, we also used a Cholesky decomposition. We ordered the variables in the same order as above. We used monthly data from January 1993 to August 2019. Based on the Akaike information criterion, the final prediction error and the Hannan and Quinn information criterion, we chose a VAR model with three lags ($p = 3$), which is

$$epu_t = c_1 + a_{1,1}^1 epu_{t-1} + a_{1,2}^1 dax_{t-1} + a_{1,3}^1 i_{t-1} + a_{1,4}^1 un_{t-1} + a_{1,5}^1 ip_{t-1} + \cdots + a_{1,1}^3 epu_{t-3} + a_{1,2}^3 dax_{t-3} + a_{1,3}^3 i_{t-3} + a_{1,4}^3 un_{t-3} + a_{1,5}^3 ip_{t-3} + e_{1,t},$$

$$dax_t = c_2 + a_{2,1}^1 epu_{t-1} + a_{2,2}^1 dax_{t-1} + a_{2,3}^1 i_{t-1} + a_{2,4}^1 un_{t-1} + a_{2,5}^1 ip_{t-1} + \cdots + a_{2,1}^3 epu_{t-3} + a_{2,2}^3 dax_{t-3} + a_{2,3}^3 i_{t-3} + a_{2,4}^3 un_{t-3} + a_{2,5}^3 ip_{t-3} + e_{2,t},$$

$$i_t = c_3 + a_{3,1}^1 epu_{t-1} + a_{3,2}^1 dax_{t-1} + a_{3,3}^1 i_{t-1} + a_{3,4}^1 un_{t-1} + a_{3,5}^1 ip_{t-1} + \cdots + a_{3,1}^3 epu_{t-3} + a_{3,2}^3 dax_{t-3} + a_{3,3}^3 i_{t-3} + a_{3,4}^3 un_{t-3} + a_{3,5}^3 ip_{t-3} + e_{3,t},$$

$$un_t = c_4 + a_{4,1}^1 epu_{t-1} + a_{4,2}^1 dax_{t-1} + a_{4,3}^1 i_{t-1} + a_{4,4}^1 un_{t-1} + a_{4,5}^1 ip_{t-1} + \cdots + a_{4,1}^3 epu_{t-3} + a_{4,2}^3 dax_{t-3} + a_{4,3}^3 i_{t-3} + a_{4,4}^3 un_{t-3} + a_{4,5}^3 ip_{t-3} + e_{4,t},$$

$$ip_t = c_5 + a_{5,1}^1 epu_{t-1} + a_{5,2}^1 dax_{t-1} + a_{5,3}^1 i_{t-1} + a_{5,4}^1 un_{t-1} + a_{5,5}^1 ip_{t-1} + \cdots + a_{5,1}^3 epu_{t-3} + a_{5,2}^3 dax_{t-3} + a_{5,3}^3 i_{t-3} + a_{5,4}^3 un_{t-3} + a_{5,5}^3 ip_{t-3} + e_{5,t}, \; t = 1, \ldots, 320.$$

## 3. RESULTS

Table 1 shows descriptive statistics for five variables, namely $epu_t$, $dax_t$, $i_t$, $un_t$ and $ip_t$.

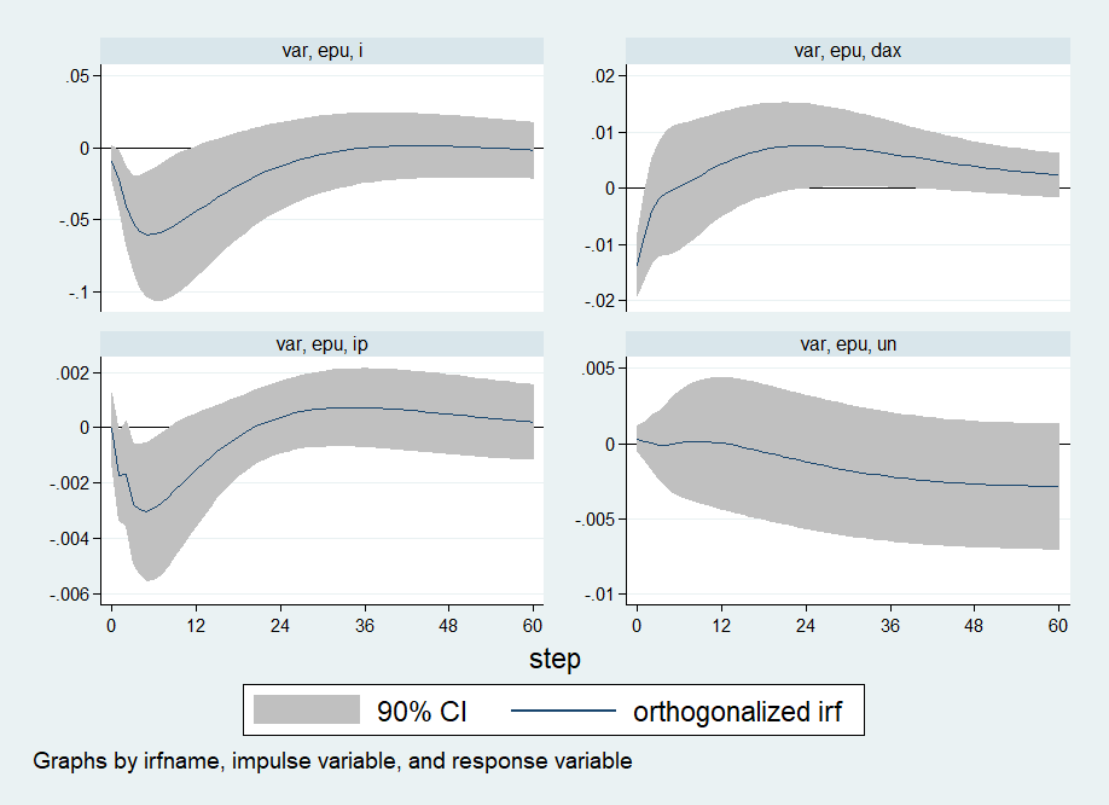
*Table 1: Descriptive statistics*

| Variable | Observations | Mean | Standard deviation | Minimum | Maximum |
|---|---|---|---|---|---|
| $epu_t$ | 320 | 124.45 | 61.77 | 28.43 | 454.01 |
| $dax_t$ | 320 | 8.61 | 0.54 | 7.36 | 9.49 |
| $i_t$ | 320 | 2.41 | 2.05 | −0.41 | 8.59 |
| $un_t$ | 320 | 1.94 | 0.35 | 1.13 | 2.42 |
| $ip_t$ | 320 | 4.45 | 0.14 | 4.17 | 4.69 |

*Source: Own calculations*

Figure 1 shows the orthogonalized impulse response graphs. The impulse variable is $epu_t$ and the response variables are $dax_t$, $i_t$, $un_t$ and $ip_t$.

*Figure 1: The orthogonalized impulse response graphs*




*Source: Own calculations*

Figure 1 shows that a positive unit (one standard error) EPU shock leads to a decrease in the DAX, the short-term interest rate and industrial production. As can be seen, the decrease in industrial production is statistically significant between the second and the fifth month after the orthogonalized shock.

## 4. DISCUSSION

Many analysts believe that EPU is the new normal in major economies. There is therefore a growing need among economists and policymakers to study the impact of EPU on industrial production in these economies. This paper provides further evidence on how EPU affects industrial production in Germany. In contrast to Belke and Kronen (2017), we found that a positive EPU shock leads to a decrease in industrial production. However, since there is a growing interest in the nonlinear impact of EPU on the economy, further studies are needed.

## 5. CONCLUSION

There is a growing body of evidence that EPU adversely affects industrial production in the US and other major economies. In this paper, we examined the impact of EPU on industrial production in Germany. We found that a positive EPU shock leads to a decrease in industrial production. This is consistent with our expectations. This study has broad policy implications. Firstly, action must be taken by politicians and policymakers to decrease EPU in Germany. Secondly, action must be taken to reduce the adverse impact of EPU on the German economy. However, taking action may not be easy as EPU is a complex phenomenon.

## LITERATURE:

1. Baker, S. R., Bloom, N. & Davis, S. J. (2016). *Measuring economic policy uncertainty*. The Quarterly Journal of Economics, 131(4), 1593–1636.
2. Belke, A. & Kronen, D. (2017). *The impact of uncertainty on macro variables: an SVAR-based empirical analysis for EU countries* (Ruhr Economic Papers No. 699). Essen: RWI Leibniz-Institut für Wirtschaftsforschung; Bochum: Ruhr-Universität Bochum; Dortmund: Technische Universität Dortmund; Essen: Universität Duisburg-Essen.
3. Curth, A. (2018). *Uncertainty and the US economy: an investigation of the economic effects of economic policy uncertainty shocks originating in the US and Europe.* Undergraduate thesis, Rotterdam: Erasmus University Rotterdam.
4. Engle, R. F. & Granger, C. W. J. (1987). *Co-integration and Error Correction: Representation, Estimation, and Testing*. Econometrica, 55(2), 251-276.
5. Granger, C. W. J. (1981). *Some properties of time series data and their use in econometric model specification*. Journal of Econometrics, 16(1), 121-130.
6. Istiak, K. & Serletis, A. (2018). *Economic policy uncertainty and real output: evidence from the G7 countries.* Applied Economics, 50(39), 4222–4233.
7. Johansen, S. (1995). *Likelihood-Based Inference in Cointegrated Vector Autoregressive Models*. Oxford: Oxford University Press.
8. Lütkepohl, H. (2013). Vector autoregressive models. In N. Hashimzade & M. A. Thornton (ed.), *Handbook of Research Methods and Applications in Empirical Macroeconomics* (p. 139–164). Cheltenham: Edward Elgar Publishing.
9. Piano, S. (2013). *The impact of European economic policy uncertainty on the economic performance of the Eurozone.* Undergraduate thesis, Coventry: University of Warwick.
10. Sims, C. (1980). *Macroeconomics and reality*. Econometrica, 48(1), 1–48.
11. Verbeek, M. (2008). *A Guide to Modern Econometrics*. Chichester: John Wiley & Sons.

# DRIVER AND BARRIER FACTORS OF INDUSTRY 4.0 IMPLEMENTATION FOR SMALL AND MEDIUM-SIZED ENTERPRISES: AN OVERVIEW

**Santi Setyaningsih**
*Szechenyi Istvan University, Hungary*
*setyaningsih.santi@sze.hu*

**Peter Kelle**
*Louisiana State University, USA*
*qmkell@lsu.edu*

**Azmi Sulaiman Maretan**
*Szechenyi Istvan University, Hungary*
*azmimaretan@gmail.com*

***ABSTRACT***

*The development of Industry 4.0 is based on third Industrial Revolution which marked by the rapid improvement of Information Technology (IT), electronics and digitalization that consist of Internet of Things (IoT), Cyber Physical System (CPS) and Internet of Services (IoS) that create Smart Factory. Industry 4.0 concept is causing significant impact to the industrial sector and usually already applicable in developed countries such as Germany, USA, and Japan, mostly by the larger enterprises. However, it is quite challenging for the Small and Medium Sized Enterprises (SMEs) to implement the same. This paper utilizes literature review methodology focusing on the emerging digital technology of Industry 4.0 that have several driver and barrier factors in application to the organization of SMEs. It is already proven that applying this Industry 4.0 can bring several benefits to organization such as improve the quality of product and service, reduce the lead time to the market, increase more productivity, etc. We identified six drivers with 27 sub-factors and six barrier factors with 23 sub-factors for the barriers based on 53 selected articles that focus on Industry 4.0 implementation. The results are crucial for SMEs in planning conversion towards digitalized processes. The paper also contributes academically by supporting future research investigating the effect of geographical and organizational structure on these driver and barrier factors of Industry 4.0 implementation.*
***Keywords:*** *Barrier, Driver, Industry 4.0, Small and Medium Enterprises*

## 1. INTRODUCTION

Industry 4.0 has changed the geography of industry, especially their technological system which is based on IoT, Cloud, Big Data, and several other types of digital technology (Won and Park, 2020). This term that was announced in Germany in 2011 has a purpose to improve and enhance productivity, revenue growth, employment, and investments (Piccarozzi, et al., 2018). Information from manufacturing companies in Italy showed that Industry 4.0 was able to improve product quality by 63.1% through the reduction of errors, share the advantages in the management of logistic by 53.8%, time-saving by 50.8%, and also successfully decrease the physical stress of collaborators by 40% (Brozzi, et al., 2020). The sample of proven implementation of Industry 4.0 is mostly from larger enterprises. Indeed, they contribute significantly to the economy of a country. However, SMEs cannot be ignored since they contribute around 90% of the economy of the EU (European Union) countries (OECD, 2016). The contribution of SMEs is also substantial in providing job opportunities, economic growth as well as ensure social stability. In terms of Industry 4.0 implementation, SMEs have more difficulties since they face a greater shortage of financial and knowledge resources (Masood

and Sonntag, 2020). Previous research revealed that SMEs require a flexible and simple application of Industry 4.0 (Moeuf, et al., 2019). Since SMEs are part of the big supply chain, improving their digitalization can provide additional opportunities to enter into new markets as well as improve their productivity (Peillon and Dubruc, 2019). A systematic literature review is presented in this research to determine what are the significant driver and barrier factors for SMEs in the implementation of Industry 4.0. We also summarize the key topics in Industry 4.0 and the research progress in these areas. Further, we show the managers of SMEs' in which area they need to focus first on Industry 4.0 implementation. The research paper is structured as follows: Section 2 describes the research methodology used for this literature review framework. Section 3 shares the process of screening results and descriptive findings from the assessment. Section 4 explains the comprehensive review of accumulated articles and split the result between driver factors and barrier factors of Industry 4.0 implementation. Section 5 concludes with the contributions and limitations of the study and proposes future research directions.

## 2. METHOD

### 2.1. Database Selection

At the time as the term Industry 4.0 was first publicly introduced in 2011 (Luenendonk, 2019), very few articles were published containing this term in International Journals, so in our search, we are also included International Conference Proceedings to enhance our publication database. This review was conducted using public literature databases. The search was not limited to the manufacturing, industrial, and engineering type of journal but a wider variety of journals and conference proceedings that published Industry 4.0 related topics. To access a broad variety of academic articles and conference publications, we selected the ProQuest and Science Direct databases. ProQuest databases share a single source for scholarly journals, newspapers, reports, working papers as well as e-books. However, we filtered it for only scholarly journals. Likewise, Science Direct has around 4,277 journals and 30,498 books for search but we filtered searching journal articles between 2011-2020.

### 2.2. Keyword Search

In this paper, we refer only to the most relevant and connected articles that are correlated to our research question. The objective was to determine a productive, thorough, and fair article search procedure. Several keywords that are used for this search process included: i) driver of Industry 4.0 in SME, ii) barrier of Industry 4.0 in SME, iii) challenge of Industry 4.0 in SME, iv) success factor of Industry 4.0 in SME and v) benefit of Industry 4.0 implementation in SME. However, we also included articles focused its research on Smart Manufacturing, IoT, and Smart Factory.

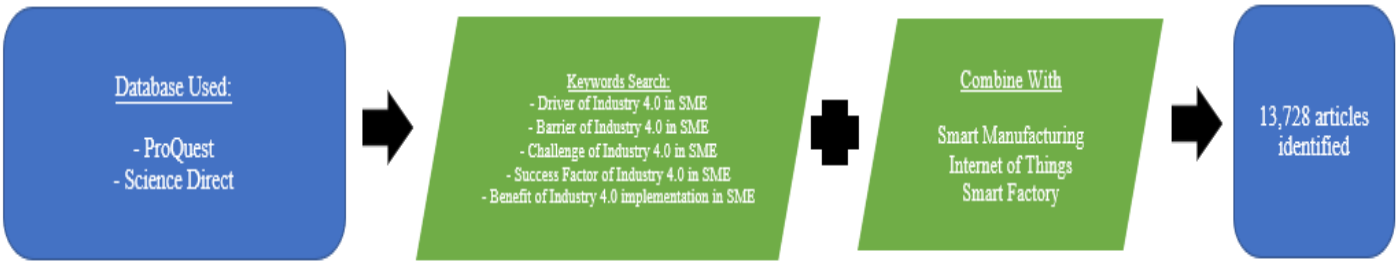



*Figure 1: Flow of Databases Collection*

### 2.3. Inclusion/Exclusion Criteria

Articles that we analyzed further in this research paper follow these inclusion criteria:

| Identifier | Description |
|---|---|
| C1 | Articles in English language |
| C2 | Articles that published in between 2011-2020 |
| C3 | Eliminate dissertation, theses, books, newspapers, magazines, working papers, and reports |
| C4 | Articles that has more than 4 pages |
| C5 | Articles encompassing the subsequent title, abstract or keywords terms: Industry 4.0, driver, barrier, challenges, success factor, and benefit |

*Table 1: Inclusion/Exclusion Criteria (Source: Own Development)*

We did the screening process several times to make sure that all the articles that being analyzed are dealing with the same topic, and there were no duplications. The initial keyword search resulted in around 13,728 publications. We confirmed that various facets of Industry 4.0 are already enclosed in the gathering phase and were also already filtered by the inclusion/exclusion criteria.

## 3. RESULT

### 3.1. Article Screening Result

The screening process used three phases to ensure that the appropriate articles from the search databases were included in the analysis part. In phase one, we were entering the keywords in the databases with the inclusion criteria and resulted in 13,728 publications under 5 themes of keywords. In phase two, we screened those articles based on titles and abstracts that are connected to the investigated topic. This action resulted in 13,551 articles that have been excluded, and 177 articles being left. In phase three, we excluded duplication articles to streamline the final databases. After discussing this selection among the co-authors resulted in 53 articles as a final selection. In summary, these actions demonstrate how this literature review provides a focused review of Industry 4.0 implementation by SMEs.

### 3.2. Descriptive Analysis

Since Industry 4.0 has been launched in 2011, no articles focused on our specific topic until 2017. In recent years, papers related to the driver and barrier research of Industry 4.0 implementation increased gradually. Table 2 shows the trend we observed from the year 2017 to 2020.

| | 2017 | 2018 | 2019 | 2020 |
|---|---|---|---|---|
| No. of Articles | 7 | 18 | 19 | 9 |

*Table 2: Statistics of Resulted Article by Year (Source: Own Development)*

Out of the 53 articles directly connected to our research, 13% were published in Procedia Manufacturing, 11% in IFAC Papers Online, and the rest has a small percentage in several other journals. The highest-ranked journal that has some related articles is the Technological Forecasting & Social Change with three articles (6%). This journal is classified as a Q1 journal in applied psychology and has a 103 H index rank.

| Journal Articles and Conference Proceeding | No. of Articles |
|---|---|
| Procedia Manufacturing | 7 |
| IFAC Papers Online | 6 |
| Procedia CIRP | 3 |
| Sustainability | 3 |
| Technological Forecasting & Social Change | 3 |
| Computers in Industry | 2 |
| Processes | 2 |
| Social Science | 2 |
| Other Proceedings and Journals | 25 |
| **Total Articles** | **53** |

*Table 3: Statistics of Resulted Article by Journal and Proceeding (Source: Own Development)*

The published case studies in these articles were mostly coming from Germany as a country origin of industry 4.0. As we see in Table 4, most of the published cases come from developed countries.

| Country Wise - Case Study | No. of Articles |
|---|---|
| Germany | 10 |
| Italy | 3 |
| European | 2 |
| Hungary | 2 |
| Japan | 2 |
| Malaysia | 2 |
| UK | 2 |
| Other Countries | 17 |
| Unknown | 13 |
| **Total Articles** | **53** |

*Table 4: Statistics of Resulted Article by Country (Source: Own Development)*

Most authors used empirical research that covered 64% of all articles that were investigated. Empirical research is based on observations and obtain knowledge from experience rather than utilize theory (PSU, 2020). Several advantages of the empirical research method include flexible methodology concerning changing sample size, sampling type, and data collection method. Besides, this research method has also fewer rules to be followed (Projectguru, 2020).

| Research Method | No. of Paper |
|---|---|
| **Empirical** | 34 |
| Survey | 13 |
| Case Study | 8 |
| Interview | 8 |
| Mixed Method | 4 |
| Others | 1 |
| **Conceptual/Theoretical** | 9 |
| **Research Method** | **No. of Paper** |
| **Literature Review** | 5 |
| **Modeling** | 4 |
| **Conceptual/Theoretical + Survey** | 1 |
| **Total Articles** | **53** |

*Table 5: Distribution of Review Articles by Research Method (Source: Own Development)*

## 4. DISCUSSION

### 4.1. Driver Factors of Industry 4.0 Implementation

In practice, several methods can be used to trigger SMEs to implement Industry 4.0. We classified them as driving factors. Reduction of cost including human resource cost, inventory cost and operating cost are the main things to encourage companies to move forward as it has been revealed in several papers of our sample: Mohamed (2018); Horváth and Szabó (2019); Müller and Voigt (2018); Zimmermann, et al. (2019); Rauch, et al. (2019); YaŞar and Ulusoy (2019); Stentoft, et al. (2019); Masood and Sonntag (2020); Hamzeh, et al. (2018)). However, we understand that these impacts can be achieved after SMEs implement Industry 4.0 with high investment as well. Besides, by implementing Industry 4.0, the enterprise could improve their production by doing mass production or ensure flexibility of customizable production systems depend on customers' demand as it has been published by Rauch, et al. (2019); Bär, et al. (2018); Kiel, et al. (2017); Mittal, et al. (2018); Masood and Sonntag (2020); Kolla, et al. (2019); Hamzeh, et al. (2018); Bigliardi, et al. (2020); Zhong, et al. (2017); Zimmermann, et al. (2019).

*Table following on the next page*

| Group | Factor | Literatures |
|---|---|---|
| Financial | Reduction of Cost (E.g.: Human Resources, Inventory Management and Operating Costs) | Mohamed (2018); Horváth and Szabó (2019); Müller and Voigt (2018); Zimmermann, et al. (2019); Rauch, et al. (2019); YaŞar and Ulusoy (2019); Stentoft, et al. (2019); Masood and Sonntag (2020); Hamzeh, et al. (2018); |
| | Increase Revenue | Mohamed (2018); Kiel, et al. (2017) |
| Process | Simplification of Business Process | Mohamed (2018); Horváth and Szabó (2019); Kiel, et al. (2017); Nagy, et al. (2018); Backhaus and Nadarajah (2019) |
| | Reducing the Error Rate | Mohamed (2018); Horváth and Szabó (2019); Kiel, et al. (2017); Müller and Voigt (2018); Zimmermann, et al. (2019) |
| | Improve Lead Time | Türkes, et al. (2019); Horváth and Szabó (2019); Kiel, et al. (2017); Stentoft, et al. (2019); Bigliardi, et al. (2020); Alaloul, et al. (2019); Müller and Voigt (2018); Zhong, et al. (2017) |
| | Ensuring Reliable Operation | Horváth and Szabó (2019); Kiel, et al. (2017) |
| **Group** | **Factor** | **Literatures** |
| Process | Mass Production or Flexible Customization | Rauch, et al. (2019); Bär, et al. (2018); Kiel, et al. (2017); Mittal, et al. (2018); Masood and Sonntag (2020); Kolla, et al. (2019); Hamzeh, et al. (2018); Bigliardi, et al. (2020); Zhong, et al. (2017); Zimmermann, et al. (2019) |
| | Having Real Time Data | Rauch, et al. (2019); Bär, et al. (2018); Nagy, et al. (2018); Kilimis, et al. (2019) |
| | Efficiency Resources | Bär, et al. (2018); Kiel, et al. (2017); Masood and Sonntag (2020); Dalmarco, et al. (2019); Zimmermann, et al. (2019) |
| External Exposure | Fulfill Customer Requirement | Türkes, et al. (2019); Bär, et al. (2018); EUDF (2018); Stentoft, et al. (2019) |
| | Market Competition | Horváth and Szabó (2019) |
| | Pressure from Competitors | Türkes, et al. (2019); Horváth and Szabó (2019), Lin, et al. (2018); Stentoft, et al. (2019); Müller, et al. (2018) |
| | Social and Economic Sustainability | Brozzi, et al. (2020); Maresova (2018); Strandhagen, et al. (2017); Haseeb, et al. (2019); Nagy, et al. (2018); Alaloul, et al. (2019) |
| | Integrate Stakeholder | Bär, et al. (2018); Zimmermann, et al. (2019) |
| | Due to Legal Requirement/Changed Legislation | Türkes, et al. (2019); Stentoft, et al. (2019); Lin, et al. (2018) |
| Human Resource | Increase Labour Shortage | Horváth and Szabó (2019) |
| | Decrease Human Work | Horváth and Szabó (2019); Kiel, et al. (2017) |
| | Improve Productivity | Zhong, et al. (2017); Mohamed (2018); Nagy, et al. (2018) |
| Management | Greater Control from Management | Horváth and Szabó (2019); Dalmarco, et al. (2019) |
| | Continuous Monitoring of Company's Performance | Horváth and Szabó (2019); Won and Park (2020) |
| | Change Business Process | Maresova (2018); Gabellano and Veiga (2019); Kiel, et al. (2017); Alaloul, et al. (2019); Garbellano and Veiga (2019) |
| | Improve Competitive Advantage | Kiel, et al. (2017); Müller, et al. (2018); Masood and Sonntag (2020); Alaloul, et al. (2019) |
| | Company Size | Trstenjak, et al. (2020) |
| **Group** | **Factor** | **Literatures** |
| Technology | Advance Manufacturing Technologies | Agostini and Nosella (2020); Maresova (2018); Lin, et al. (2018); Bigliardi, et al. (2020) |
| | Traceability of Data | Kiel, et al. (2017); Zimmermann, et al. (2019) |
| | Effective Data Exploitation | Kiel, et al. (2017); Müller and Voigt (2018) |
| | Better Data Security | Dalmarco, et al. (2019); Alaloul, et al. (2019) |

*Table 6: Driver Factors Industry 4.0 Implementation (Source: Own Development)*

### 4.2. Barrier Factors of Industry 4.0 Implementation

The major challenge that has been faced by SMEs implementing Industry 4.0 is the lack of appropriate skills of the employees working in the organization as it was mentioned in several articles. This barrier is typically related to another sub-factor, such as lack of training held by the company, as it is published in Türkes, et al. (2019); Horváth and Szabó (2019); Rauch, et al. (2019); Stentoft, et al. (2019); Moeuf, et al. (2019); Niemeyer, et al. (2020); Kamble, et al. (2018); Iyer (2018); Kolla, et al. (2019). Also, the manager often had a lack of education in Industry 4.0 which impacted the organization's performance (Mukherjee (2018); Horváth and Szabó (2019); Trstenjak, et al. (2020); Moeuf, et al. (2019); Masood and Sonntag (2020); Centea, et al. (2020)). Those sub-factors are classified into human resource and management barrier factors. Another important barrier for Industry 4.0 implementation is high investment. We understand that the company only has a restricted amount of money that should be prioritized for the activities that are the most beneficial for the company. Industry 4.0 is very important in several cases, so the company should make an early decision whether they want to allocate the money for this implementation or not.

*Table following on the next page*

| Group | Factor | Literatures |
|---|---|---|
| Human Resource | Lack of Appropriate Knowledge from Workforce | Mohamed (2018); Hamada (2019); Türkes, et al. (2019); Horváth and Szabó (2019); Huang, et al. (2019); Rauch, et al. (2019); Maresova (2018); Kiel, et al. (2017); EUDF (2019); Trstenjak, et al. (2020); Schröder (2017); Stentoft, et al. (2019); Mokhtadir, et al. (2018); Müller (2019); Peillon and Dubruc (2019); Glass, et al. (2018); Masood and Sonntag (2020); Centea, et al. (2020); Kamble, et al. (2018); Taurino and Villa (2019); Hamzeh, et al. (2018); Dassisti and Giovannini (2018); Zapata, et al. (2020) |
| | Lack of Resources | Türkes, et al. (2019); Haseeb, et al. (2019); Schröder (2017); Stentoft, et al. (2019) |
| **Group** | **Factor** | **Literatures** |
| Human Resource | Lack of Training of Knowledge | Türkes, et al. (2019); Horváth and Szabó (2019); Rauch, et al. (2019); Stentoft, et al. (2019); Moeuf, et al. (2019); Niemeyer, et al. (2020); Kamble, et al. (2018); Iyer (2018); Kolla, et al. (2019) |
| Technology | Capacity of technology | Mohamed (2018); Huang, et al. (2019); Warren (2017); Mokhtadir, et al. (2018); Glass, et al. (2018); Masood and Sonntag (2020); Iyer (2018); Kolla, et al. (2019); Müller and Voigt (2018) |
| | Lack of Standard of Industry 4.0 Implementation | Türkes, et al. (2019); Horváth and Szabó (2019); Schröder (2017); Stentoft, et al. (2019); Glass, et al. (2018); Kamble, et al. (2018); Kolla, et al. (2019); Alaloul, et al. (2019); Müller and Voigt (2018); Zapata, et al. (2020) |
| | The need for large amounts of storage capacity | Horváth and Szabó (2019); Kamble, et al. (2018) |
| | Lack of back-end systems for integration | Horváth and Szabó (2019); Kamble, et al. (2018) |
| | Insecure data access predisposes companies to cyber crime and industrial spying | Rauch, et al. (2019); Kiel, et al. (2017); EUDF (2019); Schröder (2017); Stentoft, et al. (2019), Mokhtadir, et al. (2018); Kamble, et al. (2018), Vaidya, et al. (2018); Müller and Voigt (2018) |
| Management | Lack of Managerial Skill | Mukherjee (2018); Horváth and Szabó (2019); Trstenjak, et al. (2020); Moeuf, et al. (2019); Masood and Sonntag (2020); Centea, et al. (2020) |
| | Lack of Understanding the Importance of Industry 4.0 | Türkes, et al. (2019); Stentoft, et al. (2019) |
| | Lack of Concious Planning and Goals | Horváth and Szabó (2019); Huang, et al. (2019); Schröder (2017); Moeuf, et al. (2019); Mokhtadir, et al. (2018); Müller (2019); Hamzeh, et al. (2018) |
| | Lack of Top Management Support | Rauch, et al. (2019); Kiel, et al. (2017); EUDF (2019); Kolla, et al. (2019); Kilimis, et al. (2019); Hamzeh, et al. (2018); Zapata, et al. (2020) |
| | Flexibility of Corporate Culture | Kiel, et al. (2017); Kamble, et al. (2018); Kolla, et al. (2019); Alaloul, et al. (2019); Zapata, et al. (2020) |
| | Busy with Other Challenges | Hamzeh, et al. (2018) |
| **Group** | **Factor** | **Literatures** |
| Financial | High Investment | Horváth and Szabó (2019); Huang, et al. (2019); Rauch, et al. (2019); Kiel, et al. (2017); Schröder (2017); Warren (2017); Stentoft, et al. (2019); Mokhtadir, et al. (2018); Peillon and Dubruc (2019); Glass, et al. (2018); Masood and Sonntag (2020); Kamble, et al. (2018); Vaidya, et al. (2018); Won and Park (2020); Hamzeh, et al. (2018); Dassisti and Giovannini (2018); Zimmermann, et al. (2019) |
| | Long evaluation period for tenders | Horváth and Szabó (2019) |
| Organizational | Contradictory Interest from Different Department | Horváth and Szabó (2019) |
| | Resistance to Change | Horváth and Szabó (2019); Rauch, et al. (2019); Kiel, et al. (2017); Trstenjak, et al. (2020); Stentoft, et al. (2019); Mittal, et al. (2018); Müller (2019); Peillon and Dubruc (2019); Kolla, et al. (2019); Müller and Voigt (2018) |
| | Regulatory Compliance Issue | Kamble, et al. (2018) |
| External | Resistance to Cooperation from other Parties | Horváth and Szabó (2019); Rauch, et al. (2019); Kiel, et al. (2017); Müller, et al. (2017); Mittal, et al. (2018); Mokhtadir, et al. (2018); Müller (2019); Glass, et al. (2018); Kolla, et al. (2019); Zimmermann, et al. (2019) |
| | Government Policies | Tsuruta (2018); Antoniuk, et al. (2017); Maresova (2018); Iyer (2018); Alaloul, et al. (2019) |
| | Understanding of specific customer requirements due to increased collaboration and involvement | Kiel, et al. (2017); Peillon and Dubruc (2019) |
| | Legal and Contractual Uncertainty | Kamble, et al. (2018); Iyer (2018); Alaloul, et al. (2019) |

*Table 7: Barrier Factors Industry 4.0 Implementation (Source: Own Development)*

## 5. CONCLUSION AND FUTURE RESEARCH

Nowadays, companies cannot neglect the new development of Industry 4.0 that offers opportunities to improve the performance of the organization. This strategy can be very helpful, especially for the manufacturing SMEs that strive to survive in an aggressive environment

(Peillon and Dubruc, 2019). Although SMEs can operate well with the current strategy, but the absence of Industry 4.0 technology will reduce their potential and may result to get behind other rivals in the global market. The objective of this research is to find the significant driver and barrier factors for Industry 4.0 implementation. In our focused literature research we found 6 drivers with 27 sub-factors and 6 barrier factors with 23 sub-factors. Reduction of cost is the most stated driver factor of Industry 4.0 implementation. However, this phase can be reached after the organization implements its Industry 4.0 itself, which requires high investment cost. Careful calculation must be done by the management to make sure that the investment is worth especially in SMEs that have limited financial resources. On the other hand, the lack of appropriate knowledge for the employee has become the most stated barrier factor. It is supported by the fact that SMEs have a small number of employees having only limited skills. However, this situation can be solved by recruiting employees that already understand more about Industry 4.0 or improve training or coaching for their own employees. Several limitations from this research are important to be acknowledged. First, we considered only English language articles. Second, we used only two databases, ProQuest and Science Direct. From both of the limitations above, possibly more factors can be found from including other kinds of literature. Thirdly, since this topic has just spread out since 2011 also Conference Proceeding should be considered. The results of this review are intended to support future research. Firstly, these driver and barrier factors of Industry 4.0 implementation could be tested qualitatively using different samples from areas with different geographical structure and SCM strategy to find out whether any specific additional factor comes out from this perspective. Secondly, future research could focus on ranking the driving and barrier factors. Therefore, the current results can be used as a reference for managers to handle Industry 4.0 development in their organization. Thirdly, the recommendation is to employ more advanced research methods, both in data collection and data analysis. This research only used literature review methodology, however, additional research methods can enhance the result. The more research methods are used, the more blind spots can be recognized and deliver full pictures increasing the validity through triangulation.

***ACKNOWLEDGEMENT:*** *This research has been supported by Széchenyi István University and Stipendium Hungaricum scholarship.*

**LITERATURE:**

1. Agostini, L. and Nosella, A. (2020). *The Adoption of Industry 4.0 Technologies in SMEs: Results of an International Study*. Management Decision, Vol. 58, No. 4, pp. 625-643
2. Alaloul, W.S., Liew, M.S., Zawawi, N.A.W.A., Kennedy, I.B. (2019). *Industrial Revolution 4.0 in the Construction Industry: Challenges and Opportunities for Stakeholders*. Ain Shams Engineering Journal, doi: 10.1016/j.asej.2019.08.010.
3. Antoniuk, L., Gernego, I., Dyba V., Polishchuk, Y. and Sybirianska, Y. (2017). *Barriers and Opportunities for Hi-Tech Innovative Small and Medium Enterprises Development in the 4th Industrial Revolution Era*. Problems and Perspectives in Management, Vol. 15, Issue. 4, pp. 100-113.
4. Backhaus, S.K.H. and Nadarajah, D. (2019). *Investigating the Relationship between Industry 4.0 and Productivity: A Conceptual Framework for Malaysian Manufacturing Firms*. Procedia Computer Science, Vol. 161, pp. 696-709.
5. Bär, K., Hansen, Z.N.L.H. and Khalid, W. (2018). *Considering Industry 4.0 Aspects in the Supply Chain for an SME*. Production Engineering. Doi: 10.1007/s11740-018-0851-y
6. Bigliardi, B., Bottani, E. and Casella, G. (2020). *Enabling Technologies, Application Areas and Impact of Industry 4.0: A Bibliographic Analysis*. International Conference on Industry 4.0 and Smart Manufacturing, Vol. 42, pp. 322-326.

7. Brozzi, R., Forti, D., Rauch, E. and Matt, D.T. (2020). *The Advantages of Industry 4.0 Application for Sustainability: Results from a Sample of Manufacturing Companies*. Sustainability, Vol. 12, No. 3647, doi:10.3390/su12093647
8. Centea, D., Singh, I., Wanyama, T., Magolon, M., Boer, J. and Elbestawi, M. (2020). *Using the SEPT Learning Factor for the Implementation of Industry 4.0: Case of SMEs*. 10th Conference on Learning Factories, doi: 10.1016/j.promfg.2020.04.079.
9. Dalmarco, G., Ramalho, F.R., Barros, A.C. and Soares, A.L. (2019). *Providing Industry 4.0 Technologies: The Case of a Production Technology Cluster*. Journal of High Technology Management Research, doi: 10.1016/j.hitech.2019.100355.
10. Dassisti, M and Giovannini, A. (2018). *An Approach to Support I4.0 Adoption in SME: A Core-Metamodel and Applications*. IFAC Papers Online, Vol. 51, No. 11, pp. 42-47.
11. European Union Development Fund (2018). *Industry 4.0 - Opportunities and Challenges for SMEs in the North Sea Region*. Interreg North Sea Region Growin 4.0.
12. Garbellano, S. and Veiga, M.R.D. (2019). *Dynamic Capabilities in Italian Leading SMEs Adopting Industry 4.0*. Measuring Business Excellence, Vol. 23, No. 4, pp. 472-483.
13. Glass, R., Meissner, A., Gebauer, C., Stürmer, S. and Metternich, J. (2018). *Identifying the Barrier to Industry 4.0*. 51st CIRP Conference on Manufacturing Systems, Vol. 72, pp. 985-988.
14. Hamada, T. (2019). *Determinants of Decision-Makers' Attitudes toward Industry 4.0 Adaptation*. Social Science, Vol. 8, No. 140, doi:10.3390/socsci8050140.
15. Hamzeh, R., Zhong, R. and Xu, X.W. (2018). *A Survey Study on Industry 4.0 for New Zealand Manufacturing*. 46th SME North American Manufacturing Research Conference, Vol. 26, pp. 49-57.
16. Haseeb, M., Hussain, H.I., Slusarczyk, B. and Jermsittiparsert, K. (2019). *Industry 4.0: A Solution towards Technology Challenges of Sustainable Business Performance*. Social Science, Vol. 8, No. 154, doi: 10.3390/socsci8050154.
17. Horváth, D. and Szabó, R.Z. (2019). *Driving Forces and Barriers of Industry 4.0: Do Multinational and Small and Medium Sized Companies have Equal Opportunities?*. Technological Forecasting & Social Change, No. 146, pp. 119-132.
18. Huang, C.J., Chicoma, E.D.T. and Huang, Y.H. (2019). *Evaluating the Factors that are Affecting the Implementation of Industry 4.0 Technologies in Manufacturing MSMEs, the Case of Peru*. Processes, Vol. 7, No. 161, doi:10.3390/pr7030161.
19. Iyer, A. (2018). *Moving from Industry 2.0 to Industry 4.0: A Case Study from India on Leapfrogging in Smart Manufacturing*. 15th Global Conference on Sustainable Manufacturing, Vol. 21, pp. 663-670.
20. Kamble, S.S., Gunasekaran, A. and Sharma, R. (2018). *Analysis of the Driving and Dependence Power of Barriers to Adopt Industry 4.0 in Indian Manufacturing Industry*. Computers in Industry, Vol. 101, pp. 107-119.
21. Kilimis, P., Zou, W., Lehmann, M. and Berger, U. (2019). *A Survey on Digitalization for SME in Bradenburg, Germany*. IFAC Papers Online, Vol. 52, No. 13, pp. 2140-2145.
22. Kiel, D., Arnold, C. and Müller, J.M. (2017). *Sustainable Industry Value Creation: Benefits and Challenges of Industry 4.0*. XXVIII ISPIM Innovation Conference, Composing the Innovation Symphony, Austria, Vienna.
23. Kolla, S., Minufekr, M. and Plapper, P. (2019). *Deriving Essential Components of Lean and Industry 4.0 Assessment Model for Manufacturing SMEs*. 52nd CIRP Conference on Manufacturing Systems, Vo. 81, pp. 753-758.
24. Lin, D., Lee, C.K.M., Lau, H. and Yang, Y. (2018). *Strategic response to Industry 4.0: an empirical investigation on The Chinese automotive industry*. Industrial Management and Data Systems, doi: 10.1108/IMDS-09-2017-0403

25. Luenendonk, M. (2019). *Industry 4.0: Definition, Design, Principles, Challenges, and the Future of Employment*. Retrieved 24.08.2020 from https://www.cleverism.com/industry-4-0/#:~:text=The%20term%20also%20refers%20to,competitiveness%20in%20the%20manufacturing%20industry
26. Maresova, P., et al. (2018). *Consequences of Industry 4.0 in Business and Economics*. Economies, Vol. 6, No. 46, doi:10.3390/economies6030046
27. Masood, T. and Sonntag, P. (2020). *Industry 4.0: Adoption challenges and benefits for SMEs*. Computers in Industry, Vol. 121.
28. Mittal, S., Khan, M.A., Romero, D. and Wuest, T. (2018). *A Critical Review of Smart Manufacturing & Industry 4.0 Maturity Models: Implication for Small and Medium Sized Enterprises (SMEs)*. Journal of Manufacturing Process, Vol. 49, pp. 194-214.
29. Moeuf, A., Lamouri, S., Pellerin, R. Giraldo, S.M., Valencia, E.T. and Eburdy, R. (2019). *Identification of Critical Suceess Factors, Risks and Opportunities of Industry 4.0 in SME*. International Journal of Production Research, doi: 10.1080/00207543.2019.1636323.
30. Mohamed, M. (2018). *Challenges and Benefits of Industry 4.0: An overview*. International Journal of Supply and Operations Management, Vol. 5, Issue. 3, pp. 256-265.
31. Mokhtadir, M.A., Ali, S.M., Sarpong, S.K. and Shaikh, M.A.A. (2018). *Assessing Challenges for Implementing Industry 4.0: Implications for Process Safety and Environmental Protection*. Process Safety and Environmental Protection, doi: 10.1016/j.psep.2018.04.020.
32. Mukherjee, S. (2018). *Challenges to Indian Micro Small Scale and Medium Enterprises in the Era of Globalization*. Journal of Global Entrepreneurship Research, Vol. 8, No. 28.
33. Müller, J.M. (2019). *Assessing the Barriers to Industry 4.0 Implementation from a Workers' Perspective*. IFAC PapersOnLine, Vol. 52, No. 13, pp. 2189-2194.
34. Müller, J.M., Buliga, O. and Voigt, K.I. (2018). *Fortune Favors the Prepared: How SMEs Approach Business Model Innovations in Industry 4.0*. Technological Forecasting & Social Change, Vol. 132, pp. 2-17.
35. Müller, J.M., Maier, L., Veile, J. and Voigt, K.I. (2017). *Cooperation Strategies among SMEs for Implementing Industry 4.0*. Proceeding of Hamburg International Conference of Logistics, ISBN 9783745043280.
36. Müller, J.M. and Voigt, K.I. (2018). *The Impact of Industry 4.0 on Supply Chains in Engineer to Order Industries - An Exploratory Case Study*. IFAC Papers Online, Vol. 51, No. 11, pp. 122-127.
37. Nagy, J., Oláh, J., Erdei, E., Máté, D. and Popp, J. (2018). *The Role and Impact of Industry 4.0 and the Internet of Things on the Business Strategy of the Value Chain - The Case of Hungary*. Sustainability, Vol. 10, No. 3491, doi:10.3390/su10103491.
38. Niemeyer, C.L., Gehrke, I., Müller, K., Küsters, D. and Gries, T. (2020). *Getting Small Medium Enterprises started on Industry 4.0 Using Retrofitting Solutions*. 10th Conference on Learning Factories, Vol. 45, pp. 208-214.
39. OECD (2016). *Enhancing the Contributions of SMEs in a Global and Digitalized Economy*. Retrieved 26.07.2020 from https://www.oecd.org/industry/C-MIN-2017-8-EN.pdf.
40. Peillon, S. and Dubruc, N. (2019). *Barrier to Digital Servitization in French Manufacturing SMEs*. 11th CIRP Conference on Industrial Product-Service Systems, Vol. 83, pp. 146-150.
41. Piccarozzi, M., Aquilani, B. And Gatti, C. (2018). *Industry 4.0 in Management Studies: A Systematic Literature Review*. Sustainability, Vol. 10, No. 3821, doi: 10.3390/su10103821.
42. Projectguru (2020). What are the Advantages and Disadvantages of an Empirical Study?. Retrieved 24.08.2020 from https://www.projectguru.in/what-are-the-advantages-and-disadvantages-of-an-empirical-study/
43. PSU (2020). Empirical Research in the Social Sciences and Education. Retrieved 24.08.2020 from https://guides.libraries.psu.edu/emp

44. Rauch, E., Dallasega, P. and Unterhofer, M. (2019). *Requirements and Barriers for Introducing Smart Manufacturing in Small and Medium Sized Enterprises*. Engineering Management Review, DOI 10.1109/EMR.2019.2931564
45. Schröder, C. (2017). *The Challenges of Industry 4.0 for Small and Medium Sized Enterprises*. Friedrich Ebert Stiftung.
46. Stentoft, J., Jensen, K.W., Philipsen, K. and Haug, A. (2019). *Drivers and Barriers for Industry 4.0 Readiness and Practice: An SME Perspective with Empirical Evidence*. Proceedings of the 52nd Hawaii International Conference on System Sciences, ISBN: 978-0-9981331-2-6.
47. Strandhagen, J.W., Alfnes, E. and Strandhagen, J.O. (2017). *The Fit of Industry 4.0 Applications in Manufacturing Logistics: A Multiple Case Study*. Advance Manufacture, doi: 10.1007/s40436-017-0200-y.
48. Taurino, T. and Villa, A. (2019). *A Method for Applying Industry 4.0 in Small Enterprise*. IFAC Papers Online, Vol. 52, No. 13, pp. 439-444.
49. Trstenjak, M., Opetuk, T., Cajner, H. and Tosanovic, N. (2020). *Process Planning in Industry 4.0 - Current State, Potential and Management of Transformation*. Sustainability, Vol. 12, No. 5878, doi:10.3390/su12155878.
50. Tsuruta, D. (2018). *SME Policies as a Barrier to Growth of SMEs*. Small Business Economies, doi: 10.1007/s11187-018-0119-0
51. Türkes, M.C., Oncioiu, I., Aslam, D., Pantelescu, A.M., Topor, D.I. and Căpusneanu, S. (2019). *Drivers and Barriers in Using Industry 4.0: A Perspective of SMEs in Romania*. Processes, Vol. 7, No. 153, doi:10.3390/pr7030153
52. Vaidya, S., Ambad, P. and Bhosle, S. (2018). *Industry 4.0 - A Glimpse*. 2nd International Conference on Materials Manufacturing and Design Engineering, Vol. 20, pp. 233-238.
53. Warren, P. (2017). *The Potential of Smart Technologies and Micro-Generation in UK SME*. Energies, Vol. 10, No. 1050, doi:10.3390/en10071050.
54. Won, J.Y. and Park, M.J. (2020). *Smart Factory Adoption in Small and Medium Enterprises: Empirical Evidence of Manufacturing Industry in Korea*. Technological Forecasting & Social Change, Vol. 157.
55. YaŞar, E. and Ulusoy, T. (2019). *Industry 4.0 And Turkey*. Business and Management Studies: An International Journal, Vol. 7, No. 1, pp. 24-44.
56. Zapata, M.L., Berrah, L. and Tabourot, L. (2020). *Is It a Digital Transformation Framework Enough for Manufacturing Smart Products? The Case of Small and Medium Enterprises*. Procedia Manufacturing, Vol. 42, pp. 70-75.
57. Zhong, R.Y., Xu, X., Klotz, E. and Newman, S.T. (2017). *Intelligent Manufacturing in the Context of Industry 4.0: A Review*. Engineering, Vol.3, pp. 616-630.
58. Zimmermann, M., Rosca, E., Antons, O. and Bendul, J.C. (2019). *Supply Chain Risks in Times of Industry 4.0: Insight from German Cases*. IFAC Papers Online, Vol. 52, No. 13, pp. 1755-1760.

# PROFESSIONAL ORIENTATION AS A LIFELONG LEARNING METAMODEL FOR CONTINUING EDUCATION

**Svetlana Sotnikova**
*Novosibirsk state university of economics and management, Russia*
*s.i.sotnikova@nsuem.ru*

**Olga Prokudina**
*Novosibirsk state university of economics and management, Russia*
*prokudinaa@mail.ru*

***ABSTRACT***

*Professional orientation in the context of the concept of lifelong learning (LLL) represents the general ideology of choosing a professional career by an employable individual given the changing socio-economic reality. The importance of professional orientation in the VUCA economy is related the need to achieve for labor market entities a sustained rate of income growth and reduce labor costs. The article substantiates the modern concept of the professional orientation based on system-triad analysis of genesis of ideas about the essence and content of the professional orientation. The term «triad of vocational orientation» is introduced into the managerial circulation. Based on the analysis and generalization of available domestic and foreign experience of professional orientation the authors interpret the concept of «design of vocational orientation», interpretation its socio-economic content, essence. The classification of types of vocational guidance design is proposed: operational and strategic. Author's interpretation of the imperatives of operational and strategic design of vocational orientation is given. The imperatives of the vocational orientation design allow to identify and predict favorable opportunities and risks when choosing a professional career by an employable individual.*

***Keywords:*** *Professional orientation, Vocational orientation, Triad of vocational orientation, Vocational orientation design, Professional career, Career guidance, Professional self-determination*

## 1. INTRODUCTION

The belief in the high worth of the professional orientation of an employable individual is so universal now, that the importance and need to regulate professional orientation is considered at the interstate level. According to the modern concept of UNESCO «Education through Life: Continuing Education for Sustainable Development», which is part of the «Sustainable Development Goals - UN 2030», in order to ensure sustainable economic growth, the need to «strive to create an environment for children and youth that is conducive to the full realization of their rights and opportunities» was canonized. The development of the main provisions of the UNESCO concept of continuing education in the context of the transition of the Russian Federation from industrial to post-industrial information society was reflected in the Concept of development of continuing adult education in the Russian Federation for the period until 2025. This concept, as a system of views on the content, principles and main priorities of state policy to ensure throughout life opportunities for the implementation of the guaranteed right to «freely dispose of their abilities to work, choose the type of activity and profession» (Russian Constitution as amended, 2014), has proclaimed the increasing value and mandatory professional orientation not only for the younger generation, but also for the adult person (Development concept of continuous adult education, 2015).

The main ideas of institutionalization of cooperation and stakeholder engagement in the development of professional orientation are also reflected in Russian centralized regulations: Law of the Russian Federation «On employment in the Russian Federation» of 19.04.1991 № 1032-1 (articles 9, 12), Federal Law «On education in the Russian Federation» No. 273-FL of December 29, 2012 (article 42), the State programs of the Russian Federation «Development of education» for 2013-2020 and 2018-2025, as well as the Concept of development of additional education for children until 2020, the Regional standard of personnel for industrial growth, etc. In this regard, the focus of research interest is on the development of organizational and economic imperatives of the professional orientation as a mechanism for creating conditions for successful professionalization of an employable individual, development and use its «potential for innovative socially-oriented development of the country» (Resolution of the Government of the Russian Federation No 295, 2014). *The objectives of the research* are to triadically analyze the genesis of theoretical and methodical foundations of the professional orientation, to bring the content of the modern concept of the professional orientation in accordance with the realities of time, to substantiate the theoretical and methodical foundations of the vocational orientation design during the short, medium and long periods of time. *Scientific novelty* consists in the development of theoretical and applied foundations for the design of professional orientation of employable individuals in the VUCA economy, ensuring a balance between short-term and long-term goals, financial and non-financial indicators, main and auxiliary parameters, as well as external and internal factors of vocational orientation. Regarding the problematics of the article, a complex of *basic methods of theoretical research* - analytical abstraction, interpretation, classification and typologization of the phenomenon under study - has been effectively used. *The subject of the study* is stable and regular interrelationships that can be found in the processes of development of professional orientation of an employable individual on the labor market.

## 2. SOCIO-ECONOMIC ESSENCE OF PROFESSIONAL ORIENTATION: LITERATURE OVERVIEW

The professional orientation as research object has been the focus of science for decades. The interest in studying this phenomenon and process, its scope, intensity and causes is not accidental, as it most vividly reflects many important processes of professionalization an employable individual, which reflect the dynamism of labor market competitiveness. The analysis of the available literature on the problem of the professional orientation allowed to reveal the triad structure of the professional orientation – «factor - function - activity», the form of manifestation of which is «personal need for labor ($P_{pn}$) - public (market) need for labor ($P_{mn}$) - choice of profession ($P_{cp}$)»:

$$P_{pn} \Rightarrow P_{mn} \Rightarrow P_{cp}$$

In other words, the professional orientation ($P_o$) is presented as an individually conscious choice of the profession ($P_{cp}$), reflecting the resolution of the conflict between personal ($P_{pn}$) and public (market) ($P_{mn}$) needs in professional labor. It is a choice of a significant profession for an employable individual based on a clear understanding of his needs, interests, personal properties and talents, and a public (market) need to labor. The development of industrial relations, the system of division of labor, approaches to a person, labor and property significantly changes the fundamental principles and fills the triad of the vocational orientation with new social and economic content, allowing to give it a new qualitative level which characteristic for a certain stage of society development (Table 1).

| Period | Forms of substances triads of the professional orientation | | | Conceptual content |
|---|---|---|---|---|
| | Personal need for labor ($P_{pn}$) | Public (market) need for labor ($P_{mn}$) | Choice of profession ($P_{cp}$) | |
| 1918–1936 | The need to realize the right to labor | The need for qualified employees | Professional vocation | Ensure full employment of employable people |
| 1936-1958 | Prohibition of professional orientation activities in the country by the Decree of the Communist party and the government of the Soviet state (1936) | | | |
| 1960–1990 | The need to realize personal inclinations for labor | The need for comprehensively developed employees | Professional self-realization | Ensuring social equality of employable persons |
| 1990–2000 | Monetary labor needs | The need for professionally qualified employees | Professional self-determination | Promotion of efficient employment of employed persons |
| 2001 - present | The need for personal benefits in labor | Need for competitive employees | Professional career | Promotion of labor market competitiveness |

*Table 1: Origin of the professional orientation triad: terminological analysis of ideas about forms of manifestation of the professional orientation substances (developed by authors)*

It is not difficult to notice that the development of the concept of the vocational orientation came from spontaneous and traditional distribution of employable people in the system of division of labor taking into account their attraction to any profession (calling) to professional self-realization, which is determined by a person's awareness of their own capabilities and potentials in various activities, then to professional self-determination, in which the responsibility for the validity and results of the choice of profession increases, and, finally, choosing a professional career as an individually conscious position and behavior related to the reproduction of qualifications throughout the labor life of an employee (Skrypova, 2015, pp. 190-200) .

## 3. IMPERATIVES OF THE PROFESSIONAL ORIENTATION: A MODERN CONCEPT

In the conditions of modern VUCA economy as a result of dynamic processes of formation of consumer demand for professional labor at an employable individual and employer, obeying different laws and therefore not coinciding in time and direction of changes, the balance in the triad system of vocational orientation is disturbed: $P_{pn} \Rightarrow P_{mn} \Rightarrow P_{cp}$ . Disturbed balance in the triad means that the individually conscious professional position of an employable individual in the system of division of labor does not allow him to meet the market need for professional labor and get personal benefits for himself. The manifestations of this conflict are:

- *first*, the loss of interest in the profession, the loss of professional prospects, the disintegration of professional attitudes due to the lack of opportunities to meet personal labor needs;
- *second*, the awareness of an employable individual of the insufficient level of real opportunities or personal merits to meet the social (market) need for labor;

- *third*, the discrepancy between personal and market needs for professional labor, due to the existing division of labor and uneven development of certain sectors of the economy, which create different conditions for the choice of labor activity of employees.

All this, in the end, contributes to a decrease in the competitiveness of employable individuals in the labor market, not timely their involvement in the market economy, irrational placement in the workplaces, inefficient use and fixation in the workplace, and, consequently, weakening the viability of the organization, falling profits and labor efficiency, etc. Deployment of the conflict in the triad system of the vocational orientation promotes toughening of competition between employees for a more advantageous sphere of application of their qualification based on free labor, growth of personal income. A peculiar form of economic compulsion is being developed for an employable individual, aware of the limits of freedom and responsibility for achieving competitive sustainability throughout their life, not just to choose a profession demanded by the market in accordance with personal labor needs, but to constantly search for alternative opportunities to acquire personal benefits from professional labor. «Market economy not only creates suitable conditions for the independent action of each individual, but also sets strict requirements for it - the ability to choose freely, and to be responsible for the result of the choice made (that is, to be prepared for unpredictable situations)» (Bataeva, 2017, pp. 145-150). Under these conditions, employable individuals are forced to act proactively, anticipating the necessary changes on the labor market, based on the development of «self-confidence in the choice of personal goals in significant activities, means and ways of achieving the set goals, the ability to make a real self-assessment of their own actions» (Deeva, 2006, pp. 317-319). There is a shift in attitudes and values when choosing a profession: such concepts as «profession forever» and «one job for life» disappear. «Today, a person changes eight activities, not positions, but activities on average during his life» (Chistyakova, 2007). There is a growing need for an employable individual to choose their personal and professional positioning trajectory in the market system of division of labor throughout their labor life. From how fast an employable individual is ready to respond to the challenges of the competitive environment depends on the achievement of personal benefits in professional labor, its competitive position in the labor market. In other words, under unforeseen market conditions, the vocational orientation does not contribute to a one-time act of choosing a professional activity for the entire labor life. The vocational guidance contributes to the formation of an individually conscious sequence of alternative choices of professional labor in the changing life conditions and professional activity of an employable person, i.e. the choice of professional career. In terms of content, the professional career acts as a personal and professional positioning of an employable person in the market system of division of labor throughout his working life, considering his social and psychological abilities and market demand for labor. Structurally, the professional career is presented as a set of selections of professional activities choices related to mastering a variety of qualifications, different areas of human experience, taking into account the professional preferences of an employable individual and the requirements of the labor market (Table 2).

*Table following on the next page*

| Comparison criterion | Conceptual space of notions | | |
|---|---|---|---|
| | **Professional self-realization** | **Professional self-determination** | **Professional career** |
| Purpose | Disclosure of personal potential in the chosen profession | Choice of professional activity | Choosing a professional future |
| Object | An employable individual | Growing generation | An employable individual |
| Object role | reactive | Preventive | Proactive |
| Duration | During the performance of the function | During labor life | During labor life |
| Periodicity | Situationally | Once: one profession for life | Permanent: depending on the market situation |
| Stakeholders | An employable individual | An employable individual | State, business, family, an employable individual |
| Providers | An employable individual, family | Employers, state authorities, local self-government bodies, representatives of science and education, family, an employable individual | Employers, state authorities, local self-government bodies, representatives of science and education, family, an employable individual |
| Method | Operative | Tactical | Strategic |

*Table 2: The conceptual space of the concepts of «professional self-determination», «professional self-realization» and «professional career» (developed by authors)*

The choice of the professional career is an expression of the will, conscious personal activity of an employable person, his vision of the economic value of maintaining and improving professional qualification. In other words, this choice allows «not only to act in accordance with necessity, but also, identifying and developing their creative abilities, to achieve better results of activity in comparison with market ones, i.e. to possess competitive advantages in professional labor in changing conditions of life and professional activity» (Ford, 2011, p. 85). Thus, if the professional career allows a person to get personal benefits in various labor situations and provides a sense of identity as in the internal, psychological and external, existential spaces (Chudzikowski, 2012, pp. 298-306), it defines the career track, otherwise - is not so, and there is a need to change the profession, change their career track. And if the economic usefulness of the professional career exceeds the economic investment in it, it is promising, in the opposite situation - a dead end. Thus, the development modern stage of the professional orientation concept is conditioned by the special role of the professional orientation in creation and maintenance of competitive advantage by an employable individual. The vocational guidance is designed to promote personal and conscious choice of the professional career, which will allow everyone employable individual not only to act in accordance with the need, but also, identifying and developing their creative abilities, to achieve better results than market results throughout his labor life, i.e. to have a competitive advantage in professional labor and achieve personally benefits in the changing conditions of life and professional activity. In this context, the professional orientation is a means of protection against stagnation in professionalism, unemployment, deterioration in quality of life, sets the resources for creativity and creation, encourages the identification of new opportunities to improve competitiveness, gives direction, sets the limits and forms of mastering a variety of qualifications that complement and develop an employable individual.

## 4. METHODOLOGICAL BASIS OF THE PROFESSIONAL ORIENTATION DESIGN

Deciding on the choice of the professional career in the market system of division of labor is a systematic process included in the context of the more general system - life definition of an employable individual, first, and mastering the profession, second. The decision is made based on various professional orientation technologies in a specific situation that is uncertain, unique and irreversible. At that, there is no better (one and only right) impacts of the vocational orientation: an employable individual can achieve personal benefits (meeting personal needs) due to varying the professional orientation technologies across different careers. The professional orientation as a targeted activity has an infinite number of decisions related to the professional career choice, where some solutions are more correct than others. The correctness of solution depends on the nested conceptual meaning. In this regard, the importance of building a design of the vocational orientation is growing. *The professional orientation design as a process* - is a conscious intuitive activity to design the formal elements of the vocational guidance system of an employable individual. This design regulates the activities of all labor market subjects to create conditions for the professional career's choice, which is focused on maintaining and strengthening an employable individual competitiveness in the labor market.
*The professional orientation design as a result* - is an information carrier that contains an analytical model that serves as an interface between an employable individual and the labor market and sets the conditions for choosing the consumer qualities of the professional career.
Depending on the content of the professional orientation design, operational design and strategic design are distinguished (Table 3).

| **Comparison criteria** | **Design of the operational professional orientation** | **Design of the strategic professional orientation** |
|---|---|---|
| **Purpose** | Compliance with budget of the professional orientation | Competitiveness of the professional labor market |
| **Orientation** | Orientation to action | Analytical orientation |
| **Subject** | Selection of a target segment of the labor market | Analysis of labor market participant's needs |
| **Essence** | Functional support planning to achieve the vocational guidance goal | Labor market segmentation: macro-segmentation, micro-segmentation, ego segmentation |
| **Contents** | Comprehensive research «4P-mix career»: type of the professional career, quality of labor life, employment, labor mobility | The professional career attractiveness analysis: potential of professional labor market, life cycle of professional qualifications |
| **Opportunities, resources** | Existing opportunities, resources | New opportunities, resources |
| **Subject** | Professional self-determination | Professional career |
| **Competitive Environment** | Stable environment | Dynamic environment |
| **Nature of exposure** | Preventive | Proactive |
| **Result** | Implementation of the professional orientation activity: performance and control over achievement of goals | Choosing the professional orientation strategy |

*Table 3: Comparative characteristics of strategic and operative profession design (developed by authors)*

*Design of the operational professional orientation* is the activity on designing and optimization of the professional orientation processes, which allows to satisfy utilitarian, material and spiritual needs of an employable person to the fullest extent possible, taking into account market opportunities in the short or medium term. Depending on the dominance of individual substances in the professional orientation triad $P_{pn} \Rightarrow P_{mn} \Rightarrow P_{cp}$, distinguishes: professional information and consultation, professional selection and marketing, professional benchmarking and logistics, and professional adaptation (Figure 1).

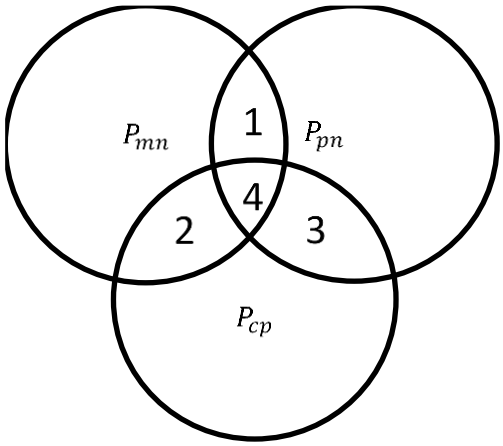



*Figure 1: Graphic operational design of professional orientation: personal ($P_{pn}$) and public/market ($P_{mn}$) needs for professional labor, professional choice ($P_{cp}$) (developed by authors)*

- Sector ($C_{mn}$= $P_{mn}/P_{pn}/P_{cp}$) - sector of one substance «public need to labor». This sector defines the implementation of *the professional information*, which involves providing information about the world of professions, the state and prospects of market demand for professional labor, professional requirements, labor conditions and regime, employment opportunities, educational organizations in an accessible and understandable form.
- Sector ($C_{pn}$= $P_{pn}/P_{mn}/P_{cp}$) - sector of one substance «personal need to labor» defines the implementation of *the professional consultation*. The vocational guidance in this segment is aimed at helping an employable person to make a reasonable personal choice of a professional track that will allow to fully meet personal labor needs.
- Sector ($C_{cp}$= $P_{cp}/P_{pn}/P_{mn}$) - sector of one substance «professional choice» defines the implementation of *the professional selection* - profession choice based on monitoring own strong and weak social and psychological abilities (Minchington, pp. 14-16) .
- Sector 1 – $C_o$= ($P_{mn} \cap P_{pn}$) - this dyad determines implementation of *the professional adaptation*, which orients an employable person to gradually adapt their personal labor needs to labor requirements, social environment, labor conditions and regime.
- Sector 2 – $C_o$= ($P_{mn} \cap P_{cp}$) - this dyad determines implementation of *the professional logistics* -selection of optimal vectors of self-realization on the labor market, choice of optimal vectors of self-realization on the labor market, manifestation of own activity of an employable person in self-knowledge, development of abilities, search of ways of realization of personal intentions in the conditions of competition.
- Sector 3 – $C_o$= ($P_{cp} \cap P_{pn}$) - this dyad determines implementation of *the professional marketing* which is focused on the search for a profession in the labor market that will achieve a competitive edge in satisfying personal labor needs in terms of labor life quality, as well as identifying opportunities for their preservation over time.

- Sector 4 – $C_o$= ($P_{cp} \cap P_{pn} \cap P_{mn}$) - this sector provides for *the professional benchmarking*, which allows to achieve competitive leadership in the profession based on an objective assessment of personal needs in labor, aptitudes of abilities and other individual qualities of the person taking into account the market demand for labor.

So, the design of the operational professional orientation is a productive process of building a harmonious subject-dimensional environment of personal and professional positioning of an employable individual in the market system of division of labor, which mediates the unity of the three substances of the vocational guidance - personal ($P_{pn}$) and public/market ($P_{mn}$) needs for professional labor, professional choice ($P_{cp}$). Each of the substances, representing an independent structure, to a greater or lesser extent contributes to the understanding of the design of professional orientation at certain stages of the life cycle of an employable individual. The market economy presents each employable individual the purpose of creating material and spiritual prerequisites for improving the quality of one's life, then the vocational guidance makes sense for any labor market actor if the professional orientation can generate an additional value. (Kong, Chrung, Song, 2012, pp. 10-11), i.e. leads to capitalization. The proposal of the consumer value of professional orientation to the target group of labor market actors - this is the premise that intangible assets of professional orientation produce financially results (income). The strategic design of the professional orientation - is the project planning of the capitalization of vocational orientation processes based on the system of equal interaction of labor market actors (Sotnikov, 2016, pp. 56-62) through regular and comprehensive monitoring and analysis of trends in consumer satisfaction and competitiveness of these actors. This design creates a causal set of professional orientation objectives and indicators for achieving these goals, initiatives, resources, time frames and liability, it allows us to understand how to achieve the strategic objectives of creating a stable system of views, beliefs, principles, qualities of employable people and their groups, which motivates them to choose a career (Sotnikov, 2016, pp. 126-135). This design clearly illustrates the focus and possibilities of focusing on such forward-looking directions of professional orientations as infrastructure, technology, stakeholders and finance. Prospects of the vocational guidance strategic design are connected among themselves by a cause-and-effect chain - an employable individuals, realizing the guaranteed right of free choice of a kind of activity and profession, carry out individually conscious choice of the professional career which adapts to changing conditions of market system of division of labor. Debugged the professional orientation processes allow to satisfy the consumer demand of stakeholders (subjects of the labor market) in the professional orientation and to achieve such quality of labor life, when the main motive of an employable individual professional activity becomes the satisfaction from labor achievements as a result of self-realization, the opportunity to develop their creative abilities and use them rationally in the process of meaningful labor, to participate in production management and decision making, etc. It is consumer satisfaction with the vocational guidance that is the source of income for the subjects of the labor market, contributes to the improvement of social and economic labor efficiency, reducing the personnel professionalization costs, and therefore increase profits, growth the labor market competitiveness and business competitiveness, etc. Reverse chain of strategic design of the professional orientation means that the reasons of unsatisfactory values of the professional orientation social and economic indicators (ROVO - Return on investment of professional orientation: efficiency of professional labor, costs on professionalization of the personnel, quality of labor life) are in the perspective of «Stakeholders». Dissatisfaction with consumer demand in the professional orientation (low economic and social performance of professional labor, its quality and complexity) means problems in the «Technology» perspective (professional information, consultation, selection, marketing, benchmarking, adaptation) as a result of conflict in the professional orientation triad system, the cause of which

is in the «Infrastructure» block. Based on the above, the cause-and-effect relationships chain reflected in the professional orientation operational and strategic design technologies gives a holistic view of the professional orientation current and strategic objectives , defines a sequence of hypothetical cause-and-effect relationships between its material results and the driving factors for their achievement. The professional orientation strategic design sets the bounds, forms, and focus on capitalization of the professional orientation. It makes to identify and predict the favorable opportunities and risks of income growth of the labor market entities and reduction of labor costs, to ensure a balance between short-term and long-term goals of the professional orientation, its financial and non-financial indicators, main and auxiliary parameters, external and internal factors.

## 5. CONCLUSION

Thus, the modern professional orientation concept represents a general ideology of the professional career choice for an employable individual, designed to prepare him for the changing socio-economic reality throughout his labor life. Professional orientation is intended to become a full-fledged regulator of lifelong learning (LLL) by increasing the socio-economic efficiency the professional career choice, the future professional choice of employable person, in accordance with their needs in labor, abilities, motives, preferences and the needs of labor market actors. The professional orientation value is explained by the fact that it is directly related to the achievement of sustainable income growth rates and labor costs reduction of labor market actors. The imperatives of the professional orientation strategic and operational design allow, first, to guarantee a professional approach to investing in professional orientation, the choice of a way of self-realization of long-term competitive advantages of employable individuals in the labor market. Second, consolidate the vision of a strategic personal-professional position of employable individuals in the labor market and create the basis for its competitiveness in the labor market. Third, create the conditions for the transition from «responsibility to choose a profession» to responsibility for a professional career.

## LITERATURE:

1. Bataeva, Y.D. (2017). Formy i metody professionalnoi orientatsii v vuze [Forms and methods of professional orientation in the university]. Izvestiia chechenskogo gosudarstvennogo pedagogicheskogo instituta [Izvestia of the Chechen State Pedagogical Institute]. No 1. Pp. 145 - 150. (Russian)
2. Chistyakova, S. N. (2007). Pedagogicheskoe soprovozhdenie samoopredeleniya shkol'nikov: metod. posob. [Teaching of self-determination of schoolchildren: methodological manual]. Moscow: Izdatel'skii tsentr «Akademiya» (Publ.). 128 p. (Russian)
3. Chudzikowski, K. (2012) Career transitions and career success in the «new» career era. Journal of VocationalBechavior. No 81. Pp. 298-306.
4. Constitution of the Russian Federation (considering the amendments made by the Laws of the Russian Federation on amendments to the Constitution of the Russian Federation). (2014). Konstitutsiia RF s uchetom popravok vnesennykh Zakonami Rossiiskoi Federatsii o popravkakh k Konstitutsii Rossiiskoi Federatsii, No 2, 6, 7, 11. Retrieved 1.10.2020 from http://www.consultant.ru/document/cons_doc_LAW_28399/.
5. Deeva, E. V. (2006). Sushchnost i usloviia protsessa formirovaniia sotsialnoi uspeshnosti iunoshei sredstvami sotsialno-pedagogicheskoi deiatelnosti v uchrezhdenii dopolnitelnogo obrazovaniia [The essence and conditions of the process of forming social success of young men by means of social and pedagogical activities in the institution of additional education]. Vestnik Tambovskogo universiteta Seriia Gumanitarnye nauki [Bulletin of Tambov University. Humanities Series]. Vol. 43. No 3-1. Pp. 317-319. (Russian)

6. Decree of the government of the Russian Federation «On approval of the state program of the Russian Federation «Education development» in 2018-2015. (2017). Postanovlenie pravitelstva RF «Ob utverzhdenii gosudarstvennoi programmy Rossiiskoi Federatsii «Razvitie obrazovaniia» na 2018-2015, No 1642. Retrieved 25.09.2020 from http://www.consultant.ru/document/cons_doc_LAW_286474/11438c397a53550b06a14dde6831a3de221a52d9/
7. Decree of the government of the Russian Federation «On approval of the state program of the Russian Federation «Education development» in 2013-2020. (2014) Postanovlenie pravitelstva RF «Ob utverzhdenii gosudarstvennoi programmy Rossiiskoi Federatsii «Razvitie obrazovaniia» na 2013-2020, No 295. Retrieved 20.09.2020 from http://static.government.ru/media/files/0kPx2UXxuWQ.pdf.
8. Ford, S.A. (2011). Dynamics of earning capacity. S.A. Ford. Greater Louisville Metro Attorney at Law Magazine. Pp. 10-11.
9. Kong, H., Chrung, C., Song, H. (2012). From hotel career management to employ-ees career satisfaction.The mediating effect of career competency. International Journal of Hospitality management. No 31. Pp. 76-85.
10. Minchington, B., Thorne, K. (2007). Measuring the effectiveness of your employer brand. Human Resources. October-November. Pp. 14-16.
11. Order of the government of the Russian Federation «On approval of the concept of development of additional education for children». (2014). Rasporiazhenie Pravitelstva RF «Ob utverzhdenii Kontseptsii razvitiia dopolnitelnogo obrazovaniia detei», No 1726-p. Retrieved 20.09.2020 from static.government.ru/media/files/ipA1NW42XOA.pdf.
12. Regional standard of staffing for industrial growth. (2016). Regionalnyi standart kadrovogo obespecheniia promyshlennogo rosta. Retrieved 22.09.2020 from https://asi.ru/upload_docs/Региональный_стандарт_кадрового_обеспечения_2.0.PDF.
13. Sotnikov, N.Z. (2016). Kontseptual'nye osnovy strategicheskogo analiza delovoi kar'ery personala [Conceptual frameworks for strategic career analysis of staff]. Menedzhment v Rossii i za rubezhom [Management in Russia and abroad]. No 4. Pp. 126-135. (Russian)
14. Sotnikov, N.Z. (2016). Metodicheskii podkhod k formalizatsii strategii delovoi kar'ery na osnove sistemy sbalansirovannykh pokazatelei [Methodological approach to the formalization of a business career strategy based on a balanced scorecard system]. Vol. 5. No 4. Pp. 56-62. (Russian)
15. The Law of the Russian Federation «On employment of population in the Russian Federation». (1991). Zakon RF O zaniatosti naseleniia v Rossiiskoi Federatsii ot 19.04.1991, No 1032-1. Retrieved 1.10.2020 from http://www.consultant.ru/document/cons_doc_LAW_60/.
16. The Concept of development of continuing adult education in the Russian Federation for the period until 2025. (2015). Kontseptsiia razvitiia nepreryvnogo obrazovaniia vzroslykh v Rossiiskoi Federatsii na period do 2025 goda. Retrieved 25.09.2020 from http://ipk.bspu.ru/sites/default/files/koncepciya_razvitiya_nepreryvnogo_obrazovaniya_vzroslyh.docx.pdf.

# CRITERIA OF SERVICE VALUE ASSESSMENT USING THE EXAMPLE OF AN EDUCATIONAL SERVICE AT A UNIVERSITY

**Hanna Mackiewicz**
*Gdynia Maritime University, Poland*
*h.mackiewicz@wpit.umg.edu.pl*

***ABSTRACT***

*The article reflects on service value assessment criteria understood as personalized service relationship. Service understood this way in an intentional provision of work by members of a meeting. By treating a man as a subject, not as an object, members of the meeting find sense in their lives through work relationships. In consequence, an enterprise will obtain value which will allow continuing the establishment's activity for the benefit of their stakeholders including their clients, employees, asset holders or society members. The article develops the previous theoretical considerations undertaken in the paper on regional scope (Mackiewicz, 2012). The theoretical content was presented using the example of educational services at a higher education institution.*

***Keywords:*** *Assessment, Education, Economic and Social Value, Service*

## 1. INTRODUCTION

The main reason for the reflection on the service value assessment criteria has been the latest discussion in scientific articles and economic literature referring to the subject matter. The multiplicity of the observed attitudes to solutions in this field has inclined the author to consider if these various criteria of assessment could be met and, if so, to what extent. The decisive factor in the layout and composition of this article has been the very object of the assessment, namely the notion of "service". For the sake of considerations, here the concept of service proposed by K. Rogoziński (Rogoziński, 2000) has been adopted. Therefore, the first chapter of the paper deals with the criteria of service value assessment, where service is discussed within the dimension of relationship, the act of service provision. The second chapter concerns the dimension of a product and its offer on the market, and the third one – the dimension of a practical example of assessment.

## 2. CRITERIA OF SERVICE RELATIONSHIP EVALUATION

Service is an activity performed by one person for the benefit of another; it is an intentional provision of work (Rogoziński, 2000). Quite often service recipients are simultaneously co-authors of a service (prosumers, co-producers), performing their work (Boguszewicz-Kreft, 2009). As a result of the performed work, the needs of both parties are satisfied. The above statement suggests that work should not necessarily be a profit generating activity; the notion of work comprises all the activities undertaken by parties in the process of exchange. The sequence of interconnected activities results in a relationship which, in consequence, joins members in mutual exchange. At the end of this model process, the servicing company is transformed into the community of common interests (Rogoziński, 2006). The relationship relies on cooperation. The relationship process in its essence is free from describing its effectiveness and efficiency (Rogoziński, 2000). For members of a given activity it is the jointly added value which gives significance (Rogoziński, 2006). What is value? The concept of value contains non-definability in itself. According to M.Scheller, recognition of value is performed through emotional acts (Galarowicz, 1992). Experience of value is prior to its definition; it is the source of its understanding and evaluation (Grzywocz, 2010). A person may be delighted as the experience of value "speaks to the man" – do not leave, let me be (Grzywocz,2010).

Service relationship is the meeting of people, an event (Bukowski, 1987), a phenomenon (Rogoziński, 2007). Meeting as such is the expression of opening of members of a service relationship on which the intentionality of service provision is based, as well as the dialogue enabling long-term cooperation among its members (Rogoziński, 2006). By accepting the fact of intentionality, namely the awareness of the sense of service activity, both on the part of the service receivers as well as the service providers, a mutual "expectation" of the meeting members as to the co-feeling of the mystery of an event is assumed, whose effect is difficult to foresee or guess. At some stage of such a meeting, it could be hard to differentiate between the service provider and the receiver in this event (Rogoziński, 2006). According to J. Tischner, "a meeting is a moment when we experience our own or someone else's real tragic nature". It results from the fact that the world structure is based on a hierarchy, and human thinking relies on preferences. A man free in his choices starts to prioritize, and this leads to a situation "where all scenarios of drama are possible" (Tischner, 2011). A meeting member can adopt various attitudes, such as closing oneself to relationships, withdrawing oneself or accepting the meeting exchange – "cultivating life". According to J. Tischner, the notion "cultivating life" means "allowing to be"(Tischner, 2011). One necessary condition of such an attitude is sacrifice, which, according to the philosopher, implies crossing the borders of oneself, accepting one's good will – one's good will directed towards another man (Covey, 2003, Boguszewicz – Kreft, 2009). According to J. Tischner, this opening to agatological (unveiling) ideal yields in consequence the affirmation of human existence and rebellion, which, when expressed, stimulates to axiological (projecting) thinking. "Such axiological thinking results in preference of truth over untruth", which in relation to a meeting consists of endeavours to find truth in a dialogue and is equal to the unveiling of face covered by a mask of pretence. The question should be asked here about the possible limits of openness. W. Chudy warns, "Exaggerated value of openness brings sometimes threat of (…) blurring someone's identity and relativity of truth" (Chudy, 2001). Unity which could be but does not necessarily has to be built between the service provider and service receiver should be based on truth, mainly on the truth about man, his nature and his fair obligations (Chudy, 2001). The question arises if and to what extent such sacrifice of people in the service relationship is possible. What could incline two members of exchange to such an attitude? Can the 21th century people afford such heroic nobility which is revealed, as R. Ingarden wrote (Tischner, 2011), in the generosity relying on the assumption that one should be faithful to the values even for the sake of the values themselves. To summarize the above, the first analysed here dimension related to service understanding deals with the personal aspect of the act of provision. In this dimension, the criterion of service value assessment focuses on the place of the service in the meeting members' hierarchy of values. The criterion of service value relationship assessment is the fact of accepting/non accepting someone's view on human subjectiveness, on the level of transcendence via truth about the nature of man, on his dignity and the system of values protecting humans against manipulations caused by individual or collective egoism (Chudy, 2001). The assumption on human subjectivity criteria contradicts a frequent practice applied in the field of services relying on the limitation of activities in the consumption sphere to the ones most satisfying the client and concentrating on obtaining the maximum profit. Such an attitude leads to the human alienation in the field of consumption and work. A service recipient should experience support in the authentic and substantial realization of his personality; therefore, an employee should be accompanied with an employer's interest in personal development through work relations. Only then is a man treated as a subject, not an object of such an act.

## 3. CRITERIA OF SERVICES VALUE ASSESSMENT BY STAKEHOLDERS

No company operates in isolation. Each service organization also has its own "electorate", whose members sense the results of company activities and are interested in its best effects

(Griffin, 2002). Generally speaking, a service providing company is responsible before members of three main groups: clients, employees and investors. Stakeholders, as risk carriers, bring their demands to a company, which a company should accept. In other words, companies operate under social pressure, the opinion created by the majority. This should not mean that these claims are always justified from the moral point of view or as physically feasible (Klimczak, 2006). The Davos Manifesto should be treated as guidance reference to the subject-oriented approach. One of its assumptions is that an organization management's prior aim should be serving its clients, co-workers, capital providers and society as well as balancing their disputable interests (Steinmann, Schreyögg, 1995). The notion of *serving* is the opposite of the term *ruling*. Serving means bowing, listening to stakeholders, familiarizing with them and trying to understand. As a result of such agreement oriented activities, profit may be obtained, which should be viewed as a kind of "prize" for the management's long-term orientation towards services aimed for the benefit of their stakeholders. The framed items below refer to the Davos Manifesto assumptions relating to some of the service activity specifics.

*The management has to serve its clients.*
*It has to satisfy its clients' needs and give them the best value. Competition among companies is the usual and accepted way of ensuring that clients receive the best value choice. The management's aim is to translate new ideas and technological progress into commercial products and services.*
*Point B.1. of the Davos Manifesto*

This dimension of service has been referred to clients. Satisfaction of clients' needs is characteristic of the marketing oriented attitude (Rogoziński, 2007). In marketing of services, attention is paid to the quality of services and clients' satisfaction as the key elements conditioning a sustainable relationship, which has significant financial consequences both for an entrepreneur and for a client. In accordance with the rule of whisper marketing, clients will share their service experience with other clients, which in consequence will influence the ultimate financial result. Clients, however, will expect to have a possibility to continue sustainable cooperation. The second part of point B.1 of the Davos Manifesto does not correspond to the service activity. The majority of the personalized service relationships is characterized by a low clarity of prices (which results from the feature of non-materiality), versatility of a service (which results from the lack of divisibility of services production and consumption as well as heterogeneity of activities of members in the services process), the essential insusceptibility if this kind of services to technical progress, unless it deals with relieving arduousness related to the provision process (Simon, 1996; Rogoziński, 2001). However, when referring to innovation, the features such as organization, marketing and process have much greater significance in services. Due to the fact of co-production (co-creation) of services, clients may want to collaborate hoping to obtain lower costs for a given service.

*The management has to serve its employees*
*because in a free society leadership must integrate the interests of those who are led. In particular, the management has to ensure the continuity of employees, the improvement of real income and the humanization of the work place.*
*Point B.3. of the Davos Manifesto*

Although front line employees, who have first contact with a client, are also co-creators of a service, yet the process of service provision as well as its final result equally depends on supporting employees and backstage staff.

Therefore, like in any system in which elements jointly contribute to a success of the whole unit, all employees are the co-workers creating the final effect, i.e. the process and a certain technical result of the provision system. In the first place, any management should care about stability of the organization by providing and maintaining proper workplaces. An entrepreneur's task is to offer his clients good at a decent level. To achieve this goal, management of a given organization should start from an accurate recruitment of personnel whose knowledge, interpersonal skills and attitude are adequate to the adopted mission and organizational culture, in order to avoid or limit problems of misfit related, for example, to pathological suppression of emotions or to moral conflicts (Klimczak, 2008). In favourable conditions, an employee is given an opportunity to remain faithful to his professional ethos (Klimczak, 2008).. Man undertakes his professional work to support himself and his family and, therefore, he deserves decent remuneration for his efforts. Thus information on the company stability, profitability or settling its obligations is so significant to its employees (Olchowicz, 2009). Man should be perceived as a physical-psychical-spiritual unity and, as such, he expects from his management to be provided with adequate conditions of work, decent treatment, respect and mannered forms of cooperation. In the results of research quoted by J.L.Hesketta, the values appreciated most by employees include the possibility of meeting customer's needs, job satisfaction, remuneration, fair promotion, treatment with respect and dignity, group work and interest in the employee's situation (Boguszewicz- Kreft, 2009). The literature in the field of services marketing (or more widely relational marketing) is primarily focused on satisfying personal relationships among employees (Boguszewicz- Kreft, 2009).

*The management has to serve its investors*
*by providing a return on its investments, higher than the return on government bonds. This higher return is necessary to integrate a risk premium into capital costs. The management is the shareholders' trustee.*
*Point B.2. of the Davos Manifest*

Capital providers including investors and loan providers take a considerable amount of risk by offering their capital. Therefore, investors should be provided with fair information on the risk, uncertainty related to investment, return rate of the involved capital, ability of a unit to pay dividends; the lenders need to be provided with information on the risk related to creditworthiness of the unit and the possibility of repayment of credit together with interests (Olchowicz, 2009).

*The management has to serve society*
*It must assume the role of a trustee of the material universe for future generations. It has to use the immaterial and material resources at its disposal in an optimal way. It has to continuously expand the frontiers of knowledge in management and technology. It has to guarantee that its enterprise pays appropriate taxes to the community in order to allow the community to fulfil its objectives. The management also has to make its own knowledge and experience available to the community.*
*Point B.4. of the Davos Manifesto*

"Investing means giving a society an opportunity to add value to their work" (John Paul II, 2000). What is significant for the society is to be aware of the financial standing of a unit and the possibility of its sustainable operation, providing a possibility of constant employment for staff, supporting local suppliers, developing infrastructure and contributing to local authorities' budgets (Olchowicz, 2009). An important asset to the discussion on combining companies' competitiveness with the shape of society is the proposal to create economic and social values

simultaneously as in the model proposed by M. E. Porter and M. R. Kramer (2011). Summing up, the conclusion can be drawn from the above statements that the primary criteria of the services value assessment should be decent well-being offered as service. Measurable and non-measurable elements are significant both for clients and for employees. Cooperation in the scope of delivering decent well-being, desired by man, both for himself and for others, may release involvement and passion contributing to clients' satisfaction and their continued loyalty. Satisfied clients become ambassadors of a brand, disinterestedly encouraging others to use services of a given organization. As a result of such natural promotion, an organization obtains profit from valuable services leading to further satisfaction of its investors. It appears from the above that capital originates from work, and when work is a significant life element and becomes one's passion, man finds sense of his life through work.

## 4. CRITERIA OF SERVICES VALUE ASSESSMENT ON THE EXAMPLE OF AN EDUCATIONAL SERVICE

The gainful work of specialist-managers is included in the Davos Manifesto as a service, and the principles of organizing and managing enterprises as ethical and professional values for stakeholders (Polańska, 2018). The work of an academic teacher performed as an educational service is the work of a specialist-manager (Mackiewicz, 2014). In a service meeting, the teacher meets students who have different motives and expectations. It is interestingly captured on a plaque in the Sorbonne that has survived to our times: "Some students come here to study to satisfy their curiosity, others – to gain fame, money, or power. These motifs are popular, but not very noble. Worthy students are those who learn in order to serve others, thus increasing good in the world, and those who want to advance in wisdom". Six values were distinguished to motivate people to learn. Nowadays, Polish students most often undertake studies in order to facilitate access to work that brings above-average salary (Polańska, 2018). When asked about which skills should be emphasized when designing a new field of study in Management, candidates for studies at one of the Polish universities indicated (the results of quantitative research provided by the Department of Promotion of the Gdynia Municipal Office):

- 60.8% (104 persons) – practical skills
- 42.1% (72 persons) – expertise
- 39.8% (68 persons) – managerial skills
- 29.2% (50 persons) – IT skills
- 18.1% (31 persons) – technical knowledge
- 14.6% (25 persons) – soft skills
- 1% (1 person) – other.

Second-year students studying in the field of Innovative Economy during the class in Marketing Research emphasized the usefulness of the course for the ability to conduct simple marketing research. The texts cited above show the multiplicity and diversity of human values in relation to studies. Two sources of information are used in the process of assessing the work of an academic teacher in terms of teaching duties at Polish universities: students' opinions and written opinions of the immediate superior visiting a class. The teacher is allowed to respond to these opinions. When assessing the classes conducted by academic teachers at Gdynia Maritime University, students answered the following closed questions in 2020:

- The teacher familiarized the students with the subject syllabus and with the requirements and criteria for passing the course.
- The teacher conducted classes according to the presented syllabus.
- The teacher conducted classes in accordance with the schedule; the classes started and ended on time.

- Classes were conducted in an understandable and orderly manner, and they took place in a cultural and encouraging atmosphere.
- The teacher aroused interest in the subject of the classes and motivated to expand knowledge independently in the area of the subject of the classes.
- The teacher prepared (presented) up-to-date teaching materials, adequate to the type of activity.

Within the individual criteria, academic teachers were assessed on a scale from 2 to 5 (where 2 means that the teacher did not meet the criterion, and 5 that he met the criterion very well). In students' opinion, the questionnaire evaluating the work of an academic teacher examines the formal compliance of work during classes with the syllabus and the study plan. One point relates to assessing the extent of motivating students to search independently for knowledge in the area of the subject matter of classes. One question relates to interpersonal communication with students. Assessing academic lecturers' teaching activities at Gdynia Maritime University, superiors answered the following closed questions in 2020:

- Is the teacher properly prepared for the classes?
- Did the teacher introduce the topic and purpose of the lesson?
- Is the content provided by the teacher consistent with the subject syllabus?
- Does the teacher use the correct language?
- Is the structure of the classes logically ordered?
- Does the teacher emphasize the practical importance of the subject?
- Is the teacher able to interest students in the subject?
- Is the teacher communicative; does he/she explain the discussed issues in a clear and understandable way?
- Can the teacher answer the questions asked by students?
- Is the class time properly planned?
- Does the teacher make proper use of teaching aids and resources?
- Did the classes take place as per the schedule?
- Did the classes start and end on time?
- Does the teacher encourage students to ask questions and actively participate in classes?
- Does the teacher treat the students with kindness and respect?

Under individual criteria, academic teachers were rated on a scale from 1 to 5 (where 1 means unsatisfactory, and 5 - excellent). In the superiors' opinion, the questionnaire assessing the work of an academic teacher, on a different scale, largely examines formal compliance of work during classes with the syllabus and the study plan. There are also questions regarding interpersonal communication with students. There is also a question about the organization of classes, the ability to raise interest in the subject, as well as the practical importance of the subject, and whether the teacher is properly prepared to the classes. From the point of view of the entire University, the quality of education assessed by the Polish Accreditation Committee is very important. The category of the University, and thus the funds awarded to the university, depends on the assessment of the committee. The committee takes into account the learning outcomes specified in the course syllabuses. It should be noted that syllabuses cannot be changed during the course. It is a social interest that university graduates find a job or be able to create a job for themselves and others. From the above content, an image of the drama of the service meeting clearly emerges. An academic teacher is a specialist in his field; he/she undertakes the trouble of compliance with his profession. It is a profession of social trust. On the one hand, there is a need for freedom from efficiency and effectiveness in service relations; on the other hand, there are evaluation criteria emphasizing compliance with the learning outcomes, the syllabus and

the study plan rigidity. The pandemic situation has shown this rigidity even more. Suddenly, all the subjects in the field of management had to be completed in distance learning. The real challenge was to conduct the so-called soft subjects, which had to be implemented as part of the curriculum in the syllabuses using the Internet as a distribution channel for the educational service. Students had problems with equipment (no webcam or equipment at all) or they had problems with Internet access from their place of stay. These difficulties were not only objective. Students do not activate the webcam for various reasons. For some, it is a genuine lack of a webcam, a broken webcam, but also a desire to hide, to dodge, to use an opportunity to cheat during tests, a possibility to skip some classes. These are just examples, and there are many others. The organization responds with procedures and declarations. The values that help in working on personal professional qualifications have been lost somewhere.

## 5. CONCLUSION

In summary, it should be stressed that service should be perceived as an act of intentional provision. Work is a broader concept than profit generating work; it comprises effort undertaken in order to satisfy human needs. Therefore, the need to prioritize, to find sense in undertaking activities as well as being open to truth in dialogue should be focused on. The only proper attitude which will release the desire to sacrifice is when one treats man as a subject, not as an object in achieving one's goals. When is it possible? Only when man accepts that by serving others, he can influence their lives. In consequence, opening to such wisdom may lead to satisfaction of employees, clients, workers and investors. The prerequisite to achieve this goal should be the application of a coherent system of personal values of the service meeting members, consistent with the declared mission of the service organization, which would enable the employees to remain loyal to their profession. It seems that the values adopted by employees are the foundation of the set of values shared by the company. Formal evaluation raises people's resistance because it changes their situation. When implementing and using employee evaluation systems in the service process, it is necessary to harmonize the interests of employees with other stakeholders. When the interests of one entity are higher than those of the other entities, then the privileged entity benefits only in the short term. These are unprofitable benefits (Polańska, 1995). And the assessment questionnaires from a tool that collects opinions that can be the basis for dialogue can only become a tool for rigid, formal control.

## LITERATURE:

1. Boguszewicz-Kreft, M. (2009), *Zarządzanie doświadczeniem klienta w usługach*, Wydawnictwo Uniwersytetu Gdańskiego, Gdańsk.
2. Bukowski, J. (1987), *Zarys filozofii spotkania*, Społeczny Instytut Wydawniczy Znak, Kraków.
3. Chudy, W. (2001), *Społeczeństwo zakłamane*, Oficyna Naukowa, Warszawa.
4. Covey, S. (2003), *7 nawyków skutecznego działania*, Dom Wydawniczy Rebis, Warszawa.
5. Galarowicz, J. (1992), *Na ścieżkach prawdy. Wprowadzenie do filozofii*, Wydawnictwo Naukowe PAT w Krakowie, Kraków.
6. Griffin, R.W. (2002), *Podstawy zarządzania organizacjami*, Wydawnictwo Naukowe PWN, Warszawa.
7. Grzywocz, K. (2010), *Wartość człowieka,* Zeszyty formacji duchowej, Jesień 49.
8. John Paul II, (2000) Encyclical, *Centesimus Annus*, Wydawnictwo Wrocławskiej Księgarni Archidiecezjalnej, Wrocław.
9. Klimczak, B. (2006), *Etyka gospodarcza*, Wydawnictwo Akademii Ekonomicznej im. Oskara Langego we Wrocławiu, Wrocław.
10. Klimczak, B. (2008), *Między ekonomią a etyką,* Wydawnictwo Uniwersytetu Ekonomicznego we Wrocławiu, Wrocław.

11. Mackiewicz, H. (2012), *Criteria of service value assessment*, Transfer wiedzy. Science Business Review, December.
12. Mackiewicz, H. (2014), *Odpowiedzialność nauczyciela akademickiego w pracy dydaktycznej* [in:] red. M. Pluta-Olearnik, S. Wrona, Usługi 2014. Wybrane uwarunkowania rozwoju usług, Prace naukowe Uniwersytetu Ekonomicznego we Wrocławiu nr 354, Uniwersytet Ekonomiczny we Wrocławiu, Wrocław.
13. Olchowicz, I. , Tłaczała, A. (2009), *Sprawozdawczość finansowa według krajowych i międzynarodowych standardów*, Difin, Warszawa.
14. Polańska, A. (1995), *Ekonomia pracy w zarządzaniu*, Wydawnictwo uniwersytetu Gdańskiego, Gdańsk.
15. Polańska, A. (1997), *O modelach w zarządzaniu personelem* [in] Zeszyty Naukowe Wyższej szkoły administracji i Biznesu w Gdyni, nr 1. Retrived 30.09.2011 from http://www.wsaib.pl/files/biblioteka/zasoby_cyfrowe/Zeszyt%20Naukowy2.pdf
16. Polańska, A. (2018), Godna praca tajemniczym skarbem człowieka, Wydawnictwo Wyzszej szkoły Administracji i Biznesu im. E. Kwiatkowskiego, Gdynia.
17. Porter, M.E., Kramer, M.K. (2011), *Creating shared value*, Harvard Business Review, January-February. Retrived 30.09.2011 from http://www.fsg.org/tabid/191/ArticleId/241/Default.aspx?srpush=true
18. Rogoziński, K. (2000). *Usługi rynkowe*, Wydawnictwo Akademii Ekonomicznej w Poznaniu, Poznań.
19. Rogoziński, K. (2001), *Usługi pod presja technologii*, Marketing i Rynek nr 7.
20. Rogoziński, K. (2006), *Zarządzanie relacjami w usługach*, Difin, Warszawa.
21. Rogoziński, K. (2007) *Zarządzanie organizacją usługową – próba wypełnienia luki poznawczej* [in:] Współczesne zarządzanie, no 3, Retrived 09.12.2020 from http://www.uslugi.ue.poznan.pl/file/129_189179007.pdf
22. Simon, H. (1996), *Zarządzanie cenami,* Wydawnictwo Naukowe PWN, Warszawa.
23. Steinmann, H., Schreyögg, G. (1995), *Zarządzanie. Podstawy kierowania przedsiębiorstwem. Koncepcje, funkcje, przykłady*, Oficyna Wydawnicza Politechniki Wrocławskiej, Wrocław.
24. Tischner, J. (2011), *Myślenie według wartości*, Wydawnictwo Znak, Kraków.
25. Tokarz A. (2010), *Zasoby ludzkie jako jeden z czynników determinujących innowacyjność przedsiębiorstw usługowych*, Zeszyty Naukowe 145, Wydawnictwo Uniwersytetu Ekonomicznego w Poznaniu, Poznań.

# ANALYSIS AND CHALLENGES OF INTRODUCING DIGITAL TAXATION IN EUROPEAN UNION COUNTRIES

**Mario Hak**
*Professor, Ministry of Finance, Tax Administration, Croatia*
*mario.hak@porezna-uprava.hr*

***ABSTRACT***
*The article analyzes the introduction of digital taxation on the member states of the European Union. The digital economy is a collective term for all economic transactions that take place happening on the Internet. It is also known as the Web economy or the Internet economy. With the advent of technology and the process of globalization digital and traditional economies merge into one. New ways of doing business in the virtual and digital world economy caused the emergence of a tax on digital services (hereinafter: digital tax). A solution is being sought internationally and globally, which is certainly a better and more systematic approach, however in this text we will see that states have decided to introduce a digital tax on their own.*
***Keywords:*** *digital taxation, digital economy, virtual and digital world, corporate taxation rules*

## 1. INTRODUCTION

The global economy is rapidly becoming digital and, as a result, new ways of doing business have emerged. Digital companies are characterised by the fact that their operations are strongly linked to the internet. In particular, digital business models rely to a large extent on the ability to conduct activities remotely and with limited or no physical presence, on the contribution of end-users to value creation, and on the importance of intangible assets. The current corporate taxation rules were mainly developed during the 20th century for traditional businesses. They are based on the idea that taxation should take place where value is created. However, the application of the current rules to the digital economy has led to a misalignment between the place where profits are taxed and the place where value is created, notably in the case of business models heavily reliant on user participation. It has therefore become evident that the current corporate tax rules for taxing the profits of the digital economy are inadequate and need to be reviewed. That review constitutes an important element of the given that the digital single market needs a modern and stable tax framework for the digital economy to stimulate innovation, tackle market fragmentation and allow all players to tap into the new market dynamics under fair and balanced conditions.

## 2. METHOD OF RESEARCH OF INTRODUCING DIGITAL TAXATION

The starting point is data and forecasts published by Statista on revenue in different digital markets. *( UNCTAD and OECD Digital Economy Outlook, p. 14)* Statista classifies the digital market into 8 main categories (e-services, e-commerce, digital media, digital advertising, e-travel, connected car, e-health, smart home), which are further broken down in subcategories. Cloud computing is covered separately. For e-payment there has been no reliable data on revenues earned in the sector (only on transaction volumes). Note that e-commerce, connected car, e-health, and smart home all relate to applications for physical goods and are not within the scope of this exercise. The table below shows how these categories relate to the business models used in this impact assessment. As reference year, Statista forecasts for 2019 were used. All estimates are static, that is they do not take into account any behavioural responses. It is important to determine whether the tax issues related to the digital economy could be sufficiently tackled by the implementation and rigid execution of anti-tax avoidance regulations, inter alia transfer pricing rules (*Schön, W., p. 72).* The digitalisation of the global economy is happening fast and permeates almost all areas of society.

Although the size of the 'digital economy' is still relatively small - estimates revolve around 4-5% of value added - businesses of all kinds now derive much of their value from intangible assets, information and data. As a result, the digital economy displays a very strong growth path. Close to a third of the growth of Europe's overall industrial output is already due to the uptake of digital technologies. *(Vandermerwe, S. and Rada, J. p. 18).* Between 2006 and 2016, digital advertising revenue in Europe has multiplied by more than 5. (*IAB Europe and IHS Markit*). Among other things, (digital) taxes should be designed such that companies can easily determine which tax burden will apply if they provide services in a particular country (Zöchling, Plott, Rosar, & Dziurdź, p. 1-19). There is no well-defined digital sector as such. Notably, the Information and Communication Technology (ICT) sector is no synonym for the digital economy. Digital companies should not be considered pre-dominantly as ICT companies. Many companies commonly considered as digital companies do not belong to the ICT sector. The 2017 World Investment Report (UNCTAD, 2017a and 2017b) has developed a methodology to classify international companies into (1) digital companies, (2) IT and telecoms companies (both enablers of the global digital economy) and (3) 'other multinational companies'. IT and telecoms companies are broadly equivalent to the ICT sector. They are either IT hardware manufacturers or software developers/providers of IT services, or they are providers of telecommunication infrastructure and connectivity. Digital companies are characterised by the nature of their operations, which are strongly linked to the internet. The report further distinguishes between providers of internet platforms, e-commerce, digital solutions and digital content. European companies may forfeit competitiveness by losing ground to competitors from other countries and continents (Becker, J., & Englisch, J., p. 8). Focussing on the top companies in each category clearly shows the much more dynamic revenue growth in the digital sector. Based on a unique assignment of companies into one of the categories, UNCTAD (2017b) has produced new lists of top 100 multinationals in the categories 'IT and telecoms' and 'digital'. Table (1) reports summary statistics for the largest companies in each category. Average revenue growth was around 14% for the top digital firms, compared to around 3% for IT and telecom enterprises and 0.2% for other multinational enterprises, although total revenue by the largest digital companies is still considerably lower than that of the other sectors. The table also reports the 'international footprint' and the relevance of intangible assets, discussed in the next subsection.

*Table 1: Revenue growth, international footprint and relevance of intangible assets of largest multinational companies (Based on UNCTAD (2017a and 2017b) and Bureau van Dijk Orbis database, Total revenue for the latest available year for the top companies in each category in $ billion.*

| Type of MNE | Total revenue | Annual revenue growth | International footprint | Relevance of intangible assets |
|---|---|---|---|---|
| **Digital** | 872 | 14.2% | 2.1 | 3.1 |
| **IT&Telecoms** | 2825 | 3.1% | 2.2 | 1.2 |
| **Other** | 5682 | 0.2% | 1.1 | 1.4 |

*'Digital' and 'IT&Telecoms' each consist of 100 companies. The category 'Other' only includes 83 companies, since some of the companies on UNCTAD's usual list of top 100 global companies belong to the first two categories. Annual average growth is measured over the latest 7 available years. International footprint is the ratio of the share of foreign sales in total sales to the share of foreign assets in total assets. The relevance of intangible assets is computed as the market capitalisation over equity book value minus 1)*

Doing so for the three categories of largest global companies shows that, compared to the traditional non-IT companies, digital companies, have a much larger share of sales earned outside their home country relative to the assets they hold abroad.

## 3. SPECIFICITIES OF DIGITAL BUSINESS MODELS IN RELATION TO TAXATION

The main characteristics of digital business models - as compared to more traditional ones - are their ability to conduct activities remotely, the contribution of internet users in their value creation, the importance of intangible assets and a tendency to winner-takes-most dynamics.
Businesses in the digital economy can easily conduct activity remotely and are therefore very active in cross-border trade. Little physical presence is required to sell into a market. From one click on the computer, consumers can order goods and services from all over the world, translating into new market reach. For digital services more specifically, this is even more acute as the delivery of the service itself requires no or little physical presence. Such activities used to be mostly conducted locally in the destination location, and are now more and more conducted remotely in the country of origin (at source), although increasingly relying on consumer information from the destination country. As a result, businesses of the digital economy have a fundamentally different international footprint, with far fewer assets in the location of their foreign sales. One way to measure this phenomenon is by measuring the share of foreign assets in total assets against the share of foreign sales in total sales. The relevance of user contributions is central, materialising through the mass of adopters, the provision of personal data and other forms of user contributions to the production process. Participating in a platform or a network creates a value. As opposed to the conventional 'value chain' business model where value is generated by the supplier of a product or a service, a large part of the value derived by users of an online platform is created by other users.

## 4. RESEARCH ON THE IMPACT OF THE INTRODUCTION OF DIGITAL TAXATION IN INDIVIDUAL COUNTRIES OF THE EUROPEAN UNION

The implementation of national digital taxes is likely to be accompanied by numerous undesirable side-effects *(Kofler, Mayr, & Schlager, p. 57*). Therefore, it is important to determine which policy tools might better level the playing field and ensure a fair share of the tax revenues from digital businesses.

*Table 2: List of European Union countries that have introduced digital taxation (author research)*

| Country | Domestic Revenue Threshold | Tax Rate | Scope | Status and essential features |
|---|---|---|---|---|
| AT | €25 million | 5% | Online advertising services | • Effective January 1, 2020;<br>• The Digital Tax Act (“Digitalsteuergesetz 2020”) is based on the European Commission's proposal on the digital services tax from March 2019;<br>• Online advertising services provided by online advertisers in Austria in exchange for payment are taxable (starting from 1 January 2020) (The law is limited to online advertising services provided within Austria, and online advertising services are considered to be provided within Austria if was received on the device of a user with an Austrian IP address, and in terms of content and design (also) is directed towards Austrian users);<br>• Online advertising services are considered to be ads placed on the digital interface, in particular in the form of advertising on signs, advertising on search engines and similar advertising services; taxpayers are companies that provide or contribute to online advertising services, which within one financial year |

| Country | Domestic Revenue Threshold | Tax Rate | Scope | Status and essential features |
|---|---|---|---|---|
| | | | | have a worldwide turnover of at least 750 million euros, while in the country they have a turnover of at least 25 million euros from fees earned by providing online advertising services;<br>• The tax base for digital tax assessment is the fee that the online advertising service provider receives from the customer. |
| BE | €50 million in the EU | 3% | Sales of user data | • Proposed → has not yet entered into force, nor is there any indication of when it could; on 23 January 2019, a bill was submitted to the House of Representatives seeking to introduce a temporary tax at Belgian level on the most important digital services of the "internet giants" who are currently evading taxes in the EU;<br>• The proposal mainly targets internet giants. The tax is targeted at companies with a total global revenue of more than € 750 million and a total taxable income in the EU of at least € 50 million. The company is responsible for DST in Belgium when the customer is in Belgium at the time of providing the taxable service (localization based on IP address). |
| CZ | CZK 100 million (aprox. €4 million) | 7% | 1. Targeted advertising via digital interface;<br><br>2. Use of a multilateral digital interface; and<br><br>3. Sales of user data | • CZ Government approved the proposal, it still needs to be approved by the Parliament → it is expected to enter into force in mid-2020;<br>• The draft law specifies a minimum threshold for the taxation of certain digital services. For the provision of targeted advertising services and the sale of user data, the amount of payment for a particular service provided in the Czech Republic should exceed CZK 5 million. Use of multilateral digital interfaces is subject to digital services tax if the number of user accounts on the interface exceeds 200,000;<br>• The tax would apply to companies with a global turnover of more than EUR 750 million and a tax base relating to taxable digital services provided in the Czech Republic of over CZK 100 million (approximately EUR 4 million). |
| FR | €25 million | 3% | 1. Making the "digital interface" available; and<br><br>2. Targeted Advertising Service | • Retroactively entered into force on 1 January 2019, however its implementation has been temporarily postponed until the end of 2020 due to US threats to impose high tariffs on French products; the French DST recognizes two categories of taxable digital services: 1. a "digital interface" service and 2. a "targeted advertising" service.<br>• The law defines the provision of a "digital interface" as providing, by electronic communications, a digital interface that allows users to contact and interact with other users, especially for the purpose of delivering goods or providing services directly between those users, while defining a "targeted advertising" service as services marketed to advertisers or their agents for the purpose of placing on a digital advertising interface targeted based on user data collected or generated when such sites are visited. These services may include, in particular, the purchase, storage and placement of advertisements, advertising and performance monitoring, and user data management and transmission services;<br>• Taxpayers are digital companies with global gross revenues from digital services of at least € 750 million and of at least € 25 million in France. |
| HU | N/A | 7.5% | Advertising | • In 2014, Hungary introduced an advertising tax, which is a special sales tax applicable to the broadcasting or publication of advertisements in Hungary;<br>• Business entities that broadcast or publish advertisements are subject to this tax, ie, in particular, newspapers, audiovisual media and billboards;<br>• The taxable amount of tax is the net turnover in the financial year generated by the broadcasting or publication of |

| Country | Domestic Revenue Threshold | Tax Rate | Scope | Status and essential features |
|---|---|---|---|---|
| | | | | advertisements, to which progressive rates ranging from 0% to 50% are applied;<br>• Subsequently, Hungary replaced the six progressive rates scale with a scale containing two rates: a 0% rate for the part of the taxable amount below HUF 100 million (approximately EUR 300,000) and a second rate, 5.3%, for the part of the taxable amount above that amount;<br>• In 2017, Hungary amended its advertising tax again to comply with EU rules, raising the upper threshold of the progressive tax rate to 7.5% for taxpayers with sales revenues over HUF 100 million. |
| IT<br><br>IT | €5.5 million | 3% | 1. Placing on the digital interface advertising targeted at users of that interface;<br><br>2. Making the multilateral digital interface available to users, enabling users to find and interact with other users, which may also facilitate the provision of goods or services directly between users; and<br>3. Sale of collected user data generated from user activities on the digital interface | • Effective January 1, 2020;<br>• On December 27, 2019, the Italian Parliament approved the Budget Law for 2020. (Italian Budget Law 2020; Law No. 160 of 2019 published in the Italian Official Gazette on December 30, 2019), which, among other things, presents a new tax on digital services, which has been applied since January 1, 2020. Mr. → is mostly based on the European Commission's proposal on the digital services tax from 2018; taxable is the revenue collected during the year from the provision of digital services to users within Italy, which as such are identified by the IP address of the devices they use or by applying the geolocation method;<br>• Taxpayers are companies that individually or as part of a group in the year before the relevant calendar year generate a total revenue of at least EUR 750 million, and in Italy a turnover of at least EUR 5.5 million;<br>• Italian DST will be automatically abolished in case a global solution is adopted. |
| ES | €3 million | 3% | 1. Placing on the digital interface advertising targeted at users of that interface;<br><br>2. Making the multilateral digital interface available to users, enabling users to find and interact with other users, which may also facilitate the provision of goods or services directly between users; and<br><br>3. sale of collected user data generated from user activities on the digital interface | • Proposed → has not yet entered into force, nor is there any indication of when it could;<br>• The Spanish Parliament rejected the Government's proposal of 19 January 2019. proposing the introduction of DST; it is expected that the new Government could re-propose the introduction of DST; only the provision of digital services used by persons located in Spain will be taxed by the Spanish digital tax (digital services are considered to be performed within Spanish territory whenever the user is in Spain; special localization rules are set for each type of taxable digital service) ;<br>• Taxpayers are legal entities, regardless of their residency, that in a calendar year generate total global revenue of at least EUR 750 million and more than EUR 3 million of revenue generated in Spain. |
| UK | £25 million (€28 million) | 2% | Revenues from social media platforms, search engines and online marketplaces | • Proposed → expected to enter into force in April 2020; the tax will be applied to revenues from social media platforms, search engines and online markets (financial and payment services are excluded);<br>• Taxpayers are companies that generate global annual digital revenues of £ 500 million and £ 25 million in the UK;<br>• The first £ 25 million of user revenue in the UK will not be subject to DST. |

In Tab. 2. the author explores the thresholds and targets of taxation in countries that have implemented the digital tax. European Union countries have moved forward with the introduction or proposal of unilateral measures.

This legislation has primarily served two aims, namely allocating an appropriate share of the tax revenues from digital services to the particular country and reducing tax inequality between domestic and digital business models. The national digital taxes implemented and proposed in the European Union territory can be allocated to three groups, including the tax type, the tax scope and the tax base.

## 5. CONSLUSION

Until the implementation of a common and coordinated action at EU level, which may take some time to agree, Member States introduce unilateral measures to address the challenges of taxing the digital economy companies. EU action is necessary in order to mitigate the fragmentation of the single market and the creation of distortions of competition within the EU due to the adoption of such unilateral actions at national level. The preferred option would be consistent with the principle of proportionality. As follows from the subsidiarity test, it is not possible for Member States to address the problem without hampering the single market. Moreover, the present proposal aims at setting a common structure of the tax, narrowly defined with thresholds not to unjustifiably hurt companies, while leaving sufficient margin of manoeuvre for Member States when it comes to actual setting of certain administrative aspects related to the measure, such as accounting and reporting obligations, and also concerning the prevention of evasion, avoidance, and abuse.

## LITERATURE:

1. Becker, J., Englisch, J. (2018). *EU Digital Services Tax: A Populist and Flawed Proposal. Kluwer International Tax Blog.* Retrieved 26.11.2020. from *https://www.kluwertaxblog.com*
2. IAB Europe and IHS Markit (2017), *'The economic contribution of digital advertising in Europe', Retrieved 19.09.2019 from http://iabsverige.se/project/the-economic-contribution-of-digital-advertising-in-europe/*
3. Kofler, G., Mayr, G., & Schlager, C. (2017). *Taxation of the Digital Economy: "Quick Fixes" or Long-Term Solution?, European Taxation, 57. Retrieved from https://research.ibfd.org/#/doc?url=/collections/et/html/et_2017_12_e2_1.html.*
4. Schön, W. (2018) Ten Questions About Why and How to Tax the Digitalized Economy, *Bulletin for International Taxation*, 72. Retrieved 26.11.2020. from https://research.ibfd.org/#/doc?url=/collections/bit/html/bit_2018_04_int_1.html
5. UNCTAD (2017a), *'World Investment Report 2017: Investment and the Digital Economy', United Nations, New York and Geneva,* Retrieved 20.11.2020. from *https://www.statista.com/download/outlook/whiterpaper/Fullpage/2/219/102/2_219_102.pdf)*
6. UNCTAD (2017b), *'The Top 100 Digital MNEs', Technical annex to the World Investment Report 2017, United Nations, New York and Geneva*, Retrieved 20.11.2020. from *https://www.statista.com/download/outlook/whiterpaper/Fullpage/2/219/102/2_219_102.pdf)*
7. UNCTAD (2017c), *'Information Economy Report 2017: Digitalization, Trade and Development', United Nations, New York and Geneva*, Retrieved 20.11.2020. from *https://www.statista.com/download/outlook/whiterpaper/Fullpage/2/219/102/2_219_102.pdf)*
8. UNCTAD and OECD Digital Economy Outlook, *(2017) Projections for these developments can be found inter alia in the Statista Digital Market Outlook, (2017a,2017b),* Retrieved 20.11.2020. from *https://www.statista.com/download/outlook/whiterpaper/Fullpage/2/219/102/2_219_102.pdf)*

# DESIGNING AND VALIDATING AN INSTRUMENT FOR THE EVALUATION OF BUSINESS PROCESS MANAGEMENT AND CUSTOMER EXPERIENCE MANAGEMENT CONVERGENCE APPROACH

**Dino Pavlic**
*University of Split, Faculty of Economics, Business and Tourism, Croatia*
*dino.pavlic@efst.hr*

**Maja Cukusic**
*University of Split, Faculty of Economics, Business and Tourism, Croatia*
*maja.cukusic@efst.hr*

***ABSTRACT***

*Following the design and the operationalisation of a novel approach for Business Process Management (BPM) and Customer Experience Management (CXM) convergence, in this paper, we present a series of steps that were carried out to design and validate a research instrument for its evaluation. After an extensive literature review and focus group in the first phase, interviews with experts and card sorting study were then organised to devise a mechanism for the evaluation of the new approach. The initial research instrument was then tested for validity and reliability. The focus of the paper is reporting on the results of card sorting that were used to formulate a final research instrument to be distributed to identified experts, BPM and CXM consultants in SouthEast Europe.*

***Keywords:*** *BPM, CXM, content validity, construct validity, card sorting*

## 1. INTRODUCTION

The convergence approach of Business Process Management (BPM) and Customer Experience Management (CXM) is a new concept based on the notion that the identification, discovery, analysis, redesign, and control of business processes should be performed along with the identification, discovery, analysis, redesign, and control of customer experience (Davis, 2011). The need for meaningful involvement of customers, as well as consideration for the entire customer journeys within the business transformation programmes and business process optimisation initiatives, is acknowledged in multiple studies (Becker et al., 2011; Bergh, Thijs & Viaene, 2014; Gersch, Hewing & Schöler, 2011; Gloppen, Lindquister & Daae, 2016; Johnston & Kong, 2011; Neubauer, 2009; Norton & Pine II, 2013; Schmiedel, Vom Brocke & Recker, 2014; Trkman, Mertens, Viaene & Gemmel, 2015). The research gap, specifically the lack of a comprehensive approach for the convergence of two different fields – BPM and CXM, was addressed in authors' earlier studies (Pavlic & Cukusic, 2019a, 2019b), where a theoretical framework, as well as possible operationalisation (using a series of process models) of the BPM-CXM convergence approach, was formulated. The framework was developed through qualitative research and by following the design science principles, including a systematic literature review, a focus group with experts, model operationalisation through prototyping a set of process models in a specific tool, validation with experts, proof-of-concept implementation and a case study followed by interviews with experts. The resulting new BPM-CXM convergence approach is based on the lifecycle of BPM (Dumas, La Rosa, Mendling & Reijers, 2018) whereby each BPM lifecycle phase is augmented with a CXM overlay (Pavlic & Cukusic, 2019b). Even though the initial feedback from the users and experts, consultants, was overwhelmingly positive, the issue of measuring the potential effects and the perceived benefits that would stem from following the new approach remained. With that purpose, this study was conducted attempting to formulate a research instrument that would be used to

evaluate the BPM-CXM convergence approach and the effects of using the approach; all compared to the traditional BPM and CXM methods. The design process of the research instrument included standard research phases such as literature analysis, organising a focus group with experts and closed card sorting to perform content and construct validity as well as reliability testing, all presented in the paper. Accordingly, the paper presents the methodological considerations and the procedure in Section 2, the results of the tests in Section 3 and conclusions and future plans in Section 4.

## 2. DESIGN OF THE INSTRUMENT FOR BPM-CXM APPROACH EVALUATION

### 2.1. The contents of the research instrument and the general procedure

By conducting an extensive literature review, followed by a focus group and interviews with experts, the initial set of constructs and items to be included in the initial version of the research instrument were identified. Five initially identified constructs that are relevant for comparisons of traditional BPM and CXM initiatives, as opposed to the new BPM-CXM convergent approach, are briefly outlined below with references:

- **Functional silos effect:** Functional silos effect within the organisations deals with the insufficient flow of information, knowledge and resources between the functional organisational units, where the functional organisational units act as silos (Maze, Smadi, Burke & Macgillivray, 2008; Stewart, 2014).
- **Innovation:** Innovation stands for the creation of new knowledge, processes and ideas to enable new business outcomes which have a goal of improving the internal business processes and structures to create market-driven products and services (Plessis, 2007).
- **Organisational performance:** Organisational performance considers the capabilities of organisations to achieve their goals (Wade & Recardo, 2001). Organisational performance can be divided into financial and non-financial (Hernaus, Pejić Bach & Bosilj-Vukšić, 2012; Kihn, 2010). While financial performance includes financial measures such and revenue, profit, costs, market share and more, non-financial organisational performance such as the relationship with employees and customers are at least equally important as the financial ones (Maskell, 1991).
- **Alignment of business processes and needs of the customer:** Alignment of business processes and the needs of the customers reflects the alignment between the strategy and operations of internal business processes and initiatives with the perspective of the customer (Botha & Rensburg, 2010).
- **Customer experience:** Customer experience is a multidimensional construct which is oriented on cognitive, emotional, sensory and social responses of the customer on the offer of the organisation during the entire journey of the customer (Lemon & Verhoef, 2016).

After the initial set of variables and indicators was defined and discussed (through an extensive literature review, focus group, interviews with experts), content and construct validity, as well as reliability, had to be checked to prepare the research instrument. Closed card sorting was performed with the procedure presented in the next section. Initially, card sorting was developed by psychologists as a methodology for knowledge organisation and categorisation (Wood & Wood, 2008). Within the closed card sorting, participants are presented with the list of items and constructs where the items should be placed (Spencer, 2009). Experts or key stakeholders then group the items according to their similarity or eliminate the items which do not fit within the predefined constructs (Straub, Boudreau & Gefen, 2004). Closed card sorting procedure was deemed appropriate considering the expert knowledge of the main author of the study in this domain, as well as the available results of the qualitative research phase, whereby only minor adjustments to the items and constructs were expected (Wood & Wood, 2008).

Closed card sorting was performed with 15 experts from the BPM and CXM domains, having at least five years of experience in both BPM and CXM domains. Experts have then considered the previously identified set of items for evaluating the implications of the new approach.

### 2.2. Procedure for testing the validity and reliability of the research instrument

Validity and reliability testing were performed based on the results of the closed card sorting procedure. Generally, validity stands for the characteristic of an instrument to measure what is considered it measures (Cohen, Manion & Morrison, 2013). In terms of content validity, it signals that the items of an instrument actually measure the defined constructs (Haynes, Richard & Kubany, 1995). In terms of construct validity, it checks if the instrument measures the variables (constructs) that it should be measuring (Cook & Campbell, 1979). In other words, with construct validity, it is checked if the instrument measures the intended constructs. Content validity was checked by the main author, longtime BPM consultant, and by an expert group that participated in the in-depth interviews and focus groups. It was supported by calculations of the content validity ratio (CVR) (Lawshe, 1975) and average relative importance values (Lewis, Snyder & Rainer, 1995). For every item, it was checked whether the item was relevant and important for the evaluation of BPM-CXM convergence approach. Construct validity was checked following the closed card sorting method by calculating the hit ratios. Hit ratios were used to check how many items are assigned to each construct (Moore & Benbasat, 1991), and to which construct or a variable each item belongs to. Except for the validity checks, reliability check of the measurement instrument was performed. Reliability stands for the property of the test to provide stable and consistent results that should be an actual result rather than a mistake in the measurement (Carmines & Zeller, 1979). Reliability of the measurement instrument was checked by calculating the Fleiss' Kappa coefficient. Fleiss' Kappa coefficient is used to check the agreement between more than two respondents (Fleiss, 1971). The described procedure was assessed as appropriate, as it was used and verified in a similar context, as presented in the studies by Orehovački (2013) and Pažur Aničić (2017). The two studies were used as a foundation for the preparation of the matrix (i.e. the MS Excel form) for conducting the closed card sorting in this study.

### 2.3. Closed card sorting procedure

Even though card sorting procedure is in some instances performed in two iterations as an additional check for robustness (Petter, Straub & Rai, 2007), authors have decided to proceed with one iteration considering the number of previous interactions in the process of forming the instrument. The consistency of the results in the first iteration was also in favour of this decision. Compared to an open card sorting procedure, closed card sorting is used when researchers have the data or experience based on which they can suggest the initial constructs or categories (Wood & Wood, 2008), or the constructs are known in advance (Fincher & Tenenberg, 2005; Morente-Molinera, Ríos-Aguilar, González-Crespo & Herrera-Viedma, 2019; Zimmermann, 2016). Furthermore, closed card sorting is also used when only the minor content changes or additions are expected compared to the existing content, all thanks to the existing knowledge or the research (Spencer, 2009). Before the form was sent to the participants, pre-testing with the purpose to avoid grammatical mistakes, ensure that the sentences are understandable and redefining the constructs and items where necessary was done with two experts. Closed card sorting procedure was carried out in a way that the participating experts were sent a request for participation by e-mail, which also included a paper (Pavlic & Cukusic, 2019b) with the detailed description and operationalisation of the proposed BPM-CXM convergence approach. The e-mail had also included an MS Excel form to collect the results.

Several of the participants already participated in an earlier stage of the research – focus group, thus meeting the criterion for the validation of respondents in part (Harry Torrace, 2012; Merriam & Tisdell, 2015). Total of fifteen experts participated in the process, this being an adequate number, according to Nielsen (2004).

## 3. RESULTS OF THE CLOSED CARD SORTING STUDY

### 3.1. Content validity results

As a part of the closed card sorting procedure, content validity check was performed by calculating the content validity ratio (CVR) as well as the average relative importance. The participants have determined relative importance for each of the 62 initially proposed items by using the following scale: *1 – not relevant; 2 – important (but not essential); 3 – essential; 0 – cannot answer*. The relative importance of each item was determined to calculate the CVR. The formula by Lawshe (1975) was used:

$$CVR = (n-N/2)/(N/2)$$

Here, n stands for the frequency or the number of participants who have scored the item as 2 – important (but not essential) and 3 – essential, while the N stands for the total number of respondents. As in the studies by Pažur Aničić (2017) and Orehovački (2013), CVR was modified to include the ratings 2 and 3 (instead of 3 exclusively). Taking into account the recommended values on the significance level of $\alpha = 0.05$ and based on the sample of 15 respondents, CVR had to be at least 0.49 to accept the item as relevant (Lawshe, 1975). The content validity index (CVI), which is an arithmetic mean of CVR values for each item (Lewis et al., 1995) was 0.75 based on all of the 62 items. Even though the result is a relatively high CVI, to make the instrument more applicable in future use, certain items were eliminated in the following way:

1) All of the items with CVR<0.49 were eliminated (twelve items were thus eliminated).
2) All of the items with the average relative importance less than 2 were eliminated. Considering there is no single rule for the critical values within this phase, authors have chosen values lower than 2 according to the personal judgement, following the recommendations in Orehovački (2013). One item was eliminated in this phase.

CVI for the remaining 49 items is 0.85, higher than before the elimination of items. The average relative importance for the remaining items was 2.48, higher than before the elimination (2.37). Comments from experts collected through the process were accepted, resulting in correcting minor writing mistakes and unclarities with the used terminology. The remaining items with CVR and average relative importance values are presented in Table 1.

*Table following on the next page*

*Table 1: Remaining items with CVR and average relative importance after the analysis*

| **Item** (The question: "By using the BPM-CXM convergent approach…") | **CVR** | **Average relative importance** |
|---|---|---|
| 1. Business process awareness within the organisation would increase. | 1 | 2.6 |
| 2. Customer experience awareness within the organisation would increase. | 1 | 2.73 |
| 3. Coordination between the BPM and CXM organisational units would improve. | 1 | 2.8 |
| 4. Cooperation between the BPM and CXM organisational units would improve. | 1 | 2.87 |
| 5. Communication between the BPM and CXM organisational units would improve. | 1 | 2.93 |
| 6. Mutual capability development between the BPM and CXM organisational units would improve. | 1 | 2.6 |
| 7. The connection between the BPM and CXM organisational units would improve. | 0.73 | 2.4 |
| 8. The number of new identified processes would increase. | 0.73 | 2.2 |
| 9. The number of new technologies introduced would increase. | 0.87 | 2.27 |
| 10. The use of innovative resources would increase. | 0.87 | 2.27 |
| 11. Creation of new knowledge would increase. | 1 | 2.67 |
| 12. Application of new knowledge would increase. | 1 | 2.73 |
| 13. The number of new launched products would increase. | 0.73 | 2.33 |
| 14. The number of new launched services would increase. | 0.73 | 2.33 |
| 15. Investment in research and development (net worth) would increase. | 0.6 | 2 |
| 16. Return on assets (ROA%) within the organisation would increase. | 0.6 | 2.4 |
| 17. Value-added per employee within the organisation would increase. | 0.73 | 2.4 |
| 18. Sales growth rate within the organisation would increase. | 0.87 | 2.53 |
| 19. Profitability within the organisation would improve. | 0.73 | 2.4 |
| 20. Market share of the organisation would increase. | 0.6 | 2.13 |
| 21. Cost within the organisation would be reduced. | 0.73 | 2.33 |
| 22. Sales growth within the organisation would exceed competitors'. | 0.6 | 2 |
| 23. Market share of the organisation would exceed competitors'. | 0.73 | 2 |
| 24. The profitability of the organisation would exceed competitors'. | 0.6 | 2.07 |
| 25. Relationship with suppliers would improve. | 0.6 | 2.13 |
| 26. Work productivity of employees would increase. | 0.87 | 2.4 |
| 27. Employees' trust in leadership would increase. | 0.87 | 2.2 |
| 28. Work organisation would become more efficient. | 1 | 2.8 |
| 29. Employees would be more prepared to go the extra mile for the organisation. | 0.87 | 2.07 |
| 30. Employees would become more satisfied with the situation/work conditions within the organisation. | 0.6 | 2.13 |
| 31. Learning ability and adaptability of employees would increase. | 0.87 | 2.4 |
| 32. The number of customer complaints within a certain period would decrease. | 1 | 2.87 |
| 33. Speed of dealing with customer complaints would increase. | 1 | 2.67 |
| 34. The reputation of the organisation in the eyes of the customers would increase. | 1 | 2.87 |
| 35. The overall competitive position of the organisation would improve. | 1 | 2.67 |
| 36. The organisation would become more aligned to customer needs. | 1 | 2.93 |
| 37. The organisation would become more aligned to customer expectations. | 0.87 | 2.67 |
| 38. BPM initiatives would become more oriented to the goals of the customer. | 1 | 2.93 |
| 39. Customer contribution to the development of competences within the organisation would increase. | 0.73 | 2.2 |
| 40. There would be an increased value for the customers. | 1 | 2.73 |
| 41. Customer orientation would improve. | 0.73 | 2.4 |
| 42. The relation between internal processes and external customer journeys would be established. | 1 | 2.87 |
| 43. Alignment of KPIs between the BPM & CXM organisational units would improve. | 1 | 2.53 |
| 44. Social experience for the customers would improve. | 0.6 | 2.13 |
| 45. Customer satisfaction would increase. | 1 | 2.87 |
| 46. Customer trust would increase. | 1 | 2.6 |
| 47. Customer loyalty would increase. | 1 | 2.53 |
| 48. Customer retention would increase. | 1 | 2.73 |
| 49. Customer acquisition would increase. | 1 | 2.47 |

### 3.2. Construct validity results

The data collected through the closed card sorting procedure was also used for construct validity and reliability checks. The respondents were asked to group the items in one of the six proposed groups or constructs presented in section 2 of the paper: functional silos effect, innovation, organisational performance (financial), organisational performance (non-financial), alignment of business processes and customer needs, and customer experience. The performed calculations include the hit ratio and Fleiss' Kappa. The table with hit ratios per construct for each of the remaining items is presented in Table 2. While performing calculations, missing values were assigned to the category Other. Even though the literature does not provide standards in terms of the critical values for accepting the hit ratio calculations, the total hit ratio of 0.75 can be considered as acceptable according to previous studies (Orehovački. 2013; Pažur Aničić. 2017).

*Table 2: Hit ratios per constructs*

| | **Functional silos effect** | **Innovation** | **Organizational performance (financial)** | **Organizational performance (non-financial)** | **Alignment of business processes and customer needs** | **Customer experience** | **Other** | **Total number of hits** | **Hit ratio** |
|---|---|---|---|---|---|---|---|---|---|
| **Functional silos effect** | **64** | 3 | 0 | 8 | 25 | 5 | 0 | 105 | **0.61** |
| **Innovation** | 3 | **95** | 8 | 7 | 0 | 2 | 5 | 120 | **0.79** |
| **Organizational performance (financial)** | 0 | 0 | **120** | 11 | 2 | 0 | 2 | 135 | **0.89** |
| **Organizational performance (non-financial)** | 3 | 6 | 9 | **107** | 9 | 27 | 4 | 165 | **0.65** |
| **Alignment of business processes and customer needs** | 9 | 3 | 0 | 8 | **83** | 16 | 1 | 120 | **0.69** |
| **Customer experience** | 0 | 1 | 2 | 8 | 2 | **77** | 0 | 90 | **0.86** |
| | | | | | | | | **Total hit ratio** | **0.75** |

For the remaining items listed above in Table 1, Fleiss Kappa values were:
Percent overall agreement = **63.03%**
Free-marginal kappa = 0.57
95% CI for free-marginal kappa [0.50, 0.64]
Fixed-marginal kappa = 0.56
95% CI for fixed-marginal kappa [0.54, 0.57]

According to previous studies (Landis & Koch, 1977; Altman, 1991). when considering the acceptable Fleiss Kappa values, the following thresholds are in place:

- Very weak for values below 0.21,
- Weak for values from 0.21 to 0.40,
- Good for values from 0.41 to 0.60,
- **Very good for values from 0.61 to 0.80,**
- Excellent for values above 0.80.

In view of that, the rate of agreement between the participants taking into account Fleiss Kappa is very good (63.03%). By analysing the individual hit ratios and Fleiss Kappa values, minor modifications of the measurement instrument were carried out. The final list of measurement items (48) of the instrument, grouped into constructs, is presented in Table 3.

*Table 3: The final list of research instrument items (48) grouped into constructs*

| **Construct** | **Item** (The question: "By using the BPM-CXM convergent approach…") |
|---|---|
| Functional silos effect | Business process management awareness within the organisation would increase. |
| | Customer experience management awareness within the organisation would increase. |
| | Coordination between the BPM and CXM organisational units would improve. |
| | Cooperation between the BPM and CXM organisational units would improve. |
| | Communication between the BPM and CXM organisational units would improve. |
| | Mutual capability development between the BPM and CXM organisational units would improve. |
| | The connection between the BPM and CXM organisational units would improve. |
| Innovation | The number of new identified processes would increase. |
| | The number of new technologies introduced would increase. |
| | Application of innovative resources would increase. |
| | Creation of new knowledge would increase. |
| | Application of new knowledge would increase. |
| | The number of new launched products/services would increase. |
| | Investment in research and development (net worth) would increase. |
| Organisational performance (financial) | Return on assets (ROA%) within the organisation would increase. |
| | Value-added per employee within the organisation would increase. |
| | Sales growth rate within the organisation would increase. |
| | Profitability within the organisation would improve. |
| | Market share of the organisation would increase. |
| | Cost within the organisation would be reduced. |
| | Sales growth within the organisation would exceed competitors'. |
| | Market share of the organisation would exceed competitors'. |
| | The profitability of the organisation would exceed competitors'. |
| Organisational performance (non-financial) | Relationship with suppliers would improve. |
| | Work productivity of employees would increase. |
| | Employees' trust in leadership would increase. |
| | Work organisation would become more efficient. |
| | Employees would be more prepared to go the extra mile for the organisation. |
| | Employees would become more satisfied with the situation/work conditions within the organisation. |
| | Learning ability and adaptability of employees would increase. |
| | The reputation of the organisation in the eyes of the customers would increase. |
| | The overall competitive position of the organisation would improve. |
| Alignment of business processes and customer needs | The organisation would become more aligned to customer needs. |
| | The organisation would become more aligned to customer expectations. |
| | BPM initiatives would become more oriented to the goals of the customer. |
| | Customer contribution to the development of competences within the organisation would increase. |
| | The internal organisation would become more customer-oriented. |
| | The relation between internal processes and external customer journeys would be established. |
| | Alignment of KPIs between the BPM & CXM organisational units would improve. |
| Customer experience | Social experience for the customers would improve. |
| | Customer satisfaction would increase. |
| | Customer trust would increase. |
| | Customer loyalty would increase. |
| | Customer retention would increase. |
| | Customer acquisition would increase. |
| | The number of customer complaints within a certain period would decrease. |
| | Speed of dealing with customer complaints would increase. |
| | There would be an increased value for the customers. |

## 4. CONCLUSIONS AND FUTURE WORK

An instrument for evaluating the new BPM-CXM convergence approach compared to the traditional BPM and CXM approaches was developed through multiple iterations: an extensive literature review, and a focus group of which the results were presented elsewhere, followed by interviews with experts and the study presented in this paper using closed card sorting

procedure. As was described in the paper, the initial list with 62 items identified into five distinct categories was then analysed quantitatively and qualitatively, and subsequently reduced to a list of 48 items across six constructs. In the process, the measurement instrument was checked for the content and construct validity, and the final version has been confirmed as reliable. Consequently, the instrument can be used in the subsequent phases of the research – to evaluate the proposed BPM-CXM convergence approach compared to the traditional approaches, as well as the implications of using the proposed BPM-CXM approach. What follows is the quantitative research phase with 30 organisations in SouthEast Europe that have extensive experience in conducting both BPM and CXM projects to provide relevant insights and identify the most important benefits of the new approach.

***ACKNOWLEDGEMENT:*** *This research was supported by the Croatian Science Foundation [grant UIP-2017-05-7625].*

**LITERATURE:**

1. Altman, D. G. (1991). Practical Statistics for Medical Research. *Chapman Hall*.
2. Becker, J., Niehaves, B., Malsbender, A., Ortbach, K., Plattfaut, R., & Pöppelbuß, J. (2011). Taking a BPM Lifecycle View on Service Productivity: Results from a Literature Analysis. *Proceedings of the 11th International RESER Conference*, 1–20.
3. Bergh, J. Van Den, Thijs, S., & Viaene, S. (2014). *Transforming Through Processes Leading Voices on BPM, People and Technology*. London: Springer International Publishing.
4. Botha, G. ., & Rensburg, A. C. van. (2010). Proposed Business Process Improvement Model With Integrated Customer Experience Management. *South African Journal of Industrial Engineering*, *21*(1), 45–57.
5. Carmines, E. ., & Zeller, R. . (1979). *Reliability and validity assessment* (17th ed.). SAGE Publications.
6. Cohen, L., Manion, L., & Morrison, K. (2013). *Research methods in education*. *Professional Development in Education* (6th ed., Vol. 38). Routledge. https://doi.org/10.1080/19415257.2011.643130
7. Cook, T. D., & Campbell, D. T. (1979). *Quasi-experimentation: Design and analysis issues for field settings*. Boston: Houghton Mifflin.
8. Davis, R. (2011). It's the Customer Journey That Counts. *A BPTrends Column*, 1–5.
9. Dumas, M., La Rosa, M., Mendling, J., & Reijers, H. A. (2018). *Fundamentals of business process management*. Berlin: Springer-Verlag Berlin Heidelberg.
10. Fincher, S., & Tenenberg, J. (2005). Making sense of card sorting data. *Expert Systems*, *22*(3), 89–93.
11. Fleiss, J. L. (1971). Measuring nominal scale agreement among many raters. *Psychological Bulletin*, 1–5. Retrieved from papers://e7d065ae-9998-4287-8af0-c9fa85af8e96/Paper/p44071
12. Gersch, M., Hewing, M., & Schöler, B. (2011). Business Process Blueprinting – an enhanced view on process performance. *Business Process Management Journal*, *17*(5), 732–747.
13. Gloppen, J., Lindquister, B., & Daae, H.-P. (2016). The customer journey as a tool for business innovation and transformation. In R. DeFillippi, A. Rieple, & P. Wikström (Eds.), *International Perspectives on Business Innovation and Disruption in Design* (pp. 118–136).
14. Harry Torrace. (2012). Triangulation, respondent validation, and democratic participation in mixed methods research Harry Torrance, Manchester Metropolitan University, UK 1. *Journal of Mixed Methods Research*, *6*(2), 111–123.

15. Haynes, S. ., Richard, D. C. ., & Kubany, E. . (1995). Content validity in psychological assessment: A functional approach to concepts and methods. *Psychological Assessment, Vol. 7*(No. 3), 238–247.
16. Hernaus, T., Pejić Bach, M., & Bosilj-Vukšić, V. (2012). Influence of strategic approach to BPM on financial and non-financial performance. *Baltic Journal of Management*, *7*(4), 376–396. https://doi.org/10.1108/17465261211272148
17. Johnston, R., & Kong, X. (2011). The Customer Experience : A Road Map for Improvement. *Managing Service Quality*, *21*(1), 5–24.
18. Kihn, L.-A. (2010). Performance outcomes in empirical management accounting research. *International Journal of Productivity and Performance Management*.
19. Landis, J. R., & Koch, G. G. (1977). The Measurement of Observer Agreement for Categorical Data. *Biometrics*, *33*(1), 159. https://doi.org/10.2307/2529310
20. Lawshe, C. H. (1975). A Quantitative Approach To Content Validity. *Personnel Psychology*, *28*(4), 563–575. https://doi.org/10.1111/j.1744-6570.1975.tb01393.x
21. Lemon, K. N., & Verhoef, P. C. (2016). Understanding Customer Experience and the Customer Journey. *Journal of Marketing*, *80*(JM-MSI Special Issue), 1–62.
22. Lewis, B. R., Snyder, C. A., & Rainer, R. K. (1995). An empirical assessment of the information resource management construct. *Journal of Management Information Systems*, *12*(1), 199–223. https://doi.org/10.1080/07421222.1995.11518075
23. Maskell, B. H. (1991). *Performance measurement for world class manufacturing: a model for American companies*. Productivity Press.
24. Maze, T. H., Smadi, O., Burke, N., & Macgillivray, I. (2008). Use of functional silos to optimize agency decision making. *Final Report MRUTC*, *05*(05).
25. Merriam, S., & Tisdell, E. (2015). Qualitative research: A guide to design and implementation. *Psychologist*. John Wiley & Sons, Inc.
26. Moore, G. C., & Benbasat, I. (1991). Development of an instrument to measure the perceptions of adopting an information technology innovation. *Information Systems Research*, *2*, 192–222.
27. Morente-Molinera, J. A., Ríos-Aguilar, S., González-Crespo, R., & Herrera-Viedma, E. (2019). Dealing with group decision-making environments that have a high amount of alternatives using card-sorting techniques. *Expert Systems with Applications*, *127*, 187–198. https://doi.org/10.1016/j.eswa.2019.03.023
28. Neubauer, T. (2009). An empirical study about the status of business process management. *Business Process Management Journal*, *15*(2), 166–183.
29. Nielsen, J. (2004). Card sorting: How many users to test. *Jakob Nielsen's Alertbox*. Retrieved from https://www.nngroup.com/articles/card-sorting-how-many-users-to-test/
30. Norton, D. W., & Pine II, B. J. (2013). Using the customer journey to road test and refine the business model. *Strategy & Leadership*, *41*(2), 12–17.
31. Orehovački, T. (2013). *Methodology for evaluating the quality in use of web 2.0. applications*. Faculty of Organization and Informatics.
32. Pavlic, D., & Cukusic, M. (2019a). Conceptualizing the Convergence Model of Business Process Management and Customer Experience Management. In C. Di Ciccio, R. Gabryelczyk, L. García-Bañuelos, T. Hernaus, R. Hull, M. Indihar Štemberger, … M. Staples (Eds.), *Business Process Management: Blockchain and Central and Eastern Europe Forum Conceptualizing*. Springer Nature Switzerland AG.
33. Pavlic, D., & Cukusic, M. (2019b). Developing a Structured Approach to Converging Business Process Management and Customer Experience Management Initiatives. In J. Gordijn, W. Guédria, & H. A. Proper (Eds.), *The Practice of Enterprise Modeling Developing*. Springer Nature Switzerland AG.

34. Pažur Aničić, K. (2017). *Supporting Higher Education Graduates' Early Careers: Strategic Framework and Maturity Model for the Field of Information and Communication Technologies*. Faculty of Organization and Informatics.
35. Petter, S., Straub, D. W., & Rai, A. (2007). Specifying Formative Constructs in Information Systems Research Stacie, (December). Retrieved from https://scholarworks.gsu.edu/cgi/viewcontent.cgi?article=1016&context=nutrition_masterprojects
36. Plessis, M. (2007). The role of knowledge management in innovation The Authors. *Journal of Knowledge Management*. https://doi.org/10.1006/bbrc.2002.6651
37. Schmiedel, T., Vom Brocke, J., & Recker, J. (2014). Development and validation of an instrument to measure organizational cultures' support of Business Process Management. *Information and Management*, *51*(1), 43–56.
38. Spencer, D. (2009). *Card Sorting: Designing Usable Categories*. *Rosenfeld Media*. Rosenfeld Media.
39. Stewart, R. H. (2014). Organizational silos within NCAA division I athletic departments. https://doi.org/10.1017/CBO9781107415324.004
40. Straub, D., Boudreau, M.-C., & Gefen, D. (2004). Validation Guidelines for IS Positivist Research. *Communications of the Association for Information Systems*, *13*(March). https://doi.org/10.17705/1cais.01324
41. Trkman, P., Mertens, W., Viaene, S., & Gemmel, P. (2015). From business process management to customer process management. *Business Process Management Journal*, *21*(2), 250–266.
42. Wade, D., & Recardo, R. (2001). *Corporate Performance Management How to Build a Better Organization Through Measurement-Driven Strategic Alignment*. Elsevier Inc. https://doi.org/10.1016/b978-0-87719-386-9.50015-x
43. Wood, J. R., & Wood, L. E. (2008). Card Sorting: Current Practices and Beyond History and Assumptions. *Journal of Usability Studies*, *4*(1), 1–6.
44. Zimmermann, T. (2016). Card-sorting: From text to themes. *Perspectives on Data Science for Software Engineering*, 137–141. https://doi.org/10.1016/b978-0-12-804206-9.00027-1

# EMPIRICAL ANALYSIS OF TOURISM IMPACT ON CROATIAN GDP

**Damira Dukec**
*Assistant Professor at Polytechnic of Međimurje in Čakovec,*
*Bana Josipa Jelačića 22a, 40 000 Čakovec, Croatia*
*damira.dukec@mev.hr*

**Damira Kecek**
*Assistant Professor at University North,*
*104. brigade 1, 42 000 Varaždin, Croatia*
*dkecek@unin.hr*

**Igor Klopotan**
*Assistant Professor at Polytechnic of Međimurje in Čakovec,*
*Bana Josipa Jelačića 22a, 40 000 Čakovec, Croatia*
*igor.klopotan@mev.hr*

***ABSTRACT***
*For Croatian economy, tourism sector is recognized as an important income and employment generator. In this paper the impact of the tourism sector on the Croatian GDP was studied by using regression analysis. A multiple linear regression model for the period 1995 to 2017 was developed. Variable GDP was considered as dependent variable, while gross capital formation and gross value added for accommodation and food services were included in the model as independent variables as well as dummy variable which represents the recession years caused by financial crisis. Results of the conducted analysis indicate that designed multiple linear regression model is appropriate for analysing and forecasting Croatian GDP. All predictors are statistically significant and 99.2 % variations of GDP are explained by the changes in predictors. The proposed multiple linear regression model could be of great benefit for economic policy makers in developing both short term measures and long term strategies aimed to promote economic growth.*
***Keywords:*** *Tourism, Croatia, GDP, regression analysis, economic growth*

## 1. INTRODUCTION

Tourism plays an important role in many economies and in most of them is the most important source of income. According to Goeldner and Ritchie (2009), tourism is the world's largest industry characterized by rapid changes driven by new technologies and increased supply of tourist destinations. Tourism can be defined in many ways. Therefore, the United Nations World Tourism Organization created a glossary of tourism terms according to which tourism is defined as follows: "Tourism is a social, cultural and economic phenomenon which entails the movement of people to countries or places outside their usual environment for personal or business/professional purposes. These people are called visitors (which may be either tourists or excursionists; residents or non-residents) and tourism has to do with their activities, some of which involve tourism expenditure." (United Nations World Tourism Organization, 2008). Due to the favorable location and natural beauties, warm summers and moderately cold winters, Croatia is considered an important tourist destination. Tourism is one of the most important industry in Croatian economy and international demand for tourism in Croatia is more income elastic compared to other Mediterranean countries (Orsini and Ostojić, 2018). For more intensive development and stronger promotion of the competitiveness of Croatian tourism, policy makers at all levels of government need to act to address the existing disadvantages and enhance the quality and extent of Croatian tourism supply.

The paper is organized as follows. The introduction is followed by an overview of the recent and relevant literature of tourism importance on the growth and development of national economies. In section 3 the research methodology and data sources are described, while the empirical results are presented in section 4. In the conclusion final remarks are provided.

## 2. LITERATURE REVIEW

In the recent and relevant empirical research related to the significance of tourism for the national economies, different economic and econometric methods have been used, including regression models (Kuang and Tsai, 2016; Popescu and Plesoianu, 2017; Kozhokulov et al., 2019; Manzoor et al., 2019; Ren et al., 2019), input-output models and tourism satellite account (Munjal, 2013; Figini, 2019; Chou and Huang, 2011), computable general equilibrium models (Pratt, 2013; Meng, 2014; Gül, 2015). In Kumar and Hussain (2014), overview and comparison of input-output models, Keynesian models, exports base models, computable general equilibrium models, ad hoc models and money generation model for assessment of the economic impact of tourism on the overall economy have been presented. Analysis of the impact and importance of tourism on Croatian economy in domestic literature is primarily based on the regression models and input-output analysis supplemented by other scientific methods. The review of the relevant and recent literature of tourism effects on Croatian economy is given in the continuation. According to Baldigara and Koić (2015) international tourist flows, especially tourists from Germany, represent a significant source of profit in Croatia. Therefore, authors analyzed basic determinants of German tourist demand to Croatia by using polynomial regression model. They estimated annual number of arrivals and overnight stays German tourist in Croatia with a two second degree polynomial model. By using multiple linear regression model, Jelušić (2017) analyzed international tourist expenditures in Croatia and domestic tourist expenditures abroad. As the most significant variables in the proposed model gross national product at inbound market and foreign exchange rate stand out. Šverko Grdić and Krstinić Nižić (2017) analyzed the impact of climate change on tourism demand in Croatia. More precisely, authors estimated the impact of rising temperatures on the number of tourists in Croatia in the future applying regression model and exponential regression analysis. Results of the analysis indicate that rising temperatures will have a positive impact on the number of tourists on the coastal and mountainous in Croatia, while Zagreb will not be affected. Relationship between tourism and climate change in coastal and continental part of Croatia was researched in Krstinić Nižić and Šverko Grdić (2018). Results of the regression and correlation analysis indicated strong correlation between tourism in the coastal part of Croatia and climate parameters and less significant correlation between tourism in the continental part and climate parameters. Considering the time period, there was a less statistically significant correlation between tourism and climate parameters in winter than in summer. To provide better insight how to stimulate the development of industries that promote tourism, how to extend the tourist season and how to curb the gray economy in Croatia, Pavlić et al. (2014) developed an economic growth model with variables tourist arrivals, real effective exchange rate, employment, gross fixed capital formation, openness of the economy and real gross domestic product included. Results of the study indicate long-run equilibrium relationship stability between variables tourist arrivals, openness of the economy and real effective exchange rate and gross domestic product and short-run causality between variables openness of the economy and gross domestic product and between real effective exchange rate and gross domestic product. In order to quantify economic effects of tourism to the Croatian economy, Gatti (2013) developed computable general equilibrium model. Obtained results showed that if international tourism demand increases than positive effect on the household welfare and moderate effects on income distribution arise. Author also concluded that tourism, without investing in other industries, will not contribute to significant economic development in the short term.

Based on the input-output methodology, Mikulić et al. (2017) estimated direct, indirect and induced effects of foreign tourist demand on Croatian economy in terms of output, gross value added and employment. Authors concluded that without tourism, decline in gross value added and employment in the observed recession period would be more intense. Effects of foreign tourist demand were most significant for sectors accommodation and food services, retail trade, transportation and personal services. Similar research was conducted in Ivandić and Šutalo (2018). Based on the tourism satellite and input-output models authors estimated effect of tourism on the creation of Croatian GDP and effects of tourism consumption on other Croatian productive sectors. Estimated results indicate great significance of tourism sector for the Croatian economy and positive impact of tourism consumption on sectors that are related to tourism and on other sectors that are not specific to tourism.

## 3. DATA AND METHODOLOGY

Empirical part of the paper analyses the role of tourism sector in Croatian economy. The underlying methodology is multiple linear regression. The regression equation in its general form, given $n$ observations, is:

$$Y_t = \beta_0 + \beta_1 X_{t1} + \beta_2 X_{t2} + \cdots + \beta_k X_{tk} + \varepsilon_t, t = 1, \ldots, n \quad (1)$$

For the purpose of the research presented in this paper, following econometric model is used:

$$Y = \beta_0 + \beta_1 INV + \beta 2\, TOURISM + \beta 3\, DUMMY \quad (2)$$

where $Y$ is output, $INV$ are investments, $TOURISM$ represents the tourism sector and $DUMMY$ stands for dummy variable which represents the recession years caused by financial crisis of 2008. Croatian Bureau of Statistics data are used for the model. Real GDP is used as the measure of output, gross capital formation for investment and gross value added for accommodation and food services for tourism. The time frame of the analysis is from 1996 to 2017. Dummy variable is inserted for the period from 2009 to 2013. In next chapter, results of regression analysis are discussed.

## 4. RESULTS AND DISCUSSION

In the Table 1 the descriptive statistics for the variables used in the model is shown. For each variable mean values and standard deviations are calculated. Standard deviation is a measure of dispersion of the data. Analysis of the values in the Tables 1 and 2 leads to conclusion that the variation of the data is small. Also, the number of observations for each variable is shown.

*Table 1: Descriptive statistics (output of the statistical programme SPSS)*

| | Mean | Std. Deviation | N |
|---|---|---|---|
| GDP | 263412.68 | 79592.661 | 22 |
| INV | 59330.59 | 19962.534 | 22 |
| TOURISM | 10211.64 | 4792.246 | 22 |
| DUMMY | 0.23 | 0.429 | 22 |

Table 2 shows the determination coefficient $R^2 = 0.992$ which means that 99.2 % of all GDP variations can be explained by the variations predictors used in the model. Results of the regression analysis indicate that there is strong positive relationship between variables used, which is also shown by the multiple correlation coefficient R = 0.996. Also, the value of Durbin-Watson (1.566) leads to conclusion that there is no autocorrelation of residuals.

*Table 2: Model Summary (output of the statistical programme SPSS)*

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Durbin-Watson |
|---|---|---|---|---|---|
| 1 | 0.996[a] | 0.992 | 0.991 | 7550.289 | 1.566 |

a. Predictors: (Constant), DUMMY, TOURISM, INV
b. Dependent Variable: GDP

Analysis of variance is shown in the Table 3. Table contains the F ratio, which shows the significance of the predictors of the model. The value of the F ratio leads to the conclusion that at least one of the predictor is significant (with a significance level of $\alpha < 0.01$).

*Table 3: ANOVA (output of the statistical programme SPSS)*

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 132008701137.435 | 3 | 44002900379.145 | 771.888 | 0.000[b] |
| | Residual | 1026123681.338 | 18 | 57006871.185 | | |
| | Total | 133034824818.773 | 21 | | | |

a. Dependent Variable: GDP
b. Predictors: (Constant), DUMMY, TOURISM, INV

Table 4 shows the parameters of the model. With help of $\beta$ coefficients, the equation of the model can be specified:

$$Y = 60683.537 + 1.554\,INV + 10.306\,TOURISM + 23337.016\,DUMMY \quad (3)$$

The equation shows the impact of each predictor on GDP. For example, if the value of investment is increased by 1 unit, GDP will increase by 1.554 units. The table contains the t-ratios. The t-ratios show the significance of each predictor in the model. The results show that all variables are significant. Beta coefficients can be used for analysis of significance of each predictor in the model. Beta coefficients show how many standard deviations would GDP change if one of the predictors changes by one standard deviation. Because all beta coefficients are measured in standard deviations the impact of each predictor on GDP can be compared. If, for example, investment increases by one standard deviation, GDP will increase by 0.390 standard deviations. In addition, it shows that the predictor tourism is more significant than the predictor investment.

*Table 4: Model parameters (output of the statistical programme SPSS)*

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | |
| 1 | (Constant) | 60683.537 | 5205.178 | | 11.658 | 0.000 |
| | INV | 1.554 | 0.126 | 0.390 | 12.371 | 0.000 |
| | TOURISM | 10.306 | 0.521 | 0.621 | 19.793 | 0.000 |
| | DUMMY | 23337.016 | 4069.591 | 0.126 | 5.734 | 0.000 |

Table 4 (continued) shows confidence intervals for coefficients which indicates the precision of the evaluated model.

*Table 4 (continued): Model parameters (output of the statistical programme SPSS)*

| Model | | 95,0% Confidence Interval for B | |
|---|---|---|---|
| | | Lower Bound | Upper Bound |
| 1 | (Constant) | 49747,862 | 71619,211 |
| | INV | 1,290 | 1,818 |
| | TOURISM | 9,212 | 11,400 |
| | DUMMY | 14787,123 | 31886,910 |

The values of Tolerance and VIF (Table 5) indicate that there is no multicolinearity present in the estimated model.

*Table 5: Collinearity Statistics (output of the statistical programme SPSS)*

| Model | | Collinearity Statistics | |
|---|---|---|---|
| | | Tolerance | VIF |
| 1 | (Constant) | | |
| | INV | 0.432 | 2.316 |
| | TOURISM | 0.436 | 2.293 |
| | DUMMY | 0.891 | 1.122 |

a. Dependent Variable: GDP

Histogram (Figure 1) shows normal distribution of regression residuals as does the Normal P – P Plot (Figure 2).

*Figure 1: Histogram (output of the statistical programme SPSS)*

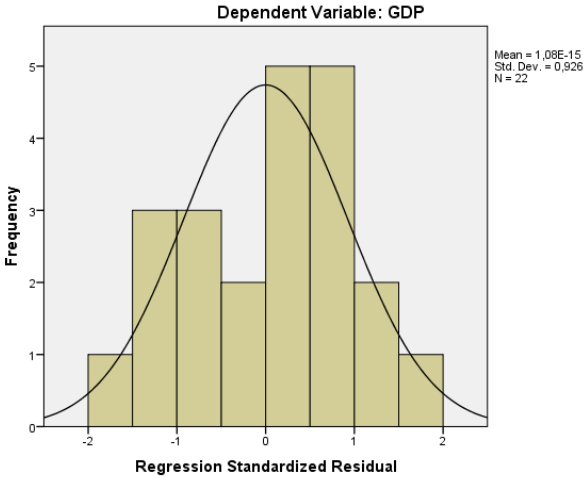
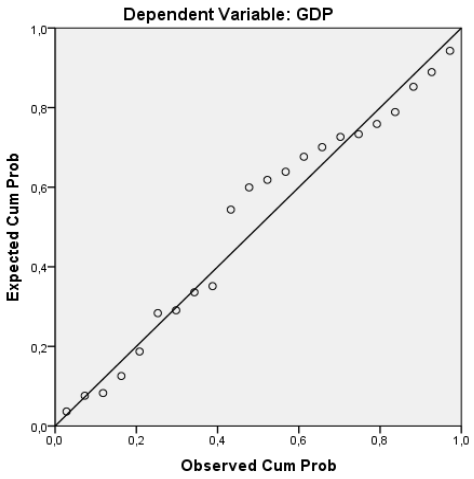



*Figure 2: Normal P-P Plot of Regression standardized Residual (output of the statistical programme SPSS)*




On the next figures partial regression scatterplots for the independent variables are shown. Scatterplots show the relationship between variables GDP and investment and GDP and tourism. The scatterplot shows strong positive relationship between variables GDP and INV. Also, there is a strong positive relationship between variables GDP and TOURISM.

*Figure 3: Partial Regression Plot for variable INV (output of the statistical programme SPSS)*

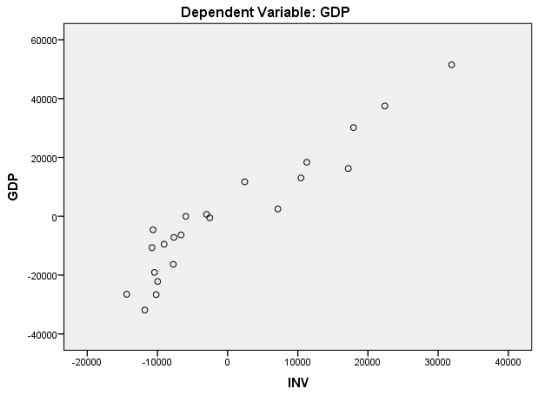
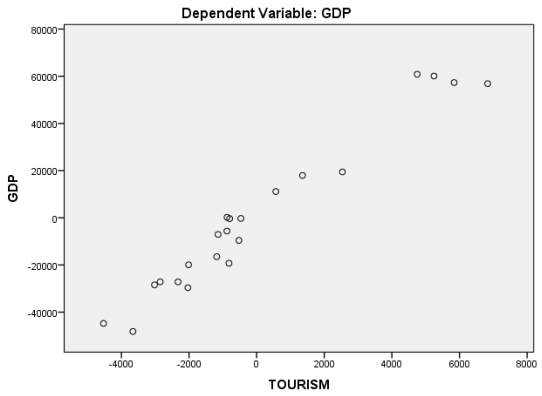



*Figure 4: Partial Regression Plot for variable TOURISM (output of the statistical programme SPSS)*




## 5. CONCLUSION

Tourism is an important sector in Croatian economy. It is considered as significant income and employment generator. Tourism generates almost a fifth of GDP of Croatia. There are many misconceptions about the impact that it has on the economy as a hole. Croatia, as a Tourism oriented economy lacks empirical research on the subject. The research presented in this paper is an attempt to overcome this gap. There are several ways to empirical analysis of the determinants of GDP growth of a certain economy. Among these, growth regressions are considered as a useful tool to approach the problem. In this paper regression analysis was applied to analyze the impact of the tourism sector on the Croatian GDP. Multiple linear regression model was developed, with GDP as dependent variable and gross capital formation, gross value added and dummy variable representing the recession years as independent variables. Results of the regression analysis indicate that designed multiple linear regression model is appropriate for analyzing and forecasting GDP in Croatia. The estimated model shows no autocorrelation of residuals and also no multicolinearity between predictors. The residuals are normally distributed. All independent variables included in the model are statistically significant. Coefficient of determination has the estimated value of 0.992 meaning that 99.2 % variations of GDP are explained by the changes in predictors. The proposed model could be useful for economic policy makers for promotion and strengthening of tourism potential in Croatia. In addition to the model developed in this paper the authors suggest the development of more complex models that would help gain deeper understanding and insight into the role of Tourism in fostering economic growth of Croatia.

**LITERATURE:**

1. Baldigara, T. and Koić, M. (2015). Modelling the international tourism demand in Croatia using a polynomial regression analysis. *Turističko poslovanje*, 15, (p. 29-38).
2. Chou, C-E. and Huang, Y-C. (2011). *Accurately Estimate Tourism Impacts: Tourism Satellite Account and Input-Output Analysis*. Travel and Tourism Research Association: Advancing Tourism Research Globally, 36.
3. Figini, P. (2019). The economic impact of tourism in the European *Union*. Final report, CAST-Centre for Advanced Studies in Tourism.
4. Gatti, P. (2013). Tourism, welfare and income distribution: The case of Croatia. *Tourism*, 61(1), (p. 53-71).
5. Goeldner, C. R. and Ritchie, J. R. B. (2009). *Tourism: Principles, Practices, Philosophies*. John Wiley & Sons, Inc., Hoboken, New Jersey.
6. Gül, H. (2015). Effects of foreign demand increase in the tourism industry: a CGE approach to Turkey. *An International Journal of Tourism and Hospitality Research*, 26, (p. 598-611).
7. Ivandić, N. and Šutalo, I. (2018). The contribution of tourism to the Croatian economy: an IO apparoach. E*konomski pregled*, 69(1), (p. 20-42).
8. Jelušić, A. (2017). Modelling tourist consumption to achieve economic growth and external balance: case of Croatia. *Tourism and Hospitality Management*, 23(1), (p. 87-104).
9. Kozhokulov et al. (2019). Assessment of Tourism Impact on the Socio-Economic Spheres of the Issyk-Kul Region (Kyrgyzstan). *Sustainability*, 11(14), 3886.
10. Krstinić Nižić, M. and Šverko Grdić, Z. (2018). Winter Tourism in Croatia: Is It Possible? *Sustainability*, 10, 3563.
11. Kuang, T. and Tsai, Y-F. (2016). *The effect of tourism growth on economic growth: A quantile regression analysis.* Travel and Tourism Research Association: Advancing Tourism Research Globally, 37.
12. Kumar, J. and Hussain, K. (2014), Evaluating tourism's economic effects: Comparison of different approaches. *Procedia - Social and Behavioral Sciences*, 144, (p. 360-365).
13. Manzoor et al. (2019). The Contribution of Sustainable Tourism to Economic Growth and Employment in Pakistan. *Int J Environ Res Public Healt*, 16(19), 3785.
14. Meng, S. (2014). The role of inbound tourism in the singaporean economy: a computable general equilibrium (cge) assessment. *Journal of Travel & Tourism Marketing*, 31, (p. 1071-1089).
15. Mikulić, D., Keček, D. and Žajdela Hrustek, N. (2017). Overall contribution of the foreign tourist demand on Croatian economy. *ToSEE – Tourism in Southern and Eastern Europe*, 4, (p. 393-407).
16. Munjal, P. (2013). Measuring the Economic Impact of the Tourism Industry in India Using the Tourism Satellite Account and Input-Output Analysis. *Tourism Economics*, 19(6), (p. 1345-1359).
17. Orsini, K. and Ostojić, V. (2018). *Croatia's Tourism Industry: Beyond the Sun and Sea*. European Economy Economic Brief, 036. Luxembourg: Publications Office of the European Union.
18. Pavlić, I., Svilokos, T. and Suman Tolić, M. (2014). Tourism, Real Effective Exchange Rate and Economic Growth: Empirical Evidence for Croatia. *International Journal of Tourism Research*, 17, (p. 282-291).
19. Popescu, A. and Plesoianu, D. (2017). An Econometric Analysis between Tourism Income and Romania's GDP. In: *30th IBIMA Conference*, Madrid, Spain.
20. Pratt, S. (2013). *Estimating Tourism Impacts using CGE Models: A Historical Review and Future Developments.* Handbook of Tourism Economics: Analysis, new applications and case studies. World Scientific Pub Co Inc.

21. Ren et al. (2019). The Impact of Tourism Quality on Economic Development and Environment: Evidence from Mediterranean Countries. *Sustainability*, 11, 2296.
22. Šverko Grdić, Z. and Krstinić Nižić, M. (2017). Development of tourist demand in correlation with climate change in the Rrepublic of Croatia. *Ekonomski pregled*, 67(1), (p. 27-43).
23. United Nations World Tourism Organization. (2008). GLOSSARY OF TOURISM TERMS. Retrieved 20.01.2020. from https://www.unwto.org/glossary-tourism-terms.
24. Croatian Bureau of Statistics (2019). First Release: Annual Gross Domestic Product, 1995 – 2017, Revised Data. Retrieved 20.01.2020. from www.dzs.hr

# MARITIME TOURISM IN THE TIME OF COVID-19 PANDEMIC IN THE BALTIC SEA REGION – CHALLENGES FOR FERRY AND CRUISE OPERATORS

**Ilona Urbanyi-Popiolek**
*Gdynia Maritime University, Poland*
*i.urbanyi@wpit.umg.edu.pl*

***ABSTRACT***

*Maritime tourism has been growing in Baltic Sea Region for last decades. The sector comprises two segments, ferry shipping and cruise operation. In 2019 more than 49 million passengers were transported by ferries in prime international and domestic services. Cruise sector reported 5,90 million passengers visited Baltic ports on board cruise vessels. In previous decades changes in external factors determining operations in maritime tourism were to a certain extent predictable. COVID-19 epidemic started unexpectedly and created new challenges for companies involved in both sectors. The latter factor suddenly hit the cruise and ferry businesses. The purpose of the paper is to research into the operations in the time of pandemic and evaluate the activities of the operators to reduce the negative effects in turnover decline. The paper begins with introduction (Section 1) and theoretical background of maritime tourism (Section 2). The main body comprises presentation of the Baltic ferry and cruise operations, as well as discussed the management of operations in time of pandemic. The methods used in this study are the analyses of literature, analyses of original data and in-depth interviews.*

***Keywords:*** *Maritime tourism, Baltic Sea Region, Management, Ferry and cruise business, Pandemia, COVID-19*

## 1. INTRODUCTION

Maritime tourism includes sea voyages by various kinds of ships to tourist destinations. The main sectors are cruise and ferry shipping. The cruise industry has shown dynamic growth for last twenty five years. Total demand for cruising grew from 4.5 million passengers in 1995 to 9.91 million in 2001 (Miotke-Dzięgiel, 2002) and more than doubled in next decade to 20,6 million in 2011 (The Cruise Industry, 2012). The global number of cruise passengers in 2019 increased to 30 million (Shippax Market 20, 2020). The main regions of cruising are: the North America with sub-markets: the Caribbean, the Bahamas, the west and east coasts of North America, the European market with Mediterranean and Baltic prime submarkets, the Asian and Pacific markets. The Caribbean is the biggest destination with the market share of about 35,4% of cruise travellers in 2019. Due to climate and tourist conditions the region is a year round operation. The second leading region is Europe. The share of Mediterranean amounted to 15,8 % and the region has become a year round destination due to climate and culture. The other sub market where cruising is developed is Northern Europe with 11,3 % share in 2019 (Shippax Market 20, 2020). The second segment of maritime tourism concerns ferry industry. The distinctive feature of this type of shipping is transport of passengers and cargo by one ship using ro-ro technology for loading and discharging wheeled units and private cars. In 2019 around 2226,3 million passengers were carried by ferries all over the world. Main regions of ferry operation are Mediterranean with 486 million passengers in 2019, North Europe - 376 million passengers, America – 305 million and South East Asia – 992 million (Shippax Market 20, 2020). It should be emphasized that in such destinations as America, Asia or Pacific ferries are used as means of transport only. Maritime tourism based on ferry shipping is strongly developed in Europe, particularly in Baltic Sea Region, North Sea, and English Channel as well as in Mediterranean.

In last two decades the maritime travelling has become the fastest growing sector of tourism industry. Key determinats traffic of developments result from economic, social and political factors. Economic factors are connected with incomes. Demand for tourists travel is generated by relatively high earnings. In general an economic activity and growing incomes create the effective demand. Social factors arise from the increase in free time, fatigue of city life and work, longer life expectancy. Cruising and sea voyages are perceived as a way for spending time and exploration of interesting places. Stabilization of the political situation in cruise and ferry destinations is another opportunity for maritime tourism (Urbanyi-Popiołek, 2014).

## 2. THEORETICAL BACKGROUND OF MARITIME TOURISM

Cruising is a shipping dedicated for pleasure and exploration voyages. The cruise ship can be defined as a vessel regularly used for cruise activities and the trip lasts longer than one day. Furthermore the ship is not used in ordinary liner shipping for transport passengers between two or more ports ([Market:12], 2012). The organization Cruise Europe defines cruising as "a voyage of at least 60 hours by a seagoing vessel, mainly for pleasure. No cargo/rolling stock will be transported but only passengers with tickets that should include accommodation and all meals. The cruise voyage must include at least two visiting ports apart from the starting and ending port" (Kizielewicz, 2013). Cruise shipping is recognized as one of the prime leisure segments in contemporary tourist products. Kizielewicz states that trips on cruise ships are considered to be the crown segment of the maritime tourism market (Kizielewicz, 2013). Stapford emphasises the difference between cruise ships and other merchant ships. It is the only segment that "deals directly with consumers and its competitors are not other shipping companies but other holiday providers (Stapford, 2009). The cruise industry is one of the fastest growing maritime businesses (Esteve-Peres & Garcia-Sanchez, 2017) as well as tourist segments. The advantage of cruise tourism is characterised by mass-industrialisation in leisure activities (Dragovic, Skuric & Kofjac, 2014). Most of the studies concerning cruise industry concentrate either on factors attracting cruise passengers from the perspective of ports of calls or on studying geographical destinations and sub-markets (e.g. Castillo-Manzano, Fageda & Gonzalez-Laxe, 2014, Studzieniecki & Wanagos, 2017, Brida, Pulina, & Riano, 2013, Sun, Fenga & Gauri, 2014, Dragovic, Skuric & Kofjac, 2014). Some papers investigate the cooperation and integration of cruise ports (Wang, Pallis & Notteboom, 2015, Kizielewicz, 2016) as well as integration in the cruise supply chain (Wang & Zeng, 2017). The cruise shipping is considered as a unique tourist product as it comprises three basic elements including transport, onboard services and leisure as well as land exploration of attractive tourist places (Esteve-Perez & Garcia Sanches, 2015). Ferry operation is defined as a type of liner shipping where passengers and cargo form one market. Ferries ply the regular routes, usually between two or three ports according to schedules. (Urbanyi -Popiołek, 2009). Kotowska states that the ferries transport two segments passengers and cargo (Kotowska, 2014), while Stapford points out that ferries transport people, goods and vehicles over short distances by sea (Stapford, 2009). Passenger traffic is usually analysed in terms of tourism functions of ferry shipping (Wild & Dearing, 2000, Kizielewicz & Urbanyi-Popiołek, 2015). Pantouvakis states that ferry passengers form satisfaction perceptions on the basis of their evaluation of four primary dimensions: service quality, price, convenience and availability (Pantouvakis, 2007). Detailed research on market segmentation has been carried out by Kizielewicz and et al. The authors analysed the generic structure of the tourist demand for ferry travel in terms of demographic variables and purchasing behaviour of passengers on-board ferries (Kizielewicz and et al., 2017). The passenger demand is created by people travelling in different purposes, e.g. visit chosen destination in connection with various needs, package trips, shopping, business.

The ferry travellers are divided into categories (Urbanyi-Popiołek, 2018):

- liner passengers – travellers taking a trip in various reasons (visit an interesting destination, participation in culture or sport event, visit relatives etc.), ferry crossing is only a part of whole trip,
- cruise passengers – travellers participating in package trips of diverse nature, e.g. round trips for pleasure, trips with short stay in port of destination etc.,
- conference passengers – participants in conferences and seminars organized on-board within liner trips,
- shopping passengers – people who travel to purchase commodities on-board or in port of destination,
- business passengers – passengers travelling in connection with their professional activities, in this category lorry drivers are included.

The presented selection is based on the prime factor generating the demand. In practice, assigning the travellers to given category is not clear because passengers travelling e.g. as conference participants also do some shopping and enjoy entertainment. The assignment of a traveller to a given segment results from the main transport need (Urbanyi-Popiołek, 2018)
The presented marine tourism segments differ in terms of organization of trips and demand-driven factors. In cruise shipping the aims of trips are leisure, exploration and on-board entertainment. The ferry passengers apart from former, travel for more wider purposes. Ferries service fixed links between two or three ports of calls and ply the routes according to schedules and mini cruises are provided within scheduled services whereas cruise shipping comprises voyages including several destinations and ports, trips last - up to one, two weeks or even longer. The other feature is origin of passengers. Ferry business is based primarily on Baltic Sea Region residents while cruise shipping passengers are mainly outside quests with origin from west and partly south European countries and Americans, Canadians and travellers from Asia, mainly from China and Japan.

## 3. METHODOLOGY

The paper focuses on the Baltic Sea maritime tourism. Ferry industry as well as cruise shipping are important sectors of international tourism in the region. Baltic cruises are distinguished from other markets by the aim of trips, attractiveness of the itineraries and shore programmes. Moreover both types of cruises differ in terms of voyage organisation, programmes, as well as structure and determinants creating the tourism demand. The study focuses on the impact of COVID-19 on cruise business in Baltic Sea Region and concerns the activities of ferry and cruise operators in the time of pandemic. The purpose of the paper is to analyse the challenges faced by the ferry and cruise operators and what operational solutions were implemented by them to minimize the negative effects after stopping the passenger traffic. The cargo turover of ferry shipping is beyond the scope of the study. The research questions are formulated as follows:

- How did the pandemic affect the activity of ferry and cruise industry in the Baltic Sea Region?
- What actions were undertaken by operators to reduce the negative effects of COVID-19 pandemic?

The research methods were the analysis of literature concerning ferry and cruise industry, analysis of statistics and interviews. The data were collected primarily from the ShipPax Information, known publisher and provider of consulting services for ferry and cruise industry, as well as from interim half year reports of selected operators and cruise organisations. In-depth interviews were conducted with chosen operators` representatives on -line.

## 4. FERRY AND CRUISE INDUSTRY IN THE BALTIC SEA

### 4.1. Ferry activities in the Baltic Sea Region

Baltic Sea constitutes one of leading ferry market. In 2019 275,054 million passengers and 105,6 million private cars were transported in the region. The numbers include the whole turnover with short routes between islands and mainland. On international and main domestic Danish and Swedish ferry lines (e.g. Bornholm and Gotland) important for tourism, around 49 million passengers and 9 million cars were carried (ShippaxMarket 20, 2020). The activity of the business is all year round. Ferry industry in the Baltic Sea concentrates in three prime ferry areas (Urbanyi-Popiołek, 2018, ShippaxMarket 20, 2020):

- West Baltic - includes routes from Denmark to Sweden, Norway and Germany, services from Sweden to Norway and Germany and Germany – Norway connection; the west market accounts for 50% in passenger and 62% in freight traffic,
- East Baltic - covers services from Sweden to Finland, Estonia and Latvia, from Estonia to Finland and Russia; the east market accounts to 44% of passenger and about 19% of freight turnover,
- South Baltic/ Central Baltic - comprises lines between Sweden and Poland, as well as from Sweden to Lithuania and the connections between Germany and Lithuania, Latvia and Finland; the central market constitutes the 6% of passenger transport and about 19% of freight.

These markets differ in terms of the demand for transport services and the functions performed by the ferry lines. In west and south Baltic cargo turnover dominates. Both markets accounts for 81% of ferry loads in region. Most services are cargo oriented routes. An exceptions are lines from Norway to Sweden Denmark and Germany where passenger traffic dominates due to tax-free sales and cruise trips offers. The Eastern Baltic Sea is characterized by the highest concentration of ferry tourism. The situation results from several reasons. For many decades the Swedes and Finns have undertaken ferry trips due to the possibility of making purchases in the duty-free ferry shops. Tax-free shopping is still preserved in this area for lines connecting Sweden with Finland and Estonia and calling at ports in the Aland Islands. Moreover, the purpose of the journey undertaken by the Scandinavians is the journey itself and the attractions on the ferry as well as shopping, not only in ferry shops, but also in Estonia and Latvia due to lower prices. The ferry conference market is highly developed in Nordic countries due to on-board attractions. Similar demand is observed on services from Norway to European Union countries, where duty - free sales prevail in motivations of trips. Baltic ferry business is concentrated. According to Shippax data, in January 2020, 16 major carriers operated on the main international and domestic markets. In terms of transport capacity and market share in passenger sector the leaders are Tallink Group, Viking Line, Color Line, Stena Line, DFDS Seaways and Fjord Line. The network of ferry connections included 60 services with 116 active ferries of different types - ro-pax, cruise-roro and high-speed.

### 4.2. Cruise activities in the Baltic Sea Region

The number of cruise passengers visiting the BSR amounted to 5,90 million in 2019 and the total number increased by 9,1% y/y, while the number of calls amounted to 2 768 and grew by 3%. This is a highest number ever achieved (Cruise Baltic, 2020). Baltic cruise market is seasonal. Due to climate the cruise operations in Baltic last about five months – from May to September. However during three past years the increase in the season has been visible. Moreover some cruises are offered in off-season time, e.g. occasional trips in Christmas and New Year time. Prime destinations are capitals such as Copenhagen, Stockholm, Helsinki, Tallinn as well as attractive tourists resorts like St. Petersburg, Gdansk, Gdynia, Rostock or smaller destinations – Turku, Visby, Kalmar, Wismar or Roenne.

Most Baltic ports are typical ports of calls, where ships visit the chosen destinations during cruises, e.g. St. Petersburg, Klaipeda, Riga, Gdansk, Gdynia, Mariehamn, Visby, Arendal. The others, like Copenhagen, Kiel, Rostock and partly Helsinki and Stockholm – apart from being ports of call – are also turnaround ports, where passengers embark and disembark. Most Baltic cruises last 7 - 10 days and include 5-6 ports of call. According to Cruise Baltic, Baltic cruise ports can be classified by the number of calls as small, medium, large and extra-large. The latter are Copenhagen with 348 calls and 940 thousand passengers, St. Petersburg – 341 calls and 649 thousand visitors, Stockholm – 279 calls and 619 thousand passengers, Helsinki – 303 and 520 thousand travellers and Tallinn – 338 calls and 635 thousand passengers (Cruise Baltic, 2020). The majority of carriers operated medium-sized ships up to 1000-2500 passengers which is typical for Baltic cruises. The next segments comprises ships carrying over 2000 visitors and less than 1000 respectively. However during last 5 years the growing number of large cruise ships as well as small cruisers is observed in Baltic cruise operations and the share of former segment dropped to 40% last year. The prime cruise operators are Aida Cruises, Costa Crociere, MSC Crociere, Princess Cruices, as well as P&O Cruices, Tui Cruises, Norwegian Cruise Line among others. Each company operates in season from one to four ships, offering various cruises in term of destinations duration, port stay and programme. In off-Baltic season, the ships operate in dfferent areas, particularly in Caribbean and Mediterranean.

## 5. MANAGEMENT OF CRUISE BUSSINES OPERATION IN COVID 19 TIME

### 5.1. Ferry sector

The COVID-19 pandemic has caused great disruption to maritime tourism in the Baltic Sea Region. Both cruise and ferry businesses were affected by the new situation. However the former was hit more strongly as ferry ships transport cargo as well.

In the beginning of March 2020 all countries in Baltic Sea Region had taken far-reaching measures which had directly influenced the maritime tourism. Nearly all Baltic states closed the borders and introduced entry restrictions. Furthermore the countries were placed in lockdown. The new situation has strongly affected the sector, however the negative impact on both segments differs in longer time. The ferry companies were forced to undertake actions to minimalize the effects of coronavirus crisis. The measures were as follows:

- temporarily suspension of services, laid – up of ferries and reduction sailings,
- restart of services in the bigging of June and operate according to pandemic requirements,
- seasonal destinations introduced by some companies,
- focus on cargo segment,
- reduction of the employment.

In first months of pandemic, the passenger traffic was stopped, only residents and persons going in business purposes were able to travel. They use ferries still active on some routes as air traffic was closed. All mini trips and mini holidays were cancelled. The majority of passenger – oriented ferry links were suspended and the cruise ferries were laid-up. Ferry links from Sweden to Finland, Estonia and Latvia were ceased, as these countries closed the borders and introduced restrictions in travelling. Helsinki – Stockholm operated both by Tallink – Silja and Viking Line, as well as Tallinn – Stockholm and Riga – Stockholm operated by Tallink are the examples. Seven of the thirteen Tallink ships were temporarily sidelined in Tallinn, Helsinki, Stockholm and Riga. Likewise four Viking Line ferries from seven were laid up from mid-March to early June. The rest of fleet operated as cargo ships. Alike Norway was one of the first countries in the region to close its borders. As a result the international services operated by Color Line, Fiord Line, DFDS Seaways and Stena Line to Sweden, Denmark and Germany were temporarily discontinued, e.g. Sandefjord – Stromstad, Oslo – Kiel, Oslo – Copenhagen. All cruise ferries were sidelined in Norwegian and Danish ferry terminals.

Moreover a number of services were ceased permanently, e.g. passenger link between Norwegian capitol Oslo and Frederikshaven in Denmark as well as service between Trelleborg in Sweden and Sassnitz in Germany. From the mid-June the Baltic states began to lift the travel restrictions, the passenger- oriented ferry services were gradually restarted. Among others were Oslo – Kiel operated by Color Line or Copenhagen – Oslo serviced by DFDS Seaways. Moreover DFDS included call to Frederikshaven on the latter route. The Sandeford – Stromstad route remained suspended as the latter Sweden port was located in red zone. Tallink made the largest reorganisation of its network, as well as offered new summer cruise destinations. The first was the Helsinki – Riga route operated every second day by cruise ro-pax Silja Serenade, normally plying Helsinki – Stockholm service. The Stockholm – Visby route was the other new summer destination. The cruises we rounded via Marienhamn, which enables tax – free sales on board and were dedicated to Swedes. The other ferry cruises were offered on Tallinn – Helsinki - Marienhamn route and Tallinn – Turku with short call at Langnas at Aland Island for tax – free sales. Similar network for summer season offered Viking Line. The iconic Helsinki – Stockholm link was suspended during summer season due to further travel restrictions and Stockholm still being the red zone. According to the rules, travel of Swedish citizens to Finland has been restricted. In addition to work-related or other essential travel, entry was allowed e.g. for persons who own a property or residence, however persons arriving from Sweden were encouraged to spend 14 days in conditions corresponding to quarantine. In autumn seasonal routes were ceased. The increasing number of COVID-19 cases across Europe resulted in decrease of demand for trips again. The governments recommended people to avoid any unnecessary travel and imposed new travel restrictions. The falling passenger numbers also results from psychological determinants – passengers fear virus infection. As a consequence the companies again reduced number of sailings or discontinued the tours and sidelined some ships, e.g. Viking Line has decided to cancel all 20-hour cruises with the Viking Cinderella from 16 November 2020 until 3 February 2021. Moreover Tallink will suspend the operation on the Tallinn-Stockholm-Riga-Stockholm-Tallinn loop and the Tallinn-Helsinki route from 1 January 2021. The company's decision comes as the operation of the vessels between Estonia, Sweden and Latvia has become financially unfeasible in the current pandemic situation and due to tightening travel restrictions once again in Estonia, Finland, Sweden and Latvia, making passenger numbers plummet.

*Table 1: Ferry turnover of selected operators in 2019 – 2020*

| Operator | H1 2020 | H1 2019 | Q3 2020 | Q3 2019 |
|---|---|---|---|---|
| Tallink Group | 1 988 212 | 4 507 615 | 1 314 301 | 2 974 790 |
| Color Line * | 621 781 | 1 634 408 | | |
| DFDS * | 342 607 | 428 255 | | |
| Viking Line | 998 483 | 2 772 427 | 643 369 | 2 125 254 |

*data for Q3 not reported

*(Source: own elaboration based on: DFDS Q2 2020 Interim Report – DFDS; Interim Report Q2 2020, Tallink Grupp AS; Interim Report Q3 2020, Tallink Grupp AS; Half-year Financial Report Viking Line, 2020; Viking Line Business Review January–September 2020; Color Line Interim Report 2020*)

The decrease in traffic resulted in decline in revenues. Tallink reported 3.4% fall in incomes in the Q1 from route operation and drop by 75% in Q2 compared to the same periods in 2019. The biggest contributors to the overall revenue fall were the 82% drop in shop and restaurant sales, 81% drop in tickets sales (Q2 Tallink, 2020). During the Q3, the group's ticket revenue decreased by 58.6%, onboard sales by 50.6%, cargo revenue by 21.5% and hotel accommodation revenue by 73.2% compared to the same period in 2019 (Q3 Tallink, 2020).

Viking Line results show similar decrease. Passenger-related revenue decreased respectively by 89% during the second quarter and by 67% in third compared with 2019. (Viking Line, 2020). The other passenger - oriented carries were affected alike. The COVID-19 pandemic affected the employment in ferry industry. Some operators were forced to reduce the staff, e.g. Norwegian Color Line laid off temporarily 2000 people with an economic stimulus package to secure salaries while Tallink reduced workload and remuneration of Estonian and Latvian personnel to 70% for two months, Sweden staff to 40-50%, and Finish were on unpaid leave, except the staff on duty on vessels. The reduction of the employment on board and ashore made it possible to cut costs in the most affected weeks from mid-March till June. It is estimated that the crew costs of cruise ferries have a 20-25% share in operating costs of the vessels. The actions resulted in average 15 % decline of operating costs, depending of the carrier. Lower operating cost savings come from the need to maintain the skeleton crew on sidelined ferries.

### 5.2. Cruise sector

Cruise shipping has been affected more deeply than ferry business. This sector in early spring is usually non-active in the Baltic Sea and the ships are employed in other destinations. The restrictions in travelling, sealed borders meant that the cruise carriers did not start operating in the region. As was stated, many Baltic countries have introduced quarantine. Consequently, the entry of cruise ships into ports such as St. Petersburg, Tallinn, Helsinki, Stockholm or Copenhagen became impossible. Americans, Japanese and Chinese taking part in sea voyages in the Baltic come to Europe as part of fly cruises. Air traffic stopped in spring and uncertain perspectives in pandemic situation resulted in booking cancellation. Likewise, Europeans cancelled their cruises after cases of the COVID-19 disease were reported on several cruise vessels. In late summer a few lines restarted the operation. Only three operators were active in Baltic region. All of them are German based and offered cruises only for Europeans. Aida Cruises made several 4 days trips with three ships ( AIDAperla, AIDAmar and AIDAblu) dedicated for Germans only without disembarking. The cruises took place with an adjusted passenger capacity and without calling at other ports. Another was Hapag Lloyd brand with two ships (Europa and Europa2) visiting German, Danish, Swedish and Polish ports. The passenger capacity are 400 of the former vessel and 516 of the latter. The pandemic requirements lower the number of travellers to 60 and 80 respectively. The third one was Mein Schiff operated two ships offering " blue cruises " without shore excursions. The other ships were laid up for whole season.

## 6. CONCLUSION

The COVID-19 pandemic deeply affected the maritime tourism in the Baltic Sea Region. The sector was strongly hit by the crisis resulting from the travelling restrictions introduced by the states. Both sectors were affected, however the cruise industry more deeply. The carriers has undertaken several activities to adapt to the new market conditions. Ferry operators oriented on passenger transport and on-board services laid up the vessels and temporarily suspended the operation. Only ro-paxes with greater cargo capacity were in service and operate as cargo ships. In the late spring some services were restarted and in summer months new destinations were offered to safe the peak season and improve the incomes. The seasonal destinations were suspended in September. Moreover the ferry business was supported by state aid. The ferry connections between Finland and Sweden, as well as between Finland and Estonia are regarded as prime elements in supply chains of essential products, as food, medicines etc. and ferry companies were granted by the states to maintain a number of ships in service to carry freight. Freight oriented services lost passenger incomes however the cargo transportation segment was affected less. Cruise sector discontinue operation and only a few ships have made voyages in the Baltic Sea under the sanitary regime during season.

Suspension of cruise activity concern all destination in the world according to travel restriction, closed borders and ceased air flights making impossible tourist to get to embarking ports. The trips were cancelled and ships sidelines, some of vessels were sent was for demolition. The COVID-19 crisis has damaged the maritime tourism, particularly cruise industry. It is impossible to predict further activity in both sectors. Global economy is expected to go into recession. This will definitely weaken the demand for trips. Maritime tourism may experience a retreat as smaller number of people will travel, particularly on large cruise ships. For both segment of maritime tourism particularly for cruise lines, customer behaviour as well as economic activity are the key elements for the companies to operate in the post COVID-19 time.

**LITERATURE:**

1. Brida, J. G., Pulina, M., Riaño, E., Aguirre, S. (2013), Cruise passengers in a homeport: A market analysis. In *Tourism Geographies*., vol.15, no. 1, pp. 68-87.
2. Castillo-Monzano, J.I., Fageda, X., Gonzales, F. (2014). An analysys of the determinants of cruise traffic : An empirical application to the Spanish port system. In *Transportation Research Part E.* vol. 66, pp.115-125.
3. *Color Line Interim Report 2020*. (2020). Oslo: Color Line A.S. pdf. Retrieved 9.10.2020 from https://www.colorline.no/polopoly.
4. *Cruise Baltic Market Review 2020*. (2020). Copenhagen: Cruise Baltic. Retrieved 10.10.2020 from https://www.cruisebaltic.com/modularpages/reports.
5. Dragovic, B., Skuric, M., Kofjac D. (2014). A proposed simulation –based operational policy for cruise ships in the port of Kotor. In *Maritime Policy & Management*. vol. 41, no. 6, pp.560.
6. Esteve-Perez, J., Garcia-Sanchez A. (2015). Cruise market: Stakeholders and the role of ports and tourists hinterland. In *Maritime Economis & Logistics*. vol. 17, no. 3, pp. 371-388.
7. Esteve-Perez, J., Garcia-Sanchez, A. (2017). Characteristics and consequences of the cruise traffic seasonality on ports: the Spanish Mediterranean case. In *Maritime Policy & Management.* vol. 44. no. 3-4., p.358-372.
8. *DFDS Q2 2020 Interim Report*. (2020)., Copenhagen: DFDS Seaways. pdf. Retrieved 10.9.2020 from https://www.dfds.com/en/about.
9. *Interim Report Q2 2020.* (2020). Tallinn: Tallink Group AS. Pdf. Retrieved 7.08.2020 from https://www.tallink.com/investors/for-investors.
10. *Interim Report Q3 2020.* (2020). Tallinn: Tallink Group AS. Pdf. Retrieved 20.11.2020 from https://www.tallink.com/investors/for-investors.
11. Half-year Financial Report Viking Line. (2020). Marienhamn: Viking Line. pdf. Retrieved 10.11.2020 from https://www.vikingline.com/investors/
12. Kizielewicz, J.(2016). *Regional Experiences in the management of cruise ships ports in costal destinations.* In Proceedings of the 12thEuropean Conference on management, leadership and governance ( ECMLG 2016), Book Series: Proceedings of the Conference on European Management Leadership and Governance [online]. Romania, pp. 125-132. Retrieved 10.11.2020 from https://azdoc.site/proceedings-of-the-12-th-european-conference-on-management-l.html.
13. Kizielewicz, J. (2013). Cruise ship tourism – a case study Poland. In *Scientific Journals Maritime University of Szczecin*. vol.35, no.107, pp. 65-75.
14. Kizielewicz, J., Urbanyi-Popiołek, I. (2015). *Rynek usług morskiej żeglugi wycieczkowej*. Warszawa: PWN. (in Polish).

15. Kizielewicz, J., Haahti, A., Luković. T., Gracan. D. (2017). The segmentation of the demand for ferry travel – a case study of Stena Line. In *Economic Research- Ekonomska Istrazivanja*, vo.30, no 1. pp. 1003–1020. Retrieved 10.09.2020 from https://www.researchgate.net/
16. Kotowska, I. (2014). *Żegluga morska bliskiego zasięgu w świetle idei zrównoważonego rozwoju transportu*. Szczecin: WNAM. (in Polish).
17. *[Market:12] Statistics Market report & outlook for ferry, cruise, ro-ro and hi-speed shipping*. (2012). Halmstad: Shippax Information.
18. Miotke-Dzięgiel, J. (2002). *Maritime Tourism*. Gdańsk: WUG.(in Polish).
19. Pantouvakis, A.M. (2007). Who pays the ferryman? An analysis of the ferry passenger's selection dilemma. In Maritime Policy & Management. vol.34. no.6. pp. 591-612.
20. *Shippax Market 20. The 2019 Ferry, Cruise, Ro-Ro and High-Speed Year in Review with Analyses and Statistics.* (2020). Halmstad: Shippax.
21. Stapford M. (2009). *Maritime economics*. London-New York: Routledge Taylor & Francis Group.
22. Studzieniecki, T., Wanagos, M. (2017). *The tourism attractiveness of the Baltic Sea Region as a destination for Polish tourists*. In Proceedings of the 20th International Colloquium on Regional Sciences 2017. Kurdejov: Masaryk University, Faculty of Economics and Administration, 2017, pp. 640-645.
23. Sun, X., Fenga, X., Gauri, D. K. (2014). The cruise industry in China: Efforts, progress and challenges. In *International Journal of Hospitality Management*. vol. 42, pp. 71-84.
24. Urbanyi-Popiołek, I. (2018). *Challenges for Polish ferry market development in Baltic Sea Region*. SHS Web of Conferences 58, 01030. GLOBMAR 2018. Retrieved 12.09.2020 from https://www.researchgate.net/.
25. Urbanyi-Popiołek I. (2009). *Ferry shipping in motorways of the sea concept – The Baltic Sea case.* In Maritime Transport IV, Ricardo Rodriguez-Martos Dauer, Ricard Mari Sagarra, Francese Xavier Martinem de Osés, Universitat Politecnica de Catalunya, Barcelona pp. 657-672.
26. Urbanyi-Popiołek I. (2014). *Cruise industry in the City of Gdynia, the implications for sustainable logistic services and spatial development*. 1st International Conference Green Cities 2014 – Green Logistics for Greener Cities. In Procedia Social and Behavioral Science. vol. 151. pp. 342 – 350
27. Viking Line Business Review January–September 2020 (2020), Marienhamn, Viking Line. pdf. Retrieved 15.11.2020 from https://www.vikingline.com/investors/.
28. Wang, G., Pallis, A., Notteboom, T. (2015). *Cooperation and vertical integration in cruise ports.* In Paper presented at the International Association of Maritime Economists Annual Conference (IAME). Kuala Lumpur, 2015. [cit.2018-01-12]. Retrieved 11.01.2020 from https://www.mar-economists.org/.
29. Wang, G., Zeng, Q. ( 2017). *A Vertical Integration Pricing Model on a Cruise Supply Chain.* In Paper presented at the International Association of Maritime Economists Annual Conference (IAME). Kyoto, June 2017. . Retrieved 12.09.2020 from https://www.mar-economists.org/.
30. Wild, P., Dearing. J. (2000*)* Development of and prospects for cruising in Europe, In *Maritime Policy & Management*. vol. 27. no. 4. pp. 315-333.
31. *The cruise industry, contribution of cruise tourism to the economies of Europe*. (2012). Copenhagen: Cruise Council.

# THE ROLE OF DIGITALIZATION FOR SMART PORT CONCEPT

**Adrianna Karas**
*Gdynia Maritime University, Poland*
*a.karas@wpit.umg.edu.pl*

***ABSTRACT***

*The transformation of modern seaports includes many factors, starting with those occurring in the economy, state policy, the environment of seaports, international supply chains, but also a number of stimulants, i.e. innovation, new technologies, sustainable development or competitiveness. The digital transformation in recent years has entered the port area with impetus and will doubtless determine the quality of port service in the near future. At the same time, diversified port environments such as port authorities, terminals, shipping lines, transport companies, logistics companies and other service providers must treat the implementation of technology as a long-term process to develop. The comprehensive range of technologies leaves great flexibility for improvements, but significant changes can only come about with collaboration and integration between ports and other actors in the supply chain. The aim of the article is to show that smart ports are another inevitable step to changes in the broadly understood functioning of ports, and the concept of smart ports is an irreversible trend that sets the direction of development of modern seaports. This article provides an overview of the latest digital technologies taking shape in some of the most modern seaports such as the Port of Hamburg and the Port of Rotterdam. Additionally, the article aims to analyze decision-making strategies to propel digital transformation in seaports.*

***Keywords:*** *digitization, digital transformation, seaports, smart ports*

## 1. INTRODUCTION

The world is currently undergoing a digital transformation and the ongoing digitization affects all areas of social and economic life. Although societies and economies have undergone many different changes over the years. For many decades, the development of technology has been boldly entering new areas including port areas. In recent years, the possibility of further development of seaports and shipping has been determined by modern infrastructure, automatization, access from the sea and land, environmental protection and digitalization. Digitalization has great potential to increase the efficiency and flexibility of maritime transport chains. In this way, it opens up an opportunity to meet contemporary challenges for ports. Thanks to digital solutions, it is possible to increase the efficiency of operation of the port's land-sea supply chains, but also to simplify complex processes. Digital networking of seaports brings additional opportunities to improve efficiency and security, and through the targeted exchange of information and data ports can develop and create new business models. Modern ports are being transformed into smart ports, which is synonymous with creating solutions corresponding to current and future challenges. Intelligent solutions require integration on many levels, starting with the social, economic and technological dimensions. The existing solutions in the area of ports focus on digitalization, which are an essential element for ports to aspire to the implementation of the Smart Port concept. Modern seaports are focused on the integration of system solutions. Digital platforms, applications are starting to play a major role in many ports ranging from management to facilitate cargo operations including the integration of port entities (Heilig et al., 2017, p. 1341). However, the success of digital transformation lies not only in the use of advanced technologies and methods, but above all in the adaptation of organizational aspects, according to the idea “digital technology is the means to an end, it is not the end”.

## 2. MODELS OF DIGITAL TRANSFORMATION

Today we live in a world of ubiquitous digital platforms connected by networks to cloud computing, big data, sensors and intelligent devices. We are a part of the world connected to a lot of data, information and knowledge. This connection of digital intensity and the abundance of people and data has been named "Internet of Things". Technological innovations that have been taking shape over the past decades have come along with the development of new systems, applications, tools, methods and they support business in various ways. On the one hand, enterprises face a real challenge, as they are now dealing with an increasing amount of data but on the other hand, they are supported by technologies that ensure greater efficiency. Undoubtedly, these big data sets cover a variety of areas such as energy, environment, transport, health care, trade, smart cities, communication, logistics and a community of constant technological change requires flexibility (OECD 2016, pp. 8-35).

### 2.1. Digitization vs. Digitalization

The greatest discovery of the 20th century technology was the computer, when in the 1980s computerization accelerated extremely. Computers entered the revolutionary idea of converting analog signals to digital form (Tilson et al., 2010, p.749). In the case of digitization and digitalization, two letters make a big difference. Understanding the differences between the two approaches is crucial as digitization is the conversion of analog to digital, whereas digitalization is the use of digital technologies and digitized data (Heilig et al., 2017, p. 1342). Not only digital processing of existing data but also the ability of digital technology to collect data and make better business decisions. Digitalization certainly improves processes, allows for the simplification, collection, dissemination, analysis, decision making and coordination of tasks.

| | Digitization | Digitalization |
|---|---|---|
| Definition | conversion analog signals, data and documents to digital form | transformation proccess, use digital technologies to change a business model and provide new revenue and value |
| Examples | - handwritten or typewritten text into digital form<br>- scanning a photograph | - analyze data collected by transferring PDF document from computer to cloud and sharing it with many people<br>- collecting data from clients to analyze it, preparing individual offers or marketing campaigns |

*Table 1: Digitalization vs. Digitalization*
*(Source: Gartner Glossary, 2020 and Truqcapp, 2020)*

### 2.2. 4S – Key dimensions of digital strategies

The classification of digital transformation activities distinguishes four key dimensions of digital strategies that shape the thinking of digital business strategy: the scope of digital business strategy, the scale of digital business strategy, speed of digital business strategy and sources of business value creation (Bharadwaj et al., 2013, p. 478).

- **The scope of the digital strategies** The scope of digital strategies includes the definition of the product portfolio as well as the diversification of activities. The scope of the digital business strategy helps to imagine relationships with companies, industries, IT infrastructure, internal and external environment. The scope gives an overview of how business is impacted by digital technologies. The adoption or emergence of digital platforms can lead to the creation of new alliances (Heilig et al., 2017, p. 1342).

- One of Key Questions on Scope Digital Business Strategy: "*How well does digital business strategy exploit the digitization of products and services, and the information around them*?" (Bharadwaj et al.,2013, p. 478).
- **The scale of the digital strategies.** When it comes to the scale of digital strategies, it should be seen as opportunities to deal with information overload through ubiquitous connectivity and computer technologies. Additionally, it can be supported by alliances and partnerships by sharing a digital platform.
- One of Key Questions on Scale Digital Business Strategy: "*How well does digital business strategy take advantage of data, information, and knowledge abundance*?" (Bharadwaj et al.,2013, p. 478).
- **Speed of digital strategies**. Speed is considered as the speed of products introduced to the market, but also as the speed of making decisions based on the efficient flow of information. Speed becomes important when it comes to responding to customer requests, and slowness can mean customers will go away. One of Key Questions on Speed Digital Business Strategy: "*How effective is digital business strategy in accelerating new product launches*?" (Bharadwaj et al.,2013, p. 478).
- **Sources of value creation**. Digital strategies and related transformations contribute to ways of creating value. First of all, digital transformation may lead to a redefinition of the scope of activities, product and service portfolio, but also the creation of business goals, e.g. customer satisfaction.
- One of Key Questions on Sources Digital Business Strategy: "*How effective is digital business strategy in leveraging value from multisided business models*?" (Bharadwaj et al.,2013, p. 478).

## 3. DIGITAL TRANSFORMATION IN SEAPORTS

Innovation is rapidly entering the fields of everyday life, but also changing the industry and the port sector. Thanks to the implementation of innovations, the port sector records savings, quality increase, development and increased efficiency of entities in the maritime supply chain. More than just reduce the costs of using ports, but technology allows to increase the safety of people staying there. Currently, interesting trends are the automation of container terminals, the use of sensors and sensors, creating models of the so-called Digital Twin, autonomous ship solutions, artificial intelligence algorithms using external data sources, using the potential of computing clouds, robotization of warehouses, use of drones.

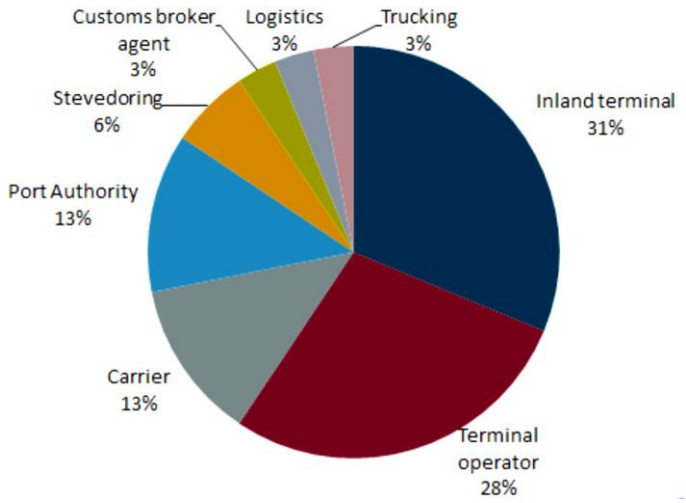



*Figure 1: Overview of industry actors involved*
*(Source: Carlan, Sys, Vanelslander, Roumboutsos, 2017, p. 6)*

In the coming years, innovation will be a key factor, in addition to costs, capacity, geographic location or increasing ship sizes and cargo volumes (Agatić, Kolanović, 2020 p. 95). This is what forces maritime ports to move towards digital technologies. Digital innovations in seaports should be considered not only as technologies and methods, but also as tools, e.g. communication platforms that will support the flow of goods, exchange of information between port stakeholders or ensure the safe transfer of electronic documents. Analyzing the digital transformation in seaports is important to understand that communication is very important and only by working together can actors involved in the port community system benefit. Opening opportunities for cooperation to competing port stakeholders is one of the challenges accompanying the implementation of digital innovations (Carlan et al., 2017, pp. 6-9). Digital technologies pose a number of challenges as ports have a wide range of smart port technologies to choose from but the key issues are the right choice of technology suited to the port. The needs of ports may vary, they may result from the location, the position of competitors, and the services offered. Port needs are also influenced by factors such as size, level of maturity and the degree of competition from surrounding ports (Boston Consulting Group, 2018). Sea ports, as complex and technologically advanced facilities, also affect the surroundings in which they are located (Skiba, 2019, p. 460).

## 4. KEY TECHNOLOGIES CONNECTED TO SMART PORTS

Ports, terminals and ships are of key importance for the global economy, (In 2018 global seaborne trade volume was estimated at approximately 11 billion metric tons) (UNCTAD, 2019), as well as intelligent technologies that allow responding to the constantly growing requirements and competitiveness of entities . In order to meet current and future challenges, ports and terminals are investing resources in smart technologies to turn into "smart ports" and this is undoubtedly the next step of the inevitable changes in the broadly understood functioning of ports. Modern ports are transforming into Smart Ports, which means creating solutions to meet the current and future challenges they face. The idea behind Smart Ports is not only the implementation and management of new technologies, but also digitization. Smart Port is a new management model that integrates a number of innovative tools used at the technological and organizational level (Karaś, 2020, pp. 27-28). Solutions in the area of ports mainly focus on improving efficiency, accessibility, increasing competitiveness and caring for the environment. Although the modern market is full of innovation technologies, and many of them have universal applications, ports vary in their activities and require custom solutions, so it is important that terminals and port authorities work together to implement the appropriate technologies, methods and tools. As part of the concept of digitization and the transition to the concept of "Smart Port", technologies such as: Internet of Things (IoT), Big data, sensors, Application programming interface (API), Real-time data, Mobile devices, Cloud computing.

*Figure following on the next page*

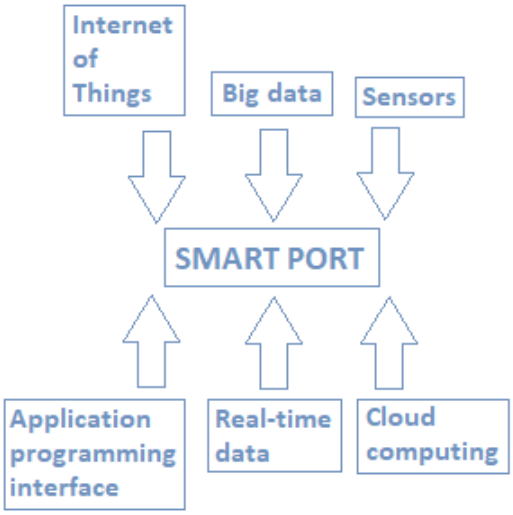



*Figure 2: Key digital technologies*
*(Source: own study)*

The high quality of services provided by the port operators in Hamburg last year contributed to the positive result of transshipment turnover. Thanks to its investments, the Port of Hamburg is one of the most modern hubs in international maritime trade, driving digital solutions that guarantee smooth and efficient operation. The systems used by HPA are leading technologies in the world, and the digital trend also ensures that the port maintains a leading position in Germany and Europe. In addition, the smartPort philosophy is constantly developed and adapted by HPA and additionaly the port has now reached a degree of digitization of 95 percent. The smartPort platform developed by HPA combines economic and ecological aspects in three sub-sectors: traffic, infrastructure and flow of goods. The smartPort platform combines the following functionalities (Hamburg Port Authority, 2020):

- **Navigation in real-time** – users moving around the port, including truck drivers, use personalized navigation to ensure smooth traffic flow. In addition to information on traffic in and around the port, system users have access to information on parking lots, infrastructure and bridge closures.
- **Shore power from renewable energies** – by powering cruise ships from shore with renewable energy sources, the environmental impact is significantly reduced. Ships are supplied with electricity through a transformer station and a mobile transfer mechanism located in the Altona cruise ship terminal.
- **Intelligent railway point** – frequently used port queue points are equipped with sensors that transmit data in real time to a central IT system, thus providing information on the status and consumption of key operational intersections. Thanks to the ongoing data transfer, it is possible to identify repairs and necessary maintenance work.
- **The mobile all-purpose sensor** – a mobile GPS sensor that wirelessly transmits data to the HPA IT system allows for fleet management, measurements of temperature, speed, wind direction, air pollution and flow status of the Elbe River.
- **Smart maintenance** – port infrastructure is monitored by mobile devices such as tablets and smartphones. The devices automatically send measurements to IT systems, where data is processed, stored and edited. Measurements allow you to control roads, bridges or tracks. The purpose of the measurements is to ensure the efficiency of the maintenance processes.
- **Virtual depot** – a virtual warehouse helps to optimize the movement of empty containers, which are unnecessarily burdened by the environment through truck transport. The system is cloud-based, informing participating operators which containers are to be delivered back to the warehouse.

- **Port Monitor** – the software allows you to keep all port stakeholders informed about the position of ships, data on the water level, berths, current construction sites, planned dives and the height and width of bridges.
- **E-mobility in the port** – introducing e-mobility to passenger and freight traffic in the port area using electric vehicles, which are becoming more and more common in transport.
- **Parking for professionals –** the system allows for comprehensive management of parking lots, while ensuring optimal use of parking spaces for trucks in the port.
- **Renewable energies** – effective use and expansion of the existing energy networks, and above all, the possibility of producing renewable energy - wind energy, solar energy, biomass.

Digital solutions are also implemented in the Port of Rotterdam. The Port of Rotterdam uses the Port Forward platform, offering digital solutions for shippers, freight forwarders and traders, enabling port authorities to manage port operations more efficiently and safer and to reduce costs, handle ships, trains and inland vessels faster (Port of Rotterdam, 2020).

- **Portinsider** – the platform provides real-time information, integrating the port community, shortening the time of ship operations and increasing the number of berths. Thanks to the use of the platform, all ship and cargo declarations are handled in one system, providing all information regarding port charges, customs clearance, cargo manipulation and inspections. The system safely enables communication between enterprises and representatives of port service supply centers.
- **PortXchange** – the platform provides shipping companies, agents, terminals and service providers with a common space where users can exchange information about ships arrivals. The individual timeline of each ship presents all events occurring during the call to port - from the ship's arrival in the port and its stay in the port to the departure from the port. Thanks to the dashboard, users can use the information to effectively plan and edit activities related to the port's call. PorXchange ensures shorter time of ship calls, predictability of terminal operations, improved communication between participants, reduced CO2 emissions.
- **Navigate** – provides insight into the different routes dedicated to worldwide container shipping via Rotterdam and helps users find, compare and select the best route options. The Navigate platform contains a directory of companies that operate in and around the Port of Rotterdam. The goal of Navigate is to optimize container transport. Navigate shows direct connections via shortsea and deepsea with 550 ports worldwide.
- **Boxinsider** – provides accurate data, thanks to which users have direct access to information, while eliminating manual typing and searching of container data, which reduces the time by 20-50%. The system informs about undesirable events on an ongoing basis, so that shippers and carriers can plan operational processes.
- **Timetoport** – offers a reliable solution for accurately predicting ships arrivals based on AIS signals. This enables port authorities and the port community to optimize the planning and maximum use of berths, people, tugs, pilots and other service providers. Timetoport provides information 5 days prior to ship arrival with an error of 4h.

## 5. CONCLUSION

Certainly, digital technologies are inherent in the largest and most modern ports in the world, although many ports are trying to keep up with the leaders. In the case of other ports, the introduction of digital technologies is certainly advisable, and the transformation process should start with improvements in the field of electronic document management, the use of Internet of Things, artificial intelligence, automation processes, Big Data, sensors, mobile devices, robots, applications and platforms.

These solutions bring a number of improvements, ensure a significant improvement in the efficiency of ports, terminals, port stakeholders and participants in international supply chains. The most important step in the digitalization of seaports is to identify, assess and understand the impact and role of digital technologies on port operations and business strategy. The area of the digital revolution is a key element in the transformation of ports towards the implementation of the Smart Port concept only on the condition of cooperation and integration of port entities. Undoubtedly, digital transformation requires great openness, courage and readiness for change.

**LITERATURE:**

1. Agatić A., Kolanović I. (2020). *Improving the seaport service quality by implementing digital technologies*. Scientific Journal of Maritime Research 34, pp. 93-101
2. Bharadwaj, A., El Sawy, O.A., Pavlou, P.A., Venkatraman, N. (2013). *Toward a next generation of insights*. Digital business strategy 37(2), pp. 471-482
3. Boston Consulting Group. (2020). *To Get Smart, Ports Go Digital*. Retrieved 17.11.2020 from https://www.bcg.com/publications/2018/toget-smart-ports-go-digital.aspx
4. Carlan, V., Sys, C., Vanelslander, T., Roumboutsos, A. (2017). *Digital innovation in the port sector: Barriers and facilitators*. Antwerp: Competition and regulation in network industries, pp. 6-9
5. Deloitte. (2017). *Smart Ports Point of View By Deloitte Port Services*. Retrieved 23.09.2020 from https://www2.deloitte.com/content/dam/Deloitte/nl/Documents/energy-resources/deloitte-nl-er-port-services-smart-ports.pdf
6. Digitization vs. digitalization: Differences, definitions and examples. Retrieved 20.10.2020 from https://www.truqcapp.com/digitization-vs-digitalization-differences-definitions-and-examples/
7. Heilig, L., Schwarze, S., Voß, S. (2017). *An analysis of digital transformation in the history and future of modern ports*. In Proceedings of the 50th Hawaii International Conference on System Sciences, pp. 1341-1350
8. Ilin I., Jahn C., Weigell J., Kalyazina S. (2019). *Digital Technology Implementation for Smart City and Smart Port Cooperation,* Atlantis Highlights in Computer Sciences Vol. 1, pp. 498-501
9. Karaś A. (2020). *Smart Port as a Key to the Future Development of Modern Ports*. The International Journal on Marine Navigation and Safety of Sea Transportation Vol.14, Nr 1, pp. 27-31
10. OECD. (2016). *The Internet Of Things: Seizing The Benefits And Addressing The Challenges*, pp. 8-35
11. Skiba S. (2019). *Seaport - City Cooperation On The Example Of The City Of Gdynia*, Varazdin: Varazdin Development and Entrepreneurship Agency, pp. 460 - 467
12. Tilson, D., Lyytinen, K., Sørensen, C. (2010). *Research commentary–digital infrastructures: The missing IS research agenda*. Information Systems Research, 21(4), pp. 748-759
13. UNCTAD, *World seaborn trade*, Retrieved 10.10.2020 from https://stats.unctad.org/handbook/MaritimeTransport/WorldSeaborneTrade.html
14. Website of Hamburg Port Authority, Retrieved 17.11.2020 from https://www.hamburg-port-authority.de/en/hpa-360/smartport/
15. Website of Port of Rotterdam, Retrieved 22.11.2020 from https://www.portofrotterdam.com/en/port-forward/products
16. Website of Gartner Glossary, Retrieved 27.11.2020 from https://www.gartner.com/en

# MARKET FOR PRO BONO LEGAL SERVICES IN CROATIA – WHAT IS THE PLACE OF SMALL BUSINESS CLINICS

**Anamarija Delic**
*Sveučilište Josipa Jurja Strossmayera u Osijeku,*
*Ekonomski fakultet u Osijeku, Croatia*
*anamarija.delic@efos.hr*

***ABSTRACT***

*Although part of every legal education in Croatia, law clinics have different roles and places within communities. Small business clinics in Croatia are at an intersection of different service providers – business support institutions, state institutions (chambers of commerce and state administration offices), and professional associations. All these institutions provide pro bono legal and economic advice to small and medium-sized enterprises (SMEs) in Croatia. Despite high competition and rather low entry barriers in the advice providers sector, a significant number of new entrants starts to offer their services in this sector. Finding one's place in such a highly saturated market demands good strategy, well-defined services, good management and clearly profiled competitive advantage. Using secondary data, the goal of this paper is to check where and how a small business clinic in Croatia can place itself within the community. Through primary data and interviews with all mentors and students involved in the Small Business Clinic of Josip Juraj Strossmayer University in Osijek, major issues and challenges will be analysed and used to draw conclusions in defining the place of clinics in the market of professional service providers in Croatia.*

***Keywords:*** *clinical education, pro bono services, services for SMEs, small business clinics*

## 1. INTRODUCTION

Small and medium-sized enterprises (SMEs) in Croatia enjoy support of 473 different business support institutions:[1]development agencies, business incubators, entrepreneurial centres, entrepreneurial zones, technology parks and centres, centres of competence, etc. All these, business support institutions have a common goal – »*to create quality, user oriented entrepreneurial environment by implementing programs focused on the development of SME sector*«.[2] Business support institutions provide different services for their user, i.e. SME sector: business advice, information, working space, co-working space, infrastructure, more favourable land prices, legal advice, organization of networking events, etc. According to the BOND report on business support organization's services (2018), SMEs usually seek for information or advice on sources of financing, management of EU projects, preparation of business plans, networking and education. Majority of those services are on *pro bono* basis for owners of SMEs or start-ups, since business support institutions are established by local, regional or national government, which financially support their work. On the other side of the *pro bono* services for SMEs, there are law clinics, which also provide advice and represent connection between university and business sector. Law clinics are part of almost every law school in the world, focused on providing legal advice (legal help) for minority groups in the society – migrants, asylum seekers, start-up entrepreneurs, people with lower incomes, immigrants, etc. Law clinics also provide the »*window into the real world*« for law students and ensure them practical and experiential learning while studying law. Law clinics have arisen from the dissatisfaction of American law students in 1960-ties, which asked for more practical approach in their education.

[1] The single register of entrepreneurial infrastructure, http://reg.mingo.hr/pi/public/#, October 30, 2020
[2] Law on the improvement of entrepreneurial infrastructure (NN 93/2013, NN 114/13, NN 41/14 i NN 57/18)

Clinical way of learning was widely accepted as the model that can prepare student for their future occupation. Croatian law clinics are defined with the Law of free legal aid (NN 143/13 and NN 98/19), in which free legal advice can be provided by governing bodies, individuals (lawyers) and law clinics. Law also defines the free legal advice as "*submission, legal advice and general legal information*", but only for clients that from different reasons cannot represent themselves in front of the Court.

## 2. PRO BONO SERVICE MARKET IN CROATIA

Providing business or legal advice for SMEs is usually seen as a service that helps SMEs in meeting their business objectives (Bennett and Robson, 1999). That definition clearly distinguishes advice from general information. External advice also contains a range of competencies that »*support the SME's intangible resources, providing a potential source of competitive advantage«* (Gooderham et al., 2004, p. 7). Clients (SMEs) seek for an external help »*to perform some work that they do not have skills to do*.« (Czerniawska, 2002, p. 10) Armbruster (2006) lists three reasons to hire external expert: to get advice, to solve problems and improve the company. Other reasons, according to O'Mahoney and Markham (2013), are to provide an original thinking (45%), to get an objective perspective (34%), to fill in for management (17%), to gain access to a methodology (17%) and to validate an internal decision (10%). SMEs, according to Birley and Westhead (1992) and Storey (1994), have a greater need for external help (advice from an expert), but also are more reluctant to seek for it. Aronoff and Ward (1994) identified several reasons that hinder owners of SMEs to use external help: lack of trust in experts, fear of sharing ideas and information with persons outside of the company and relying on advice from a friend, bankers and attorneys. Owners of SMEs, according to Deakins et al. (2001) research, usually need help with financial management and how to use financial data in decision-making processes and in this field help from an external expert in more than needed. In order to increase the use of external professional help, a number of government institutions offered their help (Bennett and Robson, 1999). Those institutions offer free or subsidized services in order to overcome this lack of demand. In Croatia, government used the same thinking while creating the big network of business support institutions. On every 8.880 inhabitants there is one business support institution offering *pro bono* advice for SMEs. But, as results of the Global Entrepreneurship Monitor (GEM)[3] show, the number of business support institutions does not guarantee the quality of the advice (Croatia has the worst grade for entrepreneurial infrastructure out of 18 countries in the GEM research). Entrepreneurial infrastructure in Croatia is acting rather as an obstacle , then as supporting factor (Croatia Consultancy Market Study, 2014, p. 71). Owners of the SMEs in Croatia report, according to conclusions in Croatia Consultancy Market Study (2014), legal issues, financial management, sales and marketing issues as most pressing problems. In the process of solving those problems, majority of SME owners (67%) desided to solve problems on their own. Although owners of the SMEs in Croatia were familiar with the offer of advice providers (consultants and business support organizations), they were reluctant to hire external experts. Despite subsidizied services and number of business support institututions, Blackburn et al. (2010) found out that the most frequently used source of external help within SMEs are accountants. Owners of the SMEs do not easy share information about the company and problems. Accountants work closely with the owners of SMEs, they share information about the company and over time time build long-term relationships. Relationship and trust are among most important criteria when choosing and purchase advisory service (Bennett and Robson, 1999). In addition to that, Marriot and Marriot (2000), claim that owners of SMEs are reluctant to change accountant even when they are not satisfied.

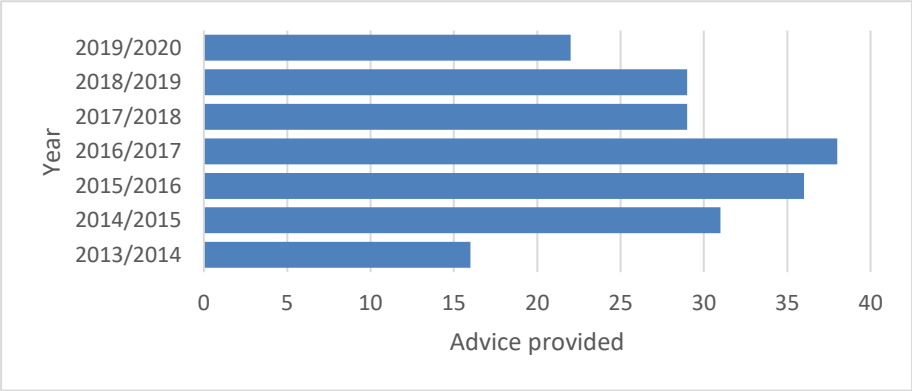
[3] Singer et al. (2017), What makes Croatia a (non)entrepreneurial country? GEM Croatia 2017, http://www.cepor.hr/wp-content/uploads/2015/03/EN-GEM-2017-za-web.pdf, accessed on October 30,2020

On the Croatian consultancy market, legal aid is also provided by non-profit organizations and law clinics. In the register of institutions for providing free legal aid, there are 54 non-profit organizations and law clinics that also "compete" on the *pro bono* consultancy market. Legal issues are among most pressing issues in Croatian SMEs and therefore those institutions slowly position themselves among other *pro bono* advice providers. On that pretty saturated market, advice also offer Chamber of commerce and Chamber of crafts. Although their services are not completely free, they can cover almost every aspect and problem in SMEs. Membership in chambers is obligatory, arranged according to the law, but owners of the SMEs rarely rely on these institutions when in need for external advice. Results from Croatia Consultancy Market Study (2014) show that owners of SMEs have the least confidence in state institutions, although information about legal regulation, SMEs usually search in state administration offices. Although not part of the *pro bono* advice service market, in 2012, there were 2.799 professional consulting companies in Croatia (Croatia Consultancy Market Study, 2014, p. 43), that were employing 4.852 employees. Professional consulting companies usually hired by big companies for the audit and expert advice purposes. SMEs rarely seek advice in professional consulting companies. Because of their "*relative lack of purchasing power, they are seen as unattractive clients*" (Gooderham et al., 2004, p. 7). Jevnaker (1996) reports that 75% of Norwegian professional consulting companies has no contact with SMEs. On the other side, SMEs also see themselves as not enough interesting for professional consultants (Aronoff and Ward, 1994). Croatian SMEs also claim that they are not familiar with the work of professional consulting companies. In the supply gap between state administration offices and chambers of commerce on one side in which owners of the SMEs do not have confidence and business support organizations on the other side, could be a *niche* for institution and organizations like small business clinics. Small business clinics could fill the gap on advice service market, focusing on legal issues of SMEs and offering that advice on *pro bono* basis.

## 3. SMALL BUSINESS CLINICS

From their beginnings in 1960-ties when primary goals was to enable practical work, covering usually civil law issues (Jelinić, 2014), law clinics today can cover almost every aspect of legal issues and aid, providing *pro bono* advice for different groups of clients. Primary goal of law clinics is to teach students how to practice law, but also to help the community in which they operate. With the raising importance of the SME sector in the world, law clinics spread their field of work on legal issues in that sector, also, diversifing themselves into small business clinics. Researching the work of law clinics, Weinstein (1999) argues that today companies operate in an increasingly complex world, in which advice providers need to expand their traditional approaches to problem solving. Weinstein (1999) stressed out that today's problems are not one-dimensional and in their solving interdiscplinary approach is the only way to finding solution. Lawyers and law clinics cannot have the knowledge and skills that would allow them to identify each aspect of the problem (Weinstein, 1999, p.320). Therefore, Winestein (1999) suggests formation of interdiscplinary clinics that could solve problems creatively and avoid "*narrowness of vision"* (Weinstein, 1999, p.322). On the other side, in order to prepare students for practical work in the future, law clinics needed to make a shift from traditional way of teaching toward teaching that will enable acquiring different skills, needed for solving today's complex problems: legal analysis and reasoning, legal research, factual investigation, communication, counselling, negotiation, litigation and alternative dispute resolution procedures, organization and management of legal work and recognizing and resolving ethical dilemmas (Hovannisian, 2004). According to Schlossberg (2003) interdisplinary approach ensures learning some skills usually connected with the consulting industry, such as planning in consultation with the client, strategic thinking and problem solving, that can help in reducing the risk of a possible dispute in future.

This goals could be reached only trough interdiscplinary approach, i.e. interdisciplinary clinics. In 2013, Faculty of Law in Osijek and Faculty of Economics in Osijek founded interdisciplinary Josip Juraj Strossmayer Legal-economic clinic, focused on providing legal and economic advice for SME from the environment. This was one of the first interdisplinary clinics in the world and the project that had two goals: to offer quality, complete advice (legal and economic view on the problem) and to better prepare student for labour market, by educating so called "hybrid professionals" prepared for solving more complex problems. In the period from the November 2013 till June 2020 more then 200 clients, owners of SMEs or start-ups, got the advice or information and more then 250 students had an opportunity to learn and work in the Legal-economic clinic. The clinic operates as a contract between two Faculties, but cooperates with lawyers, judges from the Trade court, and business support institutions in Osijek-Baranja county.




*Picture 1: Number of cases (advice provided) from 2013-2019; Source: Author's research*

Researching reasons for joining the Legal-economic clinics among student in September 2020 for the purposes of this paper, student stressed out the possibility for practical work (40%), opportunity to combine theoretical and practical knowledge (31%), quality of extracurricular activities on university (4,8%) and networking with colleagues from other deapertments and with clients (14,3%). In the Legal-economic clinic, students have to work in joint teams, solving together problems and sharing the views on the problems and solutions. Interdiscplinary approach consider useful 35,71 % of students, while 47,62% thinks that this approach provides very good results, but also find it difficult. In the Clinic students need to use acguired theoretical knowledge, since Clinic is available only for students on graduate study. Unfortunatelly, only 50 % students think that previously acquired knowledges are usefull while working with clients and 45,24 % consider that the opportunity to work in Clinic ensures them advantage over other students. This is also the reason that their final experience in the Clinic, students graded with the highest grades – 47,62 % graded experience with the grade 5 (extremely positive and useful) and 38,1% with the grade 4 (positive and useful). In order to find out where to position the Legal-economic clinic on the *pro bono* advice market, it was necessary to check satissfaction of the clients, i.e. owners of the SMEs, but also to find out what kind of the advice they find usefull and helpful.

## 4. METHODOLOGY

The goals of this paper is to detect the place of the Josip Juraj Strossmayer University Legal-economic clinic on the *pro bono* advice market. Croatian advice service market is characterized by great number of business support institutions, that offer free of charge or subsidized advice service, those work is supported by government on national and local level. Owners of SMEs usually use advice services from that institutions for preparing business plans or EU projects.

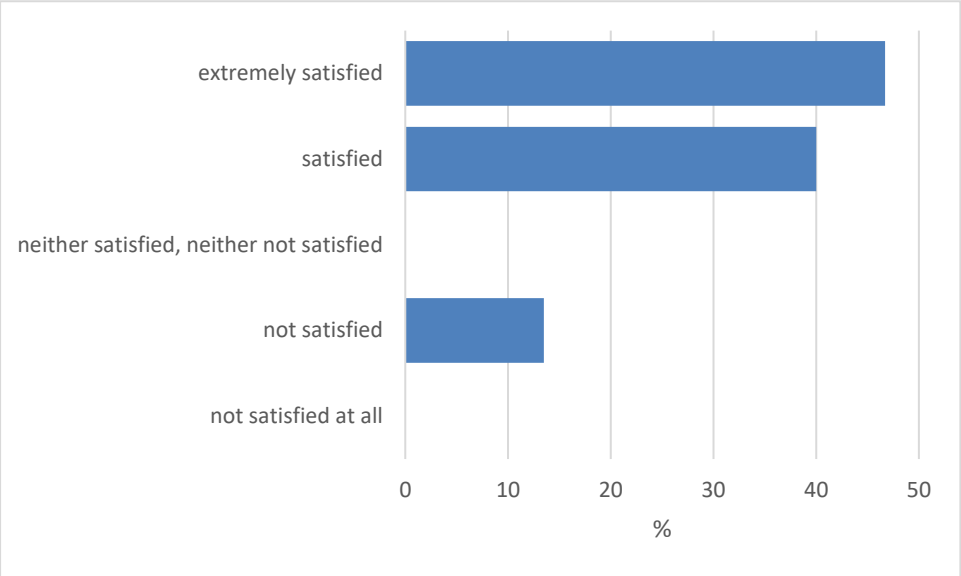
On the other side of the consulting market there are professional consultants that charge for their services, but they do not focus their services toward SME sector. On the intersection of those two poles on the advice service market, there are law clinics, that offer usually legal aid on *pro bono* basis. What kind of advice law clinics should offer and do owners of SMEs really need this kind of advice are research questions that sould be answered in this paper. For the purpose of market analysis, secondary data, mainly reports were used. BOND report (2018) and Croatia Consultancy Market Study (2014) were also used in order to find out what sort of advice owners of SMEs would like to get and business support institutions and consultants usually do not provide. Opinions and attitutes of the owners of SMEs about the Legal-economic clinic, work with students and advice that they have received were collected through interviews with 18 clients. There was 66,7% female respondents and 33,3% male respondents in the sample. Respondents were usually younger persons – 46,67 % of them was born after 1990-ties and predominantly were from urban areas (85,14%). Clients in the sample had different issues – from the decision about choosing legal form for the business till the liquidation of the company. The most common question from the clients was connected with starting business – legal form and preparation of the business and marketing plan. Finally, results from different reports and data collected through in-depth interviews were used for reaching a final conclusion. In conclusion part of the paper, there are also recommendations for further research. Limitations of the choosen research methods could be in the answers of the interviewees, who tend to give benignant responses, rather then completely honest. When asked about their experience, all of them stressed out that did not had great expectations since the consultants in the clinic were students itself and the service was on *pro bono* basis.

## 5. RESULTS

In order to find out what kind of advice owners of SMEs would like to receive, the results from BOND report (2018) were used. Owners of SMEs were asked what sort of advice they need, but can not get in business support institutions.


*Picture 2: Type of the advice that business support instiuttions do not provide and owners of SMEs would like to obtain; Source: BOND report (2018), p. 46.*

While owners of SMEs need specific advice, especially legal ownes, business support institutions agree that this should not be their task. Namely, business support institutions have to support local government and their development projects, as their founders. Business support institutioins claim that those are two different aspects of supporting SME sector and it is not possible to do both. Specialization of business support organization in advice providing service could help to overcome this discrepancy or creating clusters of business support organizations that will cover individual subjects and areas. Example of good praxis are specialized business incubators that support specific industry. For the purpose of this paper, clients were interviewed about their satissfaction with the service of the Legal-economic clinic. Respondents were asked about reliability of the advice they obtained in the Clinic. Majority of them, 60%, consider received advice reliable, while 13,3 % consider it not reliable. But despite that, 46,7% of the clients responded that they would choose Clinic again while in search for business or legal advice. Main complaint on the advice provided by students and mentors in the Clinic is that advice are too broad, and to not provide specific answer on the issue, but rather information that should easy clients decision-making process.




*Picture 3: Clients satisfaction with the received advice; Source: Author's research*

Respondents were also asked about their suggestion for improving work of the Clinic. Respondents suggest more detailed research about the issue, better marketing, digitalization of the communication and web page with the Q&A option. One of the suggestions is that students should have a big picture and make scenario analysis for different decisions. All respondents support work of the Legal-economic clinic and trust that this way of learning and serving in the community will better prepare students for the labour market.

## 6. CONCLUSION AND RECOMMENDATIONS FOR FURTHER RESEARCH

Owners of SMEs are more reluctant to use the service of external experts, but usually need it more than big companies. In their search for an advice, accountants, thanks to built long-term relationship enjoy the biggest confidence. On the intersection of different advice providers, there are also law clinics, that offer free legal aid. From the research results from secondary, but also primary research, one can conclude that owners of SMEs need complete and clear advice, followed by scenario analysis for different solutions and decisions that owners of SMEs can make. Business support institution should build their expertise in specific industry fields, in order to build confidence, but also provide advice on specific issues in SMEs.

Legal issues should not be in domain of business support institutions, but transferred on experts – lawyers and law clinics. According to results in this paper, there is a place, a *niche*, on the *pro bono* market for law clinics, but providing advice that are simple and easy understandable for owners of SMEs. Law clinics should be more visible on the market, providing legal advice that helps owners of SMEs in reaching decisions. In further research in the field of pro bono advice market, it would be interesting to better understand the process of solving legal issues in the SMEs and whether accountants also assist them in that process, too. Owners of SMEs emphasize the need for mentoring, but business support institutions do not offer that kind of service. Is there on the advice market also place for the consultants that could be mentors and teachers? Further researches should provide answer on that question, too.

**LITERATURE:**

1. Alpeza, M., Mikrut, M., Oberman Peterka, S., Delić, A. (2014). *Croatia Consultancy Market Study*, European Bank for Reconstruction and Development, HAMAG INVEST and CEPOR, Zagreb
2. Armbruster, T. (2006). *The Economics and Sociology of Management Consulting, Cambridge*. Cambridge University Press
3. Aronoff, C.E., Ward, J. L. (1994). *How to Choose and Use Advisers: Getting the Best Professional Family Business Advice*. Family Business Consulting Group, FBCG Publications, USA
4. Bennett, R., Robson, P. (1999). *Intensity of Interaction in Supply of Business Advice and Client Impact: A Comparison of Consultancy, Business Associations and Government Support Initiatives for SMEs* . ESRC Centre for Business Research, University of Cambridge, Working Paper No.142, pp. 1-48.
5. Birley, S., Westhead, P. (1992). *A comparison of new firms in 'assisted' and non-assisted areas in Great Britain.* Entrepreneurship and Regional Development, 4, pp. 299-338.
6. BOND, report (2018). *Analysis of current system of business support institutions*, HAMAG BICRO, Zagreb
7. Czerniawska, F. (2002). *The Intelligent Client: Managing your Management Consultant*. London, Kogan Page
8. Deakins, D., Logan, D. and Steele, L. (2001). *The Financial Management of the Small Enterprise*. ACCA Research Report No. 64. London: The Association of Chartered Certified Accountants, Certified Accountants Educational Trust.
9. Gooderham, P.N., Tobiassen, A., Doving, E., Nordhang, O. (2004). *Accountants as Source of Business Advice for Small Firms*. International Small Business Journal, vol 22 (1), pp. 5-22
10. Hovannisian, L. (2004). *Clinical Legal Education and the Bologna Process*. PILI Papers, No.2
11. Jelinić, Z. (2014). *Integrirano kliničko obrazovanje studenata prava i ekonomije - Prikaz projekta Pravno-ekonomske klinike Pravnog i Ekonomskog fakulteta u Osijeku*. Pravni vjesnik, 30 (3-4), pp. 285-292.
12. Jevnaker, B. (1996). *Private-sector: Consultancies in O. Nordhaug and P. N. Gooderham (eds) Competence Development in Private-sector Firms*. Oslo, Cappelen Akademisk Forlag
13. *Law of free legal help* (NN 143/13, NN 98/19)
14. *Law on the improvement of entrepreneurial infrastructure* (NN 93/2013, NN 114/13, NN 41/14 i NN 57/18)
15. Marriott, N., Marriott, P. (2000). *Professional Accountants and the Development of a Management Accounting Service for the Small Firm: Barriers and Possibilities*. Management Accounting Research 11(4): 475–92.

16. O'Mahoney, J., Markham, C. (2013). *Management Consultancy,*. Oxford, Oxford University Press
17. Schlossberg, D. (2003). *An Examination of Transactional Law Clinics and Interdisciplinary Education*. Washington Journal of Law & Policy, 11, pp. 195-236
18. Singer, S., Šarlija, N., Pfeifer, S., Oberman Peterka, S. (2017). *What makes Croatia a (non)entrepreneurial country? GEM Croatia 2017*. Retrieved 30.10.2020 from http://www.cepor.hr/wp-content/uploads/2015/03/EN-GEM-2017-za-web.pdf.
19. Storey, D.J. (1994). *Understanding the small business sector*. Routledge, London, UK
20. *The single register of entrepreneurial infrastructure*. Retrieved 30.10.2020 from http://reg.mingo.hr/pi/public/#.
21. Weinstein, J. (1999). *Coming of Age: Recognizing the Importance of Interdisciplinary Education in Law Practice*. Washington Law Review, 74(2), pp. 319-366.

# URBAN MOBILITY MANAGEMENT DURING THE CORONAVIRUS PANDEMIC: THE IMPACT OF COVID-19 ON THE ECONOMIC, ECOLOGICAL AND SOCIAL DIMENSIONS OF TRANSPORT

**Michal Kuzia**
*Gdynia Maritime University, Poland*
*m.kuzia@wpit.umg.edu.pl*

***ABSTRACT***
*The coronavirus pandemic has affected many spheres of human life. Undoubtedly, one of the directly and diametrically transformed areas turned out to be transport. Traveling has changed significantly both in the context of long distance (international and intercity travels) and short distance (travelling to work, school, shopping, etc.). Countries have implemented numerous transport restrictions, but at the same time, new initiatives have emerged in some cities to support sustainable forms of travel, e.g. widening the footpath or subsidizing the purchase of bicycles. The aim of this article is to trace and analyse changes that occurred in urban mobility management as a result of Covid-19. These changes concern city authorities and public transport operators as well as large and small private companies. The impact of the pandemic on the economic, ecological and social dimensions of transport has proven to be ambiguous, affecting urban mobility in a negative way (e.g. travel difficulties, restrictions in public transport) as well as leading to some positive changes (e.g. lower air pollution in the urban areas).*
***Keywords:*** *Covid-19, Mobility management, Transport, Urban mobility*

## 1. INTRODUCTION

Since the new coronavirus (SARS-CoV-2 pathogen) appeared in Wuhan (Hubei, China) at the end of 2019, it has been spreading rapidly worldwide. The World Health Organization (WHO) named this new contagion COVID-19, on 30 January 2020 officially declared that the COVID-19 epidemic was a public health emergency of international concern. On 11 March WHO assessed that COVID-19 can be characterized as a global pandemic (World Health Organization, 2020). To tackle the Coronavirus pandemic, countries across the world have implemented a range of stringent policies to slow the spread of the virus by enforcing physical distance between people. In terms of countermeasures, lockdowns and reductions of social activities are meant to flatten the curve of infection, protect residents and to mitigate economic damage (European Commission, 2020; Anderson et al., 2020; Matteo et al., 2020). These measures include school and workplace closures, cancellation of events and public gatherings, restrictions on public transport. 'Social distancing' is now a widely used term an also a strategy adopted to keep a suitable distance from others and avoiding unnecessary trips. As a result, COVID-19 has a disruptive impacts on the society, economy and urban systems. Undoubtedly, one of the directly and diametrically transformed areas turned out to be transport. The pandemic has had an unprecedented effect on people's mobility across the globe. The majority of governments have imposed severe restrictions on both local and long-distance traveling. This travel restriction has significantly limited people's mobility. On the other hand, new initiatives have emerged in some cities to support sustainable forms of travel, e.g. widening the footpath or subsidizing the purchase of bicycles. The aim of this article is to study the changes that have occurred in urban mobility management as a result of Covid-19. These changes concern city authorities and public transport operators as well as large and small private companies.

## 2. ANALYSIS OF CHANGES IN URBAN MOBILITY IN RESPONSE TO COVID-19 PANDEMIC

The coronavirus outbreak has had widespread impact on the transport sector worldwide and corresponding measures have been widely investigated by many maritime, railway and urban transport researchers and organizations (Zhang, 2020). The crisis has affected all forms of transport, from cars, bikes and public transport in cities, to buses, trains and planes nationally and internationally. Global road transport activity was almost 50% below the 2019 average by the end of March 2020 (International Energy Agency, 2020). A substantial reduction of passenger demand has been observed (for both leisure and business travel), due to a combination of the government imposed lockdowns and restrictions - the modes of mass transportation has been limited (figure 1). European air traffic decreased by about 90% in March and 73% in August (Airports Council International, 2020). Meanwhile, the total trips generated in Australia dropped to just over 50%. The UK claimed that government restricted policies account for 60% reduction of driving and walking traffic, and 80% reduction of transit (Arimura et al., 2020). Underground journeys has declined by 95% in London (Abu-Rayash et al., 2020). In North America, it has been calculated that around 50% of Canadians are working from home due to COVID-19 and individuals made 1.62 trips/day/person compared to 3.33 trips/day/person in the pre-pandemic period (Fatmi, 2020). Major American cities have been following similar trajectory to Canadian cities, after closures had taken effect in March.

### 2.1. Public transport restrictions and closures

While geographical conditions and data vary, a coherent pattern emerges that public transport has suffered particularly hard compared to private cars and other modes of transportation. For the first time in history, public transport has been so drastically limited in cities. Most countries in the world have imposed restrictions on public transport or have completely suspended transport connections. Public transport stations and vehicles are recognized as high-risk environments for transmission of COVID-19 due to the limited physical space available, the abundance of surfaces that help spread the virus, and the limited testing of crew and passengers who use the system. Furthermore, bus and tram drivers are among the group of professions with the highest risk of being infected (Jenelius et al., 2020). Figure 1 shows the closures of public transport at the time of the rapid development of the epidemic on April 19, 2020. Most restrictions were implemented in African, Asian and South American countries. Some countries that initially managed to contain the pandemic, introduced restrictions later, such as China (May 10) and Australia (May 18).

*Figure following on the next page*

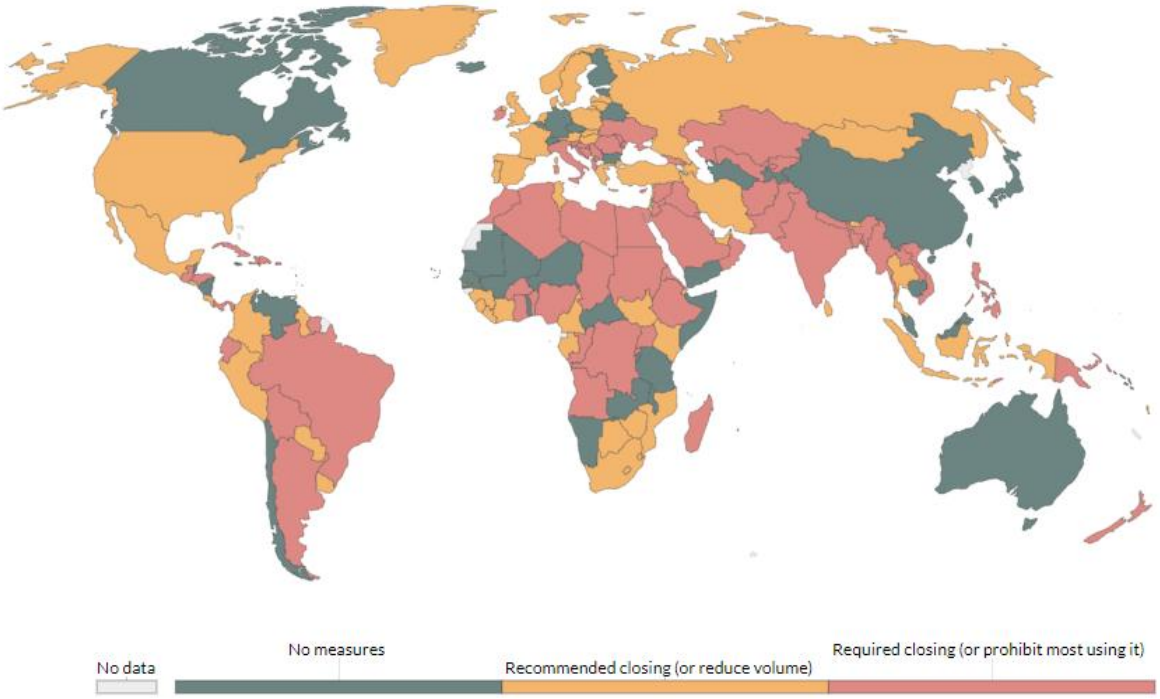



*Figure 16:Public transport closures during the Covid-19 pandemic, Apr 19,2020 (Source: Our World in Data)*

## 2.2. Data from mobility service providers

Under normal circumstances, countless applications help people navigate through cities and around the planet, aggregating data and calculating public transport routes or flights connections. In times of Covid-19, these applications has brought an entirely new role: data from Citymapper, Moovit, Google Maps and Apple Maps can be used to measure the impact of the coronavirus on mobility. Mobility service providers have published data based on geographical location, travel planner queries or app usage.

### *2.2.1. COVID-19 Community Mobility Reports*

Google provides "COVID-19 Community Mobility Reports" collecting data from users who have opted-in to Location History for their Google Account. The company has produced a regularly updated dataset that shows how peoples' movement have changed throughout the pandemic. Changes for each day are compared to a baseline, which is the median value, for the corresponding day of the week, during the 5-week period Jan 3–Feb 6, 2020 (Google, 2020). Google analyses mobility trends for:

- Retail and recreation (retail): restaurants, cafes, shopping centres, theme parks, museums, libraries, and movie theatres
- Grocery and pharmacy (grocery): grocery markets, food warehouses, farmers markets, specialty food shops, drug stores, and pharmacies
- Parks (parks): national parks, public beaches, marinas, dog parks, plazas, and public Gardens
- Workplaces (workplaces): places of work
- Residential (residential): places of residence
- Transit stations (transit): public transport hubs such as subway, bus, and train stations

The most relevant data for this article relates to the transit trend, is presented below (figure 2). The diagram was prepared by the European Commission and presents data from 4 November, 2020.

The largest decrease of traffic in public transport hubs was registered in Spain and amounted to 84%. French, Italian and Portuguese societies reduced their visits over 70% whereas Lithuanians, Czechs and Swedes are located on the other end of the spectrum with 33%, 36% and 37% decline respectively.

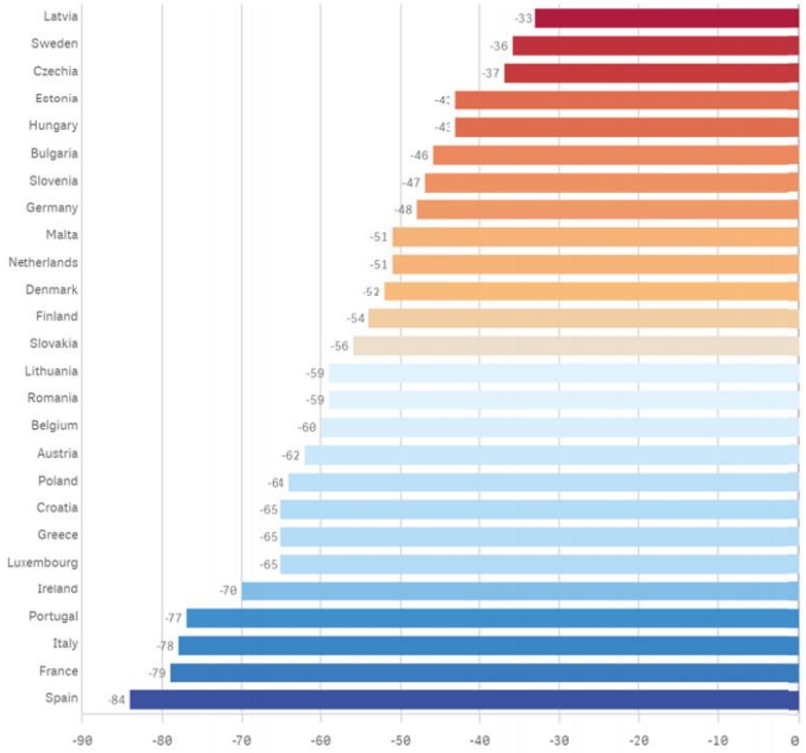



*Figure 17: Mobility trends on 04/11/20: percentage changes from baseline: transit (Source: European Commission)*

Using the same data, it has been calculated that Australia also recorded large declines in public transport hubs such as subway, bus, and train stations. The largest reduction occurred at the end of April and amounted to over 60%, while at the end of November a decrease of 40% was observed (figure 3).

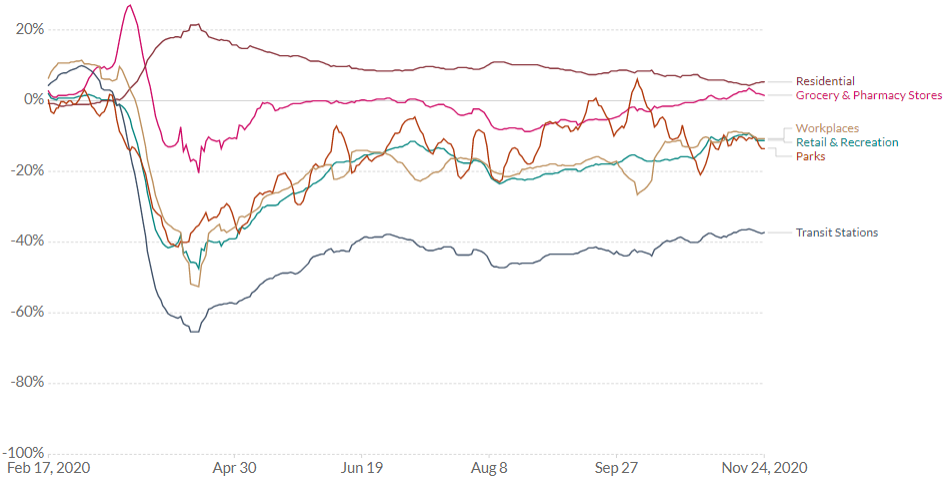



*Figure 18: Transit stations: How did the number of visitors change since the beginning of the pandemic?, Nov 27, 2020 (Source: Our World in Data)*

*2.2.2. Citymapper mobility index*

The Citymapper Mobility Index is calculated by comparing trips planned in the Citymapper application to a recent typical usage period (Citymapper, 2020). The application has allowed to compare the mobility index of US cities most affected by the coronavirus. As in other major cities in the world, a significant decrease in the movement of people is visible from the end of February to the end of March. In June, there is a slow increase in mobility due to lifting of restrictions on public transport.

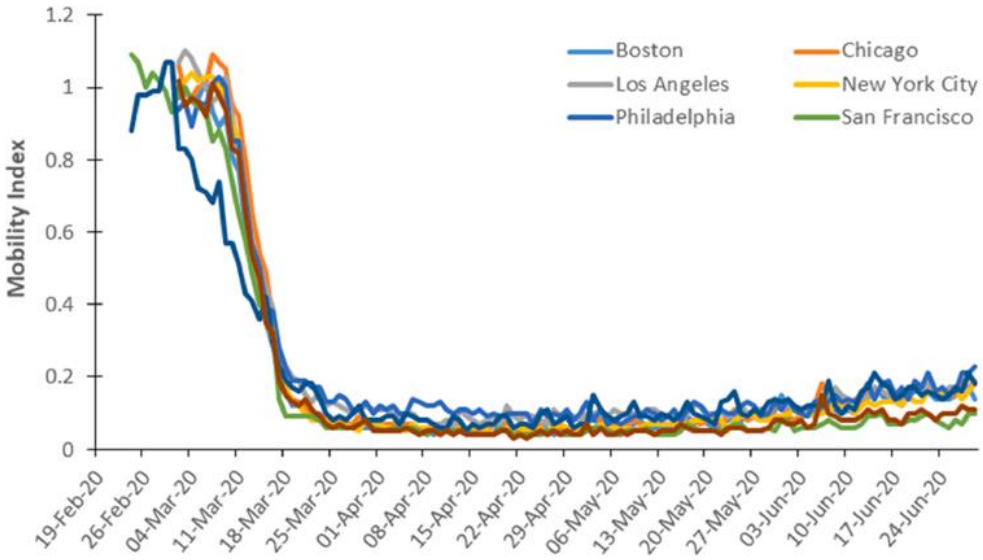



*Figure 19: Mobility changes in American cities in response to COVID-19 (Source: Abu-Rayash, 2020)*

*2.2.3. Apple mobility trend reports and Moovit Public Transit Index*

Apple's mobility trend reports show how human mobility has changed in countries and cities worldwide since 13 January 2020 (Apple, 2020). It is designed to help mitigate the spread of COVID-19. The reports specify three forms of mobility: driving, walking and public transport (transit). Brazil, a country strongly affected by the coronavirus pandemic, has been selected for the urban mobility analysis (figure 5). At the very beginning of the pandemic, a peak is visible in travels on foot (an increase by over 60%) as well as in car travels (an increase by 40%). Public transport journeys have been limited due to the risk of infection. Then, as a result of lockdown, traveling was almost completely suspended (a decrease of over 60%). There is an increase in travels from summer to autumn, but public transport remains in the greatest regression compared to walking and driving.

*Figure following on the next page*

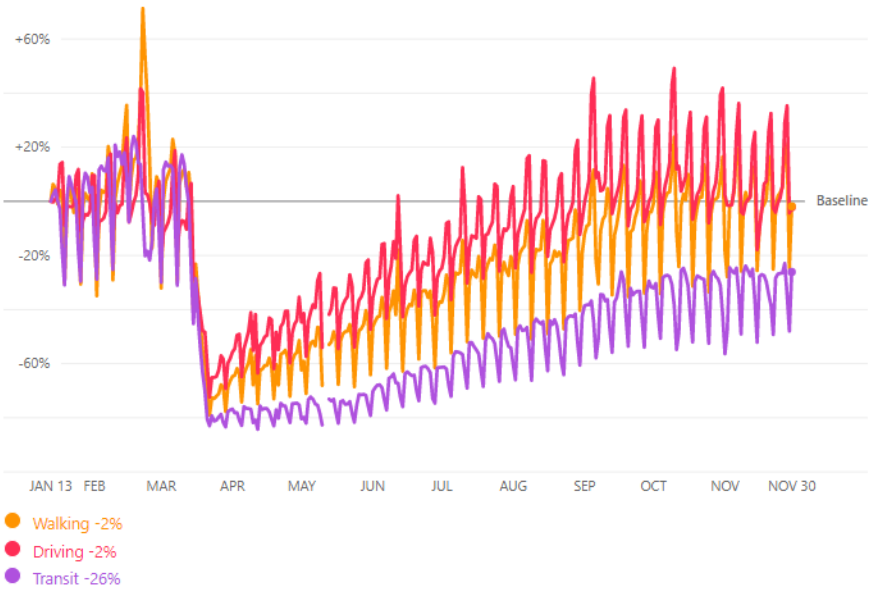



*Figure 20: Brazil. Change in routing requests since January 13, 2020 (Source: Apple, 2020)*

More detailed data for public transport are provided by the Moovit Public Transit Index (Moovit, 2020). Moovit analyses the repercussions of Coronavirus on public transport ridership worldwide, relative to the typical usage before the outbreak began (the week prior to January 15th). The graph below presents 10 Brazilian cities: Sao Paulo, Rio, Belo Horizonte, Curitiba, Porto Alegre, Fortaleza, Campinas, Recife, Brasilia, Salvador. The results are in line with data presented by Apple. The greatest drop reached almost 80% in May for the city of Fortaleza. In late November, the number of public transport passengers in the city of Brasilia had almost recovered to pre-pandemic levels.

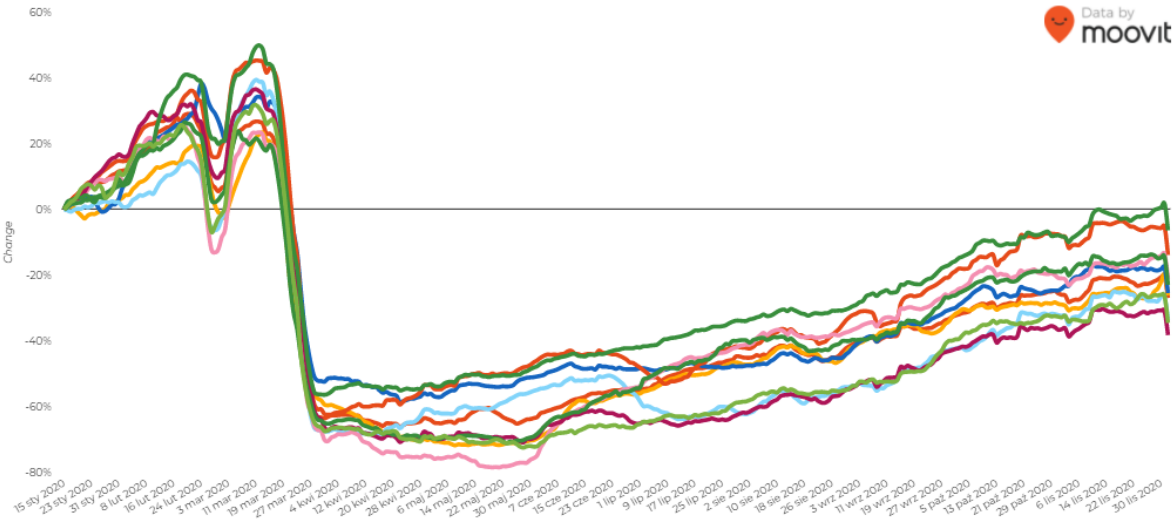



*Figure 21: Impact of Coronavirus (COVID-19) on Public Transit usage in 10 Brazilian cities (Source: Moovit)*

## 2.3. Data from regional public transport authorities

Unlike many countries, Sweden has opted for a strategy relying mainly on recommendations rather than mandatory restrictions. Public transport services were generally operated, however, people were advised to avoid travel with public transport. The data obtained from regional public transport authorities allowed to calculate the change in the number of trips in Stockholm

in various modes of transport: trains, trams and LRT (Light Rail Transit), metro (underground) and buses (Jenelius et al., 2020). The calculation of daily public transport ridership is based on ticket validation data from the digital ticket system. Ridership for both metro and commuter trains fell around 60% mid-March compared to the same period in 2019 (figure 7).

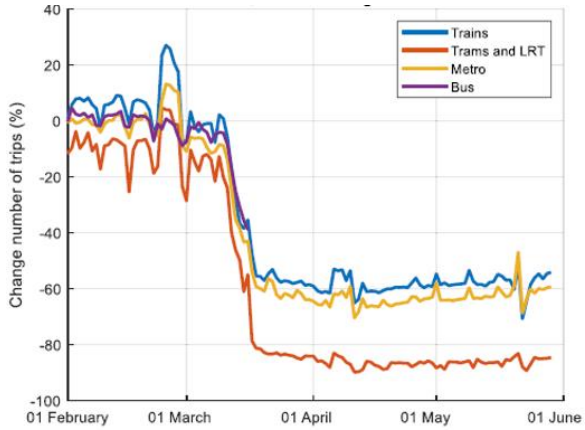



*Figure 22: Stockholm, relative change 2020/2019*
*(Source: Jenelius et al., 2020)*

## 2.4. Data from surveys of mobility

Surveys of mobility patterns have been conducted in many countries, e.g., Switzerland, Chile, Sweden (Jenelius et al., 2020) and Poland (Borkowski et al., 2020). Citizens were asked about travel behaviour and mode preferences. The results of one of the larger studies are presented below (Abdullah et al., 2020). Responses were collected from various countries around the world through an online questionnaire survey. Work was the primary travel destination for most respondents (58%) prior to COVID-19, however, shopping became the primary purpose of traveling for 44% of the respondents during COVID-19. The majority of respondents (36%) used public transport for their primary travel purposes before COVID-19 and a sharp decline in public transport use was observed during COVID-19. On the other hand, the use of other sustainable forms of transport such as cycling and walking has risen (figure 8).

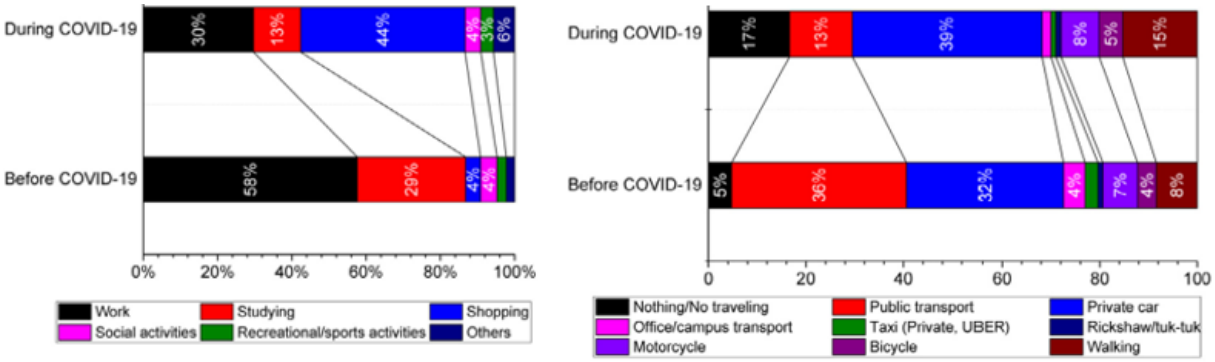



*Figure 23: Primary purpose of traveling before and during COVID-19 pandemic (left side). Mode for primary outdoor trips before and during COVID-19 pandemic (right side).*
*(Source: Abdullah et al., 2020)*

## 2.5. Bike-sharing ridership

The pandemic has affected bike-sharing systems in cites, nevertheless, bike-sharing systems have proved to be more resilient than public transport systems. For example, in Budapest public transport experienced the greatest reduction in demand (80%), while cycling (own bike) and bike-sharing system saw the lowest decrease (23% and 2%, respectively) (Bucsky, 2020).

The case-study of New York's Citi Bike noticed less significant ridership drop in comparison to a underground (71% vs 90% ridership drop)(Teixeira, 2020). Moreover, the study reveals a continued growth in the average trip duration, from a 13-minute daily average at the beginning of March to a 19-minute average by the end of the month (figure 9). Additionally, the study found compelling evidence of a possible modal transfer from some underground users to the bike-sharing system.

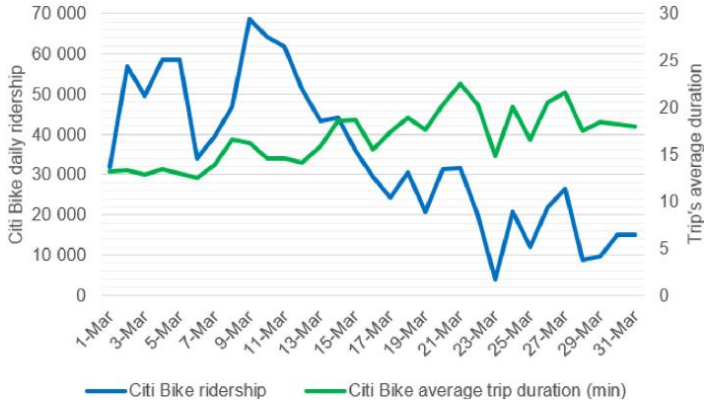



*Figure 24: Variation on Citi Bike average daily trip duration (minutes) versus its daily ridership throughout March 2020*
*(Source: Teixeira, 2020)*

## 3. THE EFFECTS OF COVID-19 ON THE ECONOMIC, ECOLOGICAL AND SOCIAL DIMENSIONS OF TRANSPORT

The comprehensive effects of the pandemic will be assessed in the future, however, some have already been observable. These effects appeal to the economic, ecological and social dimensions of transport and have both positive and negative results. According to the paradigm of sustainable development, humanity should strive to reduce air pollution, which has been observed as a result of travel restrictions. In addition, in many cities around the world, adequate urban mobility management has improved the conditions of travel for pedestrians and cyclists. On the other hand, the observed increase in the share of private car trips contradicts the idea of sustainable mobility.

### 3.1. The economic dimension

Economic activities have been largely stopped. The baseline forecast envisions a 5.2 percent contraction in global GDP in 2020 (The World Bank Group, 2020). Important feature of the current landscape is the historic collapse in oil demand and oil prices. All changes occurring as a result of a pandemic have affect transport, which is one of the key sectors of the economy. The International Civil Aviation Organization (ICAO) estimates that during the first half of 2020, compared to their original forecast, there will be an overall reduction of 47% to 58% of seats offered by airlines, 503 to 607 million passengers, and a potential loss of gross of operating revenues of airlines of 112 to 135 billion USD (ICAO, 2020). In the context of urban mobility, reductions in revenues from the sale of public transport tickets and parking fees have been noticed (Jenelius et al., 2020). Chicago has experienced a steep 52% decline in the number of parking tickets being issued (American City and County, 2020).

### 3.2. The ecological dimension

The transportation sector has been halted for the past few months, resulting in significant GHG reductions and energy savings, as the transportation industry accounts for 60% of global oil demand (Skiba, 2019). In addition, the global outbreak of the coronavirus pandemic has led to

a significant reduction of traffic and traffic-related urban air pollution. NO2 emissions were reduced by up to 60% in the city of Santander (Aloi et al., 2020). Sudden change in NO2 emissions related to reduction of urban traffic due to infection protection measures was also detected in Düsseldorf, Germany (Naethe et al., 2020) and in many other countries e.g. New Zealand (8-17% decrease in PM2.5; 7-20% decrease in PM10), South Korea (10% reduction in PM2.5 and 25% reduction in PM10) (Beria et al., 2020). Furthermore, the French study has determined the concentration of PM2.5 and PM10 linked to COVID-19-related deaths. The results showed evidence of a direct relationship between air pollution and COVID-19 mortality in France, confirming previous research regarding environmental factors involved in viral infection spread (Magazzino et al., 2020). The same results have been obtained in London: short-term exposure to air pollution (both NO2 and PM2.5) is significantly correlated with an increased risk of contracting and dying from COVID-19 (Sasidharan at al., 2020).

### 3.3. The social dimension

The ongoing COVID-19 pandemic is having a major impact on health, but has also affected numerous social phenomena on an almost unprecedented scale. The full societal impact COVID-19 pandemic is laid bare in urban mobility patterns. Pandemic may help to shift policies on urban mobility towards more environmentally friendly and citizen-focused solutions. Now, social distancing has led many municipalities to introduce new cycle paths and widen pavements. In Turin 95 km of new cycle paths were planned and the flow of bikes increased by 6.9% in August, compared to the same period in 2019. In Pamplona two important axes of the city have been extended for the use of the pedestrians and cyclers. To help cyclists, the municipality has built six modular parks, provided with charging systems for electrical bikes (Stardust Project, 2020). The city of Milan has announced that 35 km of streets will be transformed, with a rapid, experimental citywide expansion of cycling and walking space to protect residents (The Guardian, 2020). Similar actions for sustainable mobility and mobility management have been undertaken in New Zealand, Poland, Germany and many other countries. In addition, Milan awarded a bonus of 500 euros for the purchase of a new bicycle for residents. A positive effect of the pandemic is also a decrease in car accidents. Early lockdown period have witnessed a downfall in road fatality in countries such as France (56%), Norway (54%), London (36%), Ireland, Israel etc. compared to the month of 2019 (Dam et al., 2020). Traffic accidents were reduced (by up to 67%) in city of Santadner (Aloi et al., 2020).

## 4. CONCLUSION

The COVID-19 pandemic has prompted authorities around the globe to impose restrictions on transport and mobility at an unprecedented scale. The crisis has changed already people's transport behaviours in dramatic ways, with large reductions in aviation and public transport use and growth in use of private cars and active transport modes (e.g., walking and bicycles). People tend to use safer (in terms of infection) transport modes during pandemic. As lockdowns are lifted, policy will be crucial in determining whether mobility changes triggered by Covid-19 are positive or negative, in terms of their impacts energy use, safety and long-term environmental and health outcomes. There is a risk of a decline in the sustainability of mobility in urban areas. It is not known when does the demand levels for public transport systems will recover. On the other hand, comprehensive study proved that when ridership reduces by more than 40%, buses cannot be "greener" travel modal than cars in the post-COVID-19 future (Sui et al., 2020). Finally, it may be crucial to monitor changes in travel habits: will teleworking increase? Will travel patterns change for leisure, shopping, etc.?

**LITERATURE:**

1. Abdullah, M., Dias, C., Muley, D., Shahin, Md. (2020). *Exploring the impacts of COVID-19 on travel behavior and mode preferences*. Publisher: Transportation Research Interdisciplinary Perspectives
2. Abu-Rayash, A., Dincer, I. (2020). *Analysis of mobility trends during the COVID-19 coronavirus pandemic: Exploring the impacts on global aviation and travel in selected cities.* Publisher: Energy Research & Social Science
3. Airports Council International. (2020). *Airport traffic.* Retrieved 26.11.2020 from https://www.aci-europe.org/44-industry-data/40-airport-traffic.html#link_tab
4. American City and County. (2020). *Parking revenues: The unexpected casualty of COVID-19.* Retrieved 26.11.2020 from https://www.americancityandcounty.com/2020/11/25/parking-revenues-the-unexpected-casualty-of-covid-19/#
5. Aloi, A., et al. (2020). *Effects of the COVID-19 Lockdown on Urban Mobility: Empirical Evidence from the City of Santander (Spain)*. Publisher: MDPI, Sustainability
6. Apple. (2020). *Mobility Trends Reports.* Retrieved 30.11.2020 from https://covid19.apple.com/mobility
7. Arimura, M., Ha, T., Okumura, K., Asada, T., (2020). *Changes in urban mobility in Sapporo city, Japan due to the Covid-19 emergency declarations.* Publisher: Transportation Research Interdisciplinary Perspectives
8. Anderson, R.M., Heesterbeek, H., Klinkenberg, D., Hollingsworth, T.D. (2020). *How will country-based mitigation measures influence the course of the COVID-19 epidemic?* Publisher: Lancet.
9. Beria, P., Lunkar, V. (2020). *Presence and mobility of the population during the first wave of Covid-19 outbreak and lockdown in Italy*. Publisher: Sustainable Cities and Society
10. Borkowski, P., Jażdżewska-Gutta, M., Szmelter-Jarosz, A. (2020). *Lockdowned: Everyday mobility changes in response to COVID-19*. Publisher: Journal of Transport Geography
11. Bucsky, P. (2020). *Modal share changes due to COVID-19: The case of Budapest*. Publisher: Transportation Research Interdisciplinary Perspectives
12. Citymapper. (2020). *Citymapper Mobility Index.* Retrieved 21.11.2020 from https://citymapper.com/cmi
13. Dam, P., et al. (2020). *COVID-19: Impact on transport and mental health.* Publisher: Journal of Transport & Health
14. European Commission. (2020). *Coronavirus response: travel and transportation.* Retrieved 25.11.2020 from https://ec.europa.eu/info/live-work-travel-eu/health/coronavirus-response/travel-and-transportation_en.
15. European Commission. (2020). *The effect of COVID-19 confinement policies on community mobility trends in the EU.* Retrieved 25.11.2020 from https://publications.jrc.ec.europa.eu/repository/bitstream/JRC120972/jrc120972_covid_techreport_final.pdf
16. Fatmi, M. (2020). *COVID-19 impact on urban mobility.* Publisher: Journal of Urban Management
17. Google. (2020). *COVID-19 Community Mobility Reports.* Retrieved 25.11.2020 from https://www.google.com/covid19/mobility/
18. ICAO. (2020). *Effects of Novel Coronavirus (Covid-19) on Civil Aviation: Economic Impact Analysis.* Retrieved 25.11.2020 from https://www.icao.int/sustainability/Documents/COVID-19/ICAO_Coronavirus_Econ_Impact.pdf
19. International Energy Agency. (2020). *Changes in transport behaviour during the Covid-19 crisis*. Retrieved 25.11.2020 from https://www.iea.org/articles/changes-in-transport-behaviour-during-the-covid-19-crisis

20. Jenelius, E., Cebecauer, M. (2020). *Impacts of COVID-19 on public transport ridership in Sweden: Analysis of ticket validations, sales and passenger counts*. Publisher: Transportation Research Interdisciplinary Perspectives
21. Magazzino, C., Mele, M., Schneider, N. (2020). *The relationship between air pollution and COVID-19-related deaths: An application to three French cities*. Publisher: Applied Energy
22. Matteo, C., Jessica, T.D., Marco, A., Corrado, G., Maria, L., Stefano, M., (2020). *The effect of travel restrictions on the spread of the 2019 novel coronavirus (COVID-19) outbreak*. Publisher: Science
23. Moovit. (2020). *Moovit Public Transit Index.* Retrieved 30.11.2020 from https://moovitapp.com/insights/en/Moovit_Insights_Public_Transit_Index-countries
24. Naethe, P., Delaney, M., Julitta, T. (2020). *Changes of NOx in urban air detected with monitoring VIS-NIR field spectrometer during the coronavirus pandemic: A case study in Germany*. Publisher: Science of the Total Environment
25. Our World in Data. (2020). *Google Mobility Trends: How has the pandemic changed the movement of people around the world?* Retrieved 25.11.2020 from https://ourworldindata.org/covid-mobility-trends
26. Our World in Data. (2020). *Public transport closures during the Covid-19 pandemic*. Retrieved 25.11.2020 from https://ourworldindata.org/grapher/public-transport-covid?stackMode=absolute&time=2020-04-19&region=World
27. Sasidharan, M., Singh, A., Torbaghan, M. E., Parlikad, A. K. (2020). *A vulnerability-based approach to human-mobility reduction for countering COVID-19 transmission in London while considering local air quality*. Publisher: Science of the Total Environment
28. Skiba, S. (2019). *Relacje handlowo-transportowe państw Azji Centralnej u Unią Europejską*. Publisher: Przedsiębiorczość i Zarządzanie
29. Stardust Project. (2020). *How the Covid-19 pandemic is changing urban mobility*. Retrieved 22.11.2020 from http://stardustproject.eu/news/how-covid19-is-changing-urban-mobility/
30. Sui, Y., et al. (2020). *Mining urban sustainable performance: Spatio-temporal emission potential changes of urban transit buses in post-COVID-19 future*. Publisher: Applied Energy
31. Teixeira, J, F., Lopes, M. (2020). *The link between bike sharing and subway use during the COVID-19 pandemic: The case-study of New York's Citi Bike.* Publisher: Transportation Research Interdisciplinary Perspectives
32. The Guardian. (2020). *Milan announces ambitious scheme to reduce car use after lockdown.* Retrieved 21.11.2020 from https://www.theguardian.com/world/2020/apr/21/milan-seeks-to-prevent-post-crisis-return-of-traffic-pollution
33. The World Bank Group. (2020). *The Global Economic Outlook During the COVID-19 Pandemic: A Changed World*. Retrieved 25.11.2020 from https://www.worldbank.org/en/news/feature/2020/06/08/the-global-economic-outlook-during-the-covid-19-pandemic-a-changed-world
34. World Health Organization. (2020). *Archived: WHO Timeline-COVID-19.* Retrieved 23.11.2020 from https://www.who.int/news/item/27-04-2020-who-timeline---covid-19
35. Zhang, J. (2020). *Transport policymaking that accounts for COVID-19 and future public health threats: A PASS approach.* Publisher: Transport Policy

# USING THE BALANCED SCORECARD FOR TRANSLATING STRATEGY INTO ACTIONS AND FOR EXERCISING OF EFFECTIVE CONTROL

**Venelin Terziev**
*Georgi Rakovski Military Academy, Sofia, Bulgaria*
*University of Rousse, Rousse, Bulgaria*
*Kaneff University Hospital, Rousse, Bulgaria*
*Russian Academy of Natural History, Moscow, Russia*
*terziev@skmat.com*

**Marin Georgiev**
*Kaneff University Hospital, Rousse, Bulgaria*
*clementon@abv.bg*

**Olga Andreeva**
*Rostov State University of Economics, Rostov-on-Don, Russia*
*olvandr@ya.ru*

***ABSTRACT***
*The main role of Balanced Scorecards (BSC) as a tool for strategic management and control is associated with their essence of operationalized and synthesized expression of the strategy, which sets good enough prerequisites for metrifying their implementation. The model of the card, which implies identifying key factors of success and controllable parameters deriving from them, their target values and initiatives for their implementation is considered as a good enough basis for regulation and control over the strategy implementation.*
***Keywords:*** *Balanced scorecard, Performance measurement, Strategic management, Control, Organization*

## 1. INTRODUCTION

The very first thoughts on the concept of a Balanced scorecard prove that any organization can be analysed through specific perspectives and the BSC model sets the strongest possible connection between short-term operational control and a long-term strategy. This way, the organization focuses on a set of critical key coefficients that reflect the state and tendencies in certain planned areas. In other words, the company is forced to control and analyse everyday operations, since they influence the long-term development and the strategic perspectives. Therefore, the concept of a Balanced Scorecard contains three time dimensions that analyse registered results, control the present activity and are focused on the future.

## 2. BALANCED SCORECARD AS A TOOL FOR STRATEGIC MANAGEMENT AND CONTROL

The Balanced Scorecard (Fig. 1) is a way to reach a consensus and implement control as to how to develop one organization that follows its strategy. There is an excessive number of key coefficients in business and public sector. The difference is in focusing on a deliberately chosen set of criteria – very few to be observed – and on using them to achieve and share a common view of the organization`s strategy for its future development. The approved set of criteria, formed on the basis of a necessary and reasonable balance, reflects the strategic choice of the organization. The selected criteria can be considered as an addition to financial control and as a means to reduce the risk of harmful short-term approach while at the same time they provide a clear idea to the organization`s employees about their work, hidden expectations and the

future of the company. Some scientists (Horvath & Partner, 2000) argue about changing the approach from financial to strategic control, i.e. to focus attention on the overall organizational strategy instead on a specific direction in management. The question affects the nature of the economy more than the monetary method. A good economy implies good resource management.

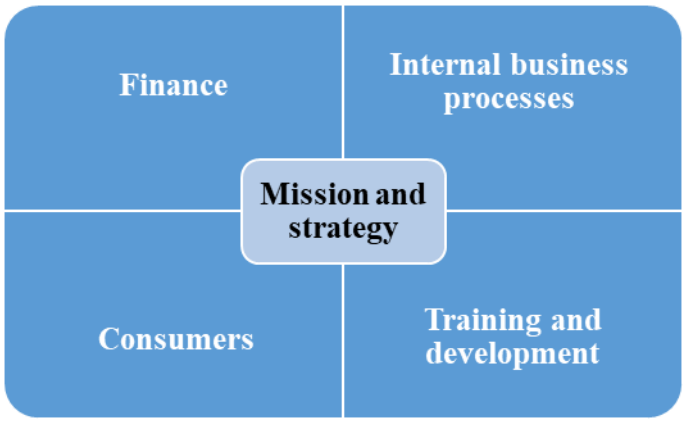



*Figure 1: The Balanced Scorecard Framework*

Contemporary organizations are much more than just a smart investment of capital. It is important for every leading manager to know how to manage talent, market position and accumulated knowledge. The perfection of a simple concept predetermines the universal character of the BSC model and its wide application, timely demonstrating the tangible and intangible benefits of combining financial and non-financial criteria. In most organizations the processes of strategic planning and operational financing exist independently of each other and separate organizational structures are involved with them. The process of strategic planning is constant, sets long-term plans, goals and strategic initiatives and is usually implemented by deepening significant trends registered on an annual basis. On the same basis the top management approves the budget of the organization. It consists almost entirely of numerical financial indicators, which usually mark the connection of the strategic plan with the organizational goals. If an organization wants to establish a link between its actions and strategy, its strategic planning should be linked to operational funding. “The processes of determining strategic goals represent the aspiration of the business unit to achieve excellent results in terms of strategic indicators of the opportunities that form its BSC” (Muller, 2000). Organizations use resources and implement initiatives to ignore the differences between the current situation and the indirect goals for a future period. One of the most essential alternatives for providing real control over the strategies validity and strategic planning effectiveness is determining specific short-term goals regarding the parameters of the BSC. These interim controls are a real illustration of the top executive management performance about the pace and results of current programmes and initiatives for strategic indicators. Such detailed short-term financial planning is important, but the budget process must include the expected efficiency of the other areas included in the card structuring. This means that the executive management must provide, as part of integrated planning and budgeting, short-term monthly or quarterly tasks for performance and efficiency indicators for its users, innovation and operational processes, and systems and organization to achieve synchronization between employees. These key stages of planning for the next year express the expectations for short-term achievements on the long-term process of implementation of the strategy chosen by the enterprise. If the process of setting long-term goals is carried out correctly, the short-term budgeting process will consist of bringing the first year of the multiannual plan into current budgets for the goals and indicators in all areas of the BSC.

Targeting the necessary conference link between strategy and budget, a new direction for improving the BSC model is emerging. In this process, two management problems are taking place simultaneously:

- First. Increasing the operational and tactical efficiency and related budgets.
- Second. Implementation of successful strategic development through reasonable strategic planning. The combination of the two solutions defines a new content and functionality of the BSC as a tool for strategy management and control.

In this line of thought, the relationship between strategy and budget, strategic planning and budgeting is a procedure based on effective analysis and detailing to make the smooth transition from a high-level strategy to the creation of a budget for ongoing activities. The strategy defines the course of organizational development for a 3-5 year period of its implementation, while the annual budget provides the first year of this process and marks the links between current and strategic goals. The BSC was originally developed to provide managers with structured information about performance criteria based on a combination of leading and lagging indicators. However, since its introduction, the BSC has gradually grown from a means of organizing criteria into a strategic control mechanism. It has evolved in terms of its construction, as well as the process of development and models for use. This evolution goes through three stages, becoming what the author now calls a third-generation BSC. Third-generation BSC still is a methodology for managing and assessing the progress of organizations on their way to achieving strategic goals. It takes years of practical experience and scientific work to overcome the drawbacks of the original model, which is most often associated with the unsuccessful application of BSC as an effective and efficient tool for corporate governance and control. Typical problems have already been resolved, such as lack of proprietary attitude towards management, monitoring only financial criteria and the inability to force the management system to develop and improve. The ideas of the third-generation BSC are based on the following key concepts for activity management and strategic development control. The model`s importance is based on the following points of the organizational management content:

- Causality: identifying and developing activities needed to achieve key results and implement strategies.
- Training: using feedback to find ways to improve and refine work.
- Ownership: using consensus so that everyone knows what needs to be done and is fully involved in the process.
- Communication: providing clear and unambiguous information to reveal the goals and optimize the organizational activity.

A significant breakthrough during the evolution of BSC is the realization that successful use of this tool depends not only on the use of proper methods for selection of the criteria included in it, but also on the fact whether organizations properly implement management processes that allow the card to be effectively used by managers. These statements cause the development of BSC as a “framework for management and control”, which proves the hypotheses by deriving them from the following factors:

- clear definition of “desired state” or strategic destination (positioning);
- medium-term strategic objectives, subject to assessment, decomposed into activities, results and, if necessary, into standard perspectives (Kaplan, Norton, 2004);
- specific and clearly defined goals, interpreted on the basis of vision, mission and strategy;
- priority initiatives related to the structuring and implementation of strategic goals;
- analysis of the expectations and organizational needs and on this basis development of criteria requirements for determining key characteristics, set as a system of criteria.

Effective BSC of the latest generation are those that are developed with the active participation of the management team who will use them to manage the enterprise. The application of a technologically sound and appropriate development process is crucial to success. It is recommended to use a simplified process (Kaplan, Norton, 2004), according to which the management team itself determines the "content", which largely implies a positive and timely result. The appropriate and effective management and control model of BSC registers certain gaps and problems, solution of which is a way to its improvement and enrichment in terms of contents and functionality. Is it possible to define and develop strategic goals of the organization to control its strategic development, by engaging all staff and so that all these actions lead to success and stable development? BSC is a modern management and control model through which we can accomplish this task. Together with the Balanced scorecard it is possible to perform flexible and effective management and strategic control using not numerous yet suitable indicators. A starting point in the implementation of effective management and control is the balanced combination of different in nature necessary indicators reflecting the activities of the organization and the development of a logical system such as BSC based on proven causality. The implementation of this process and its specific details comes along with certain issues, the analysis and solutions to which are an alternative for improving the BSC as a model of real control. "Everyone acquainted with the life of an organization knows that there are many control systems that affect its daily activities. However, there is a lack of a systematic understanding of why and how these systems are used as a means to achieve certain programmes" (Simons, 1995). By organizing their management system based on the structure of BSC, managers can achieve their main goal - putting the strategy into action and control over this process. When organizations turn their strategic vision into action, this crucial transition helps them realize the real upswing and gain real benefits from developing and implementing strategically balanced cards. The results of the initially developed BSC always lead to a series of management processes that mobilize and reorient the organizational efforts. The development of the initial BSC in an organization is achieved on the basis of systematic processes that create consensus and provide clarity on how the mission and strategy can be brought into a system of current goals and indicators. As a result of an in-depth study of good practices among organizations that have implemented and used Balanced cards, a generalized model of five principles (Kaplan, Norton, 2001) has been established. Organizations could follow these principles in transforming their strategy into specific actions and implementing real, strategic control. According to the first principle the change must begin at the highest level. The idea is that senior management initiates implementation of the strategy, by setting the organization`s vision and goals in the first place, by demonstrating personal interest and engaging the staff with the forthcoming change. The second principle states that the strategy must be interpreted, i.e. described in details, linked to deadlines and operational plans. At this stage, an organization develops strategic cards, that analyse the connections between the individual elements of the strategy, defines the goals and their measures and identifies strategic initiatives. The third principle is based on the necessity of an organization to be in a state that allows it to implement corporate strategy. At this stage it is obligatory to develop BSC with indicators for lower in the hierarchy business units, i.e. departments, workshops, in order to identify opportunities for synergies to achieve maximum added value. The fourth principle expresses the need for strategy implementation to become an essential part of the activity of each employee in the organization. This is a difficult process due to the fact that it involves the development of individual Balanced Cards, which contain individual goals and consider the relationship between each employee's personal contribution to the implementation of the company's strategy. It should be noted that the practical application of Balanced cards as a form of individual development and control has meaning and logical explanation, especially for key individual positions (consultants, sales representatives, etc.), where their activities have a

significant impact on organizational efficiency due to which the application of BSC is financially secured and objectively necessary. An essential point here is to find the intersection between individual and corporate values. Success at this stage is critical because although the strategy is defined by management, its implementation depends on the staff working in the organization. By aligning and consolidating the goals and incentives at the individual level with those of the organization, effective transparency of communications and maximum effectiveness of management and control is achieved. The fifth principle is of a general nature, imperatively stating that the strategy must become an ongoing and continuously evolving process. "It is at this point that various practices related to resource management, the process of learning organization and the updating of control initiatives and activities are being developed" (Botta, 2001).

## 3. CONCLUSION

The aforementioned statements lead to the following conclusions (Terziev, Georgiev, 2017; Terziev et al. 2017a; Zahariev et al. 2020; Laktionova et al. 2019):

- First, the main role of the Balanced Scorecard as a tool for strategic management and control is associated with their essence of operationalized and synthesized expression of the strategy, which sets good enough prerequisites for metrifying its implementation. The model of the card, which helps identify the key success factors and the resulting basic controllable parameters, their target values and initiatives for their implementation, is considered as a good enough basis for regulation and control over the strategy implementation. As long as this model is considered a function of an already existing strategy, the balanced scorecard fits perfectly into the idea of the strategy as a "big model", a "plan" and a "position" functioning as a tool for strategy implementation. In principle, this role of the card serves the manifestation of control as negative feedback at the strategic level.
- Second, the Balanced Scorecard as a tool for strategic management and control entirely fits into the existing views on elements of the control function, including those of the leading Bulgarian researchers. The fundamental novelty that they introduce, as mentioned above, is related to the applied theoretical and practical approaches to operationalize the norm of the system in a strategic aspect, i.e. in terms of the first element of the control function. In this regard, we should emphasize the leading role of this element in the manifestation of control in different areas and at different organizational levels, which is particularly common in Bulgarian research and especially in those by M. Dinev. Until the emergence of Balanced Scorecards, this element of the control function is either considered fragmentarily or is absent in the theoretical developments on the structure of the control function in numerous foreign sources.
- Third, the specifics of developing the Balanced Scorecard create sufficient preconditions for their active role as a tool for effective management and control over the very process of strategy development. This role can be significant even in the context of the implementation of strategy concepts such as "big model", "plan" and "position". This is because in the process of operationalization of the strategy and determination of the key controllable parameters included in the card, it is required to prove the causal relationships between them and the impact of changes in their meanings on the target results of the organization. Experience shows that in most cases this leads to rethinking, redefining and refining the strategy itself. In this sense, the development of the card sends feedback control signals to the strategy itself, i.e. plays the role of positive feedback in the process of its improvement even before the stage of its development.
- Fourth, being a generalized expression of the strategy, the card has no analogue among the known strategic tools for clear, specific and accessible presentation of strategic intentions

among the staff of the organization at all organizational levels. The chain included in the process: "key success factors> key indicators and interconnections between them> target values of indicators> strategic initiatives to achieve the target values", creates extremely favourable conditions for the development and unification of "intellectual models" in the organization. In this context, the Balanced Scorecard can be considered as a tool for implementation of a "learning organization" concept. From this point of view, the very process of developing the card down the hierarchical structure of the organization can be seen as a process of controlling the views of different employee categories about the success factors and ways to master them. In other words, being a tool for strategic management and control, the card creates prerequisites not only for analysis and control over behaviour, but also for its deep conditioning in the form of "intellectual models" of success. This is again a role of negative feedback, which contributes to the clear understanding of the strategy and the ways for its implementation at different organization`s levels by the senior management and initiates means to manage the perception of problems and control this whole understanding.

- Fifth, implementation of the Balanced Scorecard as a tool for organizational communication in accordance with the "learning organization" concept creates favourable conditions for manifestation of control over the strategy implementation as a positive feedback. As a clear, specific and accessible manifestation of the strategy, the card not only "transfers" strategic intentions from top to bottom in the hierarchy of the organization, but also draws from the bottom up the initiatives for changes in the strategy. In this sense, the Balanced Scorecard serves as a tool mainly for controlling the adequacy of the strategy in the process of its implementation. From this point of view, it is necessary to conclude that as a tool for strategic control the card is able to serve equally the application of the strategy concepts such as "big model", "plan" and "position" and the application of the strategy concept "emerging or developing". This makes the card a universal tool for management and control, which naturally fits into the implementation of modern views on strategic management, regardless of their specifics and differences (Terziev, Stoyanov, Georgiev, 2017b-c; Terziev et al. 2017d).

**LITERATURE:**

1. Horvath & Partner. (2000). *Balanced Scorecard umsetzen*. Stuttgart, 2000.
2. Muller, A. (2000a). *Strategisches Management mit der Balanced Scorecard*. Stuttgart, 2000.
3. Kaplan, R., Norton, D. (2004). *Strategy maps: converting intangible assets into tangible outcomes*, HBRP, 2004.
4. Simons, Robert. (1995). *Levers of Control: How Managers Use Innovative Control Systems to Drive Strategic Renewal*, (Boston: Harvard Business School Press, 1995).
5. Kaplan, R., Norton, D. (2001). *Having Trouble with Your Strategy? Then Map It!* Harvard Business Review, 2001, I-II.
6. Botta, V. (2001). *Balanced Controlling*. IS-Report 3/2001.
7. Terziev, V., Georgiev, M. (2017). *Highlights of the evolution of the "Balanced Scorecard"idea as a model for managing strategy development and control*. // SOCIOINT 2017- 4th In-ternational Conference on Education, Social Sciences and Humanities 10-12 July 2017- Du-bai, UAE, OCERINT- International Organization Center of Academic Research, Istanbul, Turkey, 2017, pp. 607-610, ISBN: 978-605-82433-1-6.

8. Terziev, V., Nichev, N., Stoyanov, E., Georgiev, M. (2017a). *A general principle of the development process of balanced scorecards as an instrument of control*. // Proceedings of ADVED 2017- 3rd International Conference on Advances in Education and Social Sciences 9-11 October 2017- Istanbul, Turkey. International Organization Center of Academic Research, www.ocerint.org, 2017, pp. 690-694, ISBN: 978-605-82433-0-9.
9. Zahariev, A., Zveryakov, M., Prodanov, S., Zaharieva, G., Angelov, P., Zarkova, S., Petrova, M. (2020). *Debt management evaluation through Support Vector Machines: on the example of Italy and Gree*ce. // Entrepreneurship and Sustainability Issues 7(3): 2382-2393. https://doi.org/10.9770/jesi.2020.7.3(61).
10. Laktionova, O., Dobrovolskyi, O., Karpova, T. S., Zahariev, A. (2019). *Cost Efficiency of Applying Trade Finance for Agricultural Supply Chains*. // Management Theory and Studies for Rural Business and Infrastructure Development, 41(1), 62-73. https://doi.org/10.15544/mts.2019.06.
11. Terziev, V., Stoyanov, E., Georgiev, M. (2017b). *Prerequisites for the development of the balanced scorecard model*. // Scientific journal «Economics and finance». Topical issues of contemporary science: Collection of scientific articles, C.E.I.M., Valencia, Venezuela, 2017, pp. 55-61, ISBN 978-0-9942661-1-8.
12. Terziev, V., Stoyanov, E., Georgiev, M. (2017c). *Prerequisites for the implementation of the balanced scorecard model*. // Scientific journal «Economics and finance». Topical issues of contemporary science: Collection of scientific articles, C.E.I.M., Valencia, Venezuela, 2017, pp. 61-68, ISBN 978-0-9942661-1-8.
13. Terziev, V., Banabakova, V., Latyshev, O., Georgiev, M. (2017d). *Opportunities of application of the balanced scorecard in management and control*. // Proceedings of ADVED 2017- 3rd International Conference on Advances in Education and Social Sciences. International Organization Center of Academic Research, www.ocerint.org, 2017, pp. 773-791, ISBN: 978-605-82433-0-9.

# GOVERNMENT EXPENDITURE EFFICIENCY AND MACROECONOMIC PERFORMANCE OF BALKAN COUNTRIES: DEA APPROACH

**Presiana Nenkova**
*University of National and World Economy, Bulgaria*
*pnenkova@unwe.bg*

**Gergana Mihaylova-Borisova**
*University of National and World Economy, Bulgaria*
*gmihaylova-borisova@unwe.bg*

***ABSTRACT***

*Public sector performance and efficiency is of significant interest not only to policy makers but also to all economic agents. In recent decades, special attention has again been paid to public sector spending which leads to high levels of economic growth, high employment, and price stability. The last crisis periods also raise the question of better management of public resources to achieve economic policy objectives and to foster economic recovery and macroeconomic stability. In many countries, the main tool used to influence the exit from crises and to stimulate the economy was government expenditures. The current study uses the non-parametric approach Data Envelopment Analysis (DEA) to investigate and evaluate the countries' technical efficiency based on one input – total government expenditure in % of GDP and several macroeconomic outputs. We measure the relative macroeconomic performance of 12 Balkan countries and compares them for the period 2007-2019. The results show that the efficiency of the Balkan countries is decreasing over time. Increasing differences in the countries' efficiency is also observed together with the fact that bigger governments or countries with higher government expenditures relative to GDP tend to be less efficient.*
***Keywords:*** *efficiency, government expenditures, fiscal policy, DEA, Balkan countries*

## 1. INTRODUCTION

Efficient use of public resources leads to higher economic growth, higher employment, and price stability. The analysis of public sector performance and efficiency of government spending is of particular importance since general increase in government expenditures does not necessarily lead to an increase in public welfare and economic development (Baciu, Botezat, 2014). The performance or efficiency of the public sector is also important with regard to the competition for mobile factors as labor and capital, which move freely around the world. Inefficiencies due to an oversized public sector could be attributed to the fact that part of public funds spending provides no benefits to taxpayers. Inefficient public sectors could not attract mobile factors and in a globalized world this would put bigger restrictions on tax revenue collection. The crises observed in recent decades: the financial crisis that began in the United States in 2008 and turned into a global financial crisis affecting all countries in the world; the European debt crisis in 2012-2013, and the current economic crisis due to coronavirus pandemic also raise the question of better budget management and efficiency of the government expenditures. One of the main tools used to influence the exit from crises and to stimulate the economy is government spending. After the significant strain put on government expenditure to alleviate the consequences of economic crises the wave of consolidation undergone by public budgets in many countries led to significant cut in essential public service delivery. One alternative to public expenditures decrease is more efficient use of public resources and better public sector performance, i.e. to produce better results given a certain public spending.

The current study uses the non-parametric approach Data Envelopment Analysis (DEA) to evaluate the countries' technical efficiency based on several macroeconomic output indicators and one input indicator. We compare the relative macroeconomic performance of 12 countries, namely Bulgaria, Romania, Slovenia, Croatia, Greece, Albania, Serbia, Bosnia and Herzegovina, North Macedonia, Montenegro, Kosovo and Turkey, with all or part of these countries located within the Balkan Peninsula, during the period 2007-2019. Our research is based on two hypotheses. The first hypothesis is that the efficiency of government expenditures decreases over time, due to crisis periods, requiring higher state participation in the economy. The second hypothesis is that countries with a bigger public sector or higher share of government expenditure to GDP possess lower efficiency. The study tries to contribute to the existing literature on efficiency of government expenditures and macroeconomic performance of countries in two ways. First, we measure the efficiency of government expenditures and macroeconomic performance of all countries lying on the Balkan Peninsula. Only few of Balkan countries such as Bulgaria, Romania, Greece, Slovenia, Slovakia, have been included in some efficiency studies conducted at European Union level (Baciu, Botezat, 2014; Halaskova et al., 2018). Second, we cover a relatively long period of time including more than ten years, starting in 2007. The current study is organized as follows: The second section gives a short overview of existing literature on public sector efficiency. The specifics of the methodology used to determine the technical efficiency of countries as a decision-making unit is presented in the third section. The fourth section summarizes the main steps of the research conducted and explains the results. The last section concludes.

## 2. LITERATURE REVIEW

Studies measuring the efficiency of governments have mainly focused on specific areas of the public sector services provision, while studies examining the global performance of a country, and its determinants have attracted less attention in the past. During the last ten years there is a growing number of studies that use different techniques to measure the efficiency of government expenditures and to assess the efficiency and effectiveness of countries' fiscal policy as well as countries' macroeconomic performance as a whole. Among the economic studies performed to measure the public sector efficiency we can distinguish several groups based on the methodology used. The first group comprises studies, focused on the use of a composite indicator consisting of several sub-indicators, which reflects important public sector activities (Afroso et al., 2003; Afroso et al., 2006; Afroso et al., 2007; Baciu and Botezat, 2014; Hauner, Kyobe, 2008). Two subtypes of research stand out. The first subtype, or the so-called macro approach aims to calculate the efficiency of total government expenditures. The second subtype - micro approach aims to measure the efficiency of a specific category of government expenditures such as healthcare, research and development, education, etc. The second group of studies is concentrated on calculating the efficiency of government expenditures using the non-parametric method "Data envelopment analysis (DEA)" (Baciu and Botezat, 2014; Afonso et al., 2006; Afonso et al., 2019; Halaskova et al., 2018; Raber, 2017; Hauner, Kyobe, 2008; Wang, Alvi, 2011; Lovell et al., 1995; Mohamad, Said, 2011; Montes et al., 2019; Ouertani et al., 2018; Boueri et al., 2014; Herrera, Ouedraogo, 2018; Herrera, Pang, 2005; Mattina, Gunnarsson, 2007; Hu et al., 2020). The third group of studies measures the efficiency of government expenditures through the use of the so-called parametric approach "Stochastic Frontier Approach (SFA)" (Grigoli et. al., 2013), and the fourth group of applies another non-parametric method, the Free Disposal Hull[1] (FDH) (Herrera, Ouedraogo, 2018; Herrera, Pang, 2005; Afroso et al., 2003).

[1] Data Envelope Analysis (DEA) and Free Disposal Hull (FDH) are the used nonparametric methods, used to measure efficiency. They are based on the definition of a production frontier (Mihaylova-Borisova, 2015).

Lovell et al. (1995) and Mohamad et al. (2011) apply Data Envelopment Analysis (DEA) method for the purposes of the macroeconomic performance assessment by defining almost the same outputs and inputs. Based on Lovell et al. (1995) who concluded that DEA "... is fully appropriate for the analysis of the macroeconomic performance" of the countries, we also apply DEA to calculate the efficiency of the Balkan countries for the period of 2007 through 2019.

## 3. METHODOLOGY AND DATA USED

In order to measure the efficiency of decision-making units it is first necessary to decide on the approach to construct a best practice frontier and second to define the appropriate set of inputs and outputs.

### 3.1. Data Envelopment Analysis

The technique used in current study for the purpose of technical efficiency measurement of government expenditures is the non-parametric approach Data Envelopment Analysis (DEA). The DEA approach is a method, based on liner programming for efficiency measurement of respective production units, so-called decision-making units (DMUs), in relation to a specific efficiency benchmark derived from the most efficient units included in the model. The most efficient units define the production frontier. The DEA approach is usually applied to non-profit units, in particular universities, hospitals, etc., but in the last thirty years it is actively applied for profit-making units. In the present study government is considered as a DMU or producer, using specific inputs in order to produce the respective amount of outputs. The DEA approach is not based on a preliminary formulation of the production function form. Thus, there is no possibility of error in this respect. However, the approach has a strong dependence on extreme observations, which makes it difficult to distinguish whether the deviation from the production frontier, defined by the model, is due to inefficiency or random errors. The DEA approach has a number of advantages. One of them is the ability to use multiple inputs and outputs without specifying the significance of these factors (Kumar, Gulati, 2008; Lin, Lee, Chiu, 2009). In addition, the DEA approach can be used to analyze relatively small samples of production units. So, it is appropriate to use the DEA approach for our sample comprising 12 Balkan countries instead of methods such as the Stochastic Frontier Approach (SFA), based on predefinition of the production function such as the Cobb-Douglas production function or another type of production function. The method uses inputs and outputs of the production units. It selects the units, lying on the efficiency frontier and measures the efficiency of the individual units in relation to it. There are two forms of the method in particular output-oriented DEA approach and input-oriented DEA approach. The output-oriented DEA approach minimizes inputs to achieve the specific outputs. The input-oriented DEA approach maximizes outputs by keeping inputs at their current levels. The DEA approach calculates the technical efficiency of the production units, which takes value of 0 to 1. The production units, having technical efficiency of 1, lie on the production frontier. Production units can work under constant return to scale (CRS) or under variable return to scale (VRS). If the production units use one input in order to produce one output it is effective if it lies on the production frontier. On Figure 1, production units A, B and C are technically efficient, but they produce with a different return to scale. Production unit A is technically efficient, but it lies on this part of the production frontier, which corresponds to an increasing return to scale. Production unit B is technically efficient, but it lies on this part of the production frontier, which corresponds to a decreasing return to scale. Production unit C is technically efficient and operates at technologically optimal scale of production or at constant return to scale.

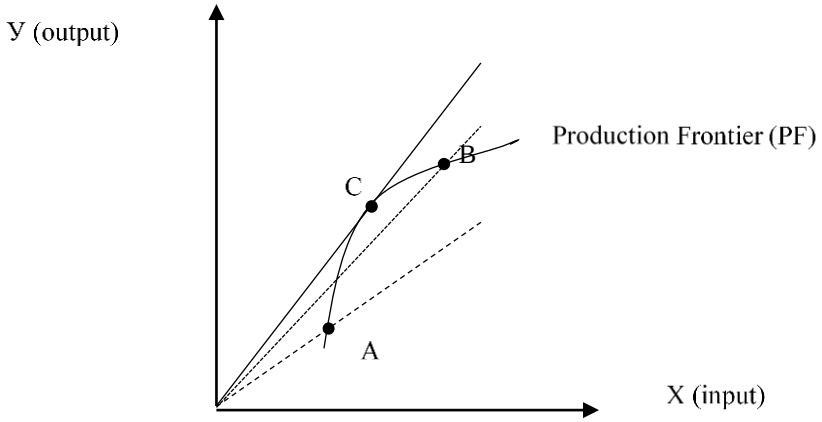



*Figure 1: Constant and variable return to scale*
*(Source: Coelli et al. (2005), Nenovsky, Mihaylova, Ivanov (2008))*

### 3.2. Data used

The study uses annual data for 12 Balkan countries, in particular Bulgaria, Romania, Slovenia, Croatia, Greece, Albania, Serbia, Bosnia and Herzegovina, North Macedonia, Montenegro, Kosovo and Turkey. The period covered by the study is 2007-2019. The macroeconomic performance of a country is characterized by main macroeconomic indicators such as economic growth rate, inflation, measured by the consumer price index, employment and trade balance, which are the objectives of the country's economic policy. The objectives could be reached by using the monetary policy and fiscal policy. As the purpose of the paper is to investigate the efficiency of the government sector in Balkan countries, the fiscal policy performed by the government will be taken into consideration. For the purpose of the study one input, in particular government expenditures as a % of GDP, will be used, as well as four outputs. We use the methodology applied by Mohamad and Said (2011). Similar approach to define inputs and outputs was used by Lovell et al. (1995).

The variables used are:
Input (X): Total government expenditures as % of GDP.
Output 1 ($Y_1$): GDP, real growth rate, %.
Output 2 ($Y_2$): The ratio of exports to imports, used as a proxy for trade balance.
Output 3 ($Y_3$): Inflation, measured by consumer price index (CPI), annual, %.
Output 4 ($Y_4$): Employment to population ratio, 15+, total (%).

The standard deviation of the selected indicators is presented on Table 1. In respect to the value of the government expenditures to GDP there is a high standard deviation among Balkan countries in the period 2007-2017. There is high standard deviation in respect to the GDP growth rate in the period 2008-2013 and in respect to the employment ratio in the period 2007-2013.

*Table following on the next page*

| | Public expenditures to GDP, % | GDP growth (%) | Exports to Imports | Inflation | Employment to population ratio (%) |
|---|---|---|---|---|---|
| **2007** | 8,39 | 1,43 | 0,18 | 2,36 | 9,10 |
| **2008** | 7,89 | 3,06 | 0,20 | 2,96 | 9,29 |
| **2009** | 8,02 | 3,44 | 0,20 | 2,91 | 8,49 |
| **2010** | 8,04 | 2,99 | 0,19 | 2,31 | 8,16 |
| **2011** | 8,51 | 3,46 | 0,21 | 2,59 | 7,91 |
| **2012** | 8,66 | 2,66 | 0,22 | 2,24 | 7,89 |
| **2013** | 11,07 | 2,04 | 0,22 | 2,61 | 6,93 |
| **2014** | 8,19 | 1,40 | 0,26 | 2,77 | 7,25 |
| **2015** | 8,40 | 1,30 | 0,28 | 2,46 | 7,76 |
| **2016** | 7,25 | 1,28 | 0,28 | 2,45 | 7,17 |
| **2017** | 6,72 | 1,63 | 0,34 | 2,80 | 7,13 |
| **2018** | 6,57 | 1,04 | 0,61 | 4,25 | 7,43 |
| **2019** | 6,67 | 1,01 | 0,83 | 4,08 | 7,14 |

*Table 1: Standard deviation of indicators*
*(Source: Authors' calculations)*

Balkan countries reported relatively high economic growth rate for the period 2007-2019. On average they were less affected by the global financial crisis - in 2009 the Balkan countries reported an economic decline of 2.9%, which made their recovery easier, while the EU countries registered a drop of 4.3%, according to the Eurostat's data. During the period under review among the top performers with respect to economic growth were Kosovo, Romania and Albania (Figure 2).

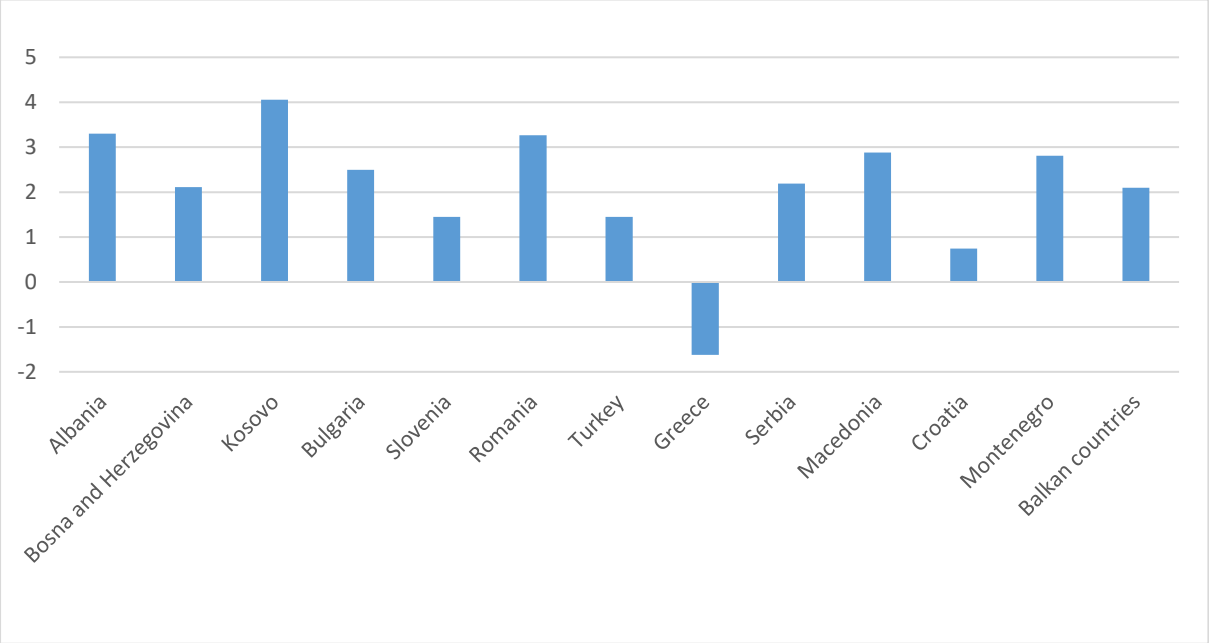



*Figure 2: Average economic growth rate, 2007-2019*
*(Source: World Bank, Authors' calculations)*

Albania and Romania also were the countries that registered high employment to population ratio, characterized also with price stability (the average inflation of 2.3% was reported in Albania in the period 2007-2019 and 2.2% in Romania) (Figure 3 and Figure 4).

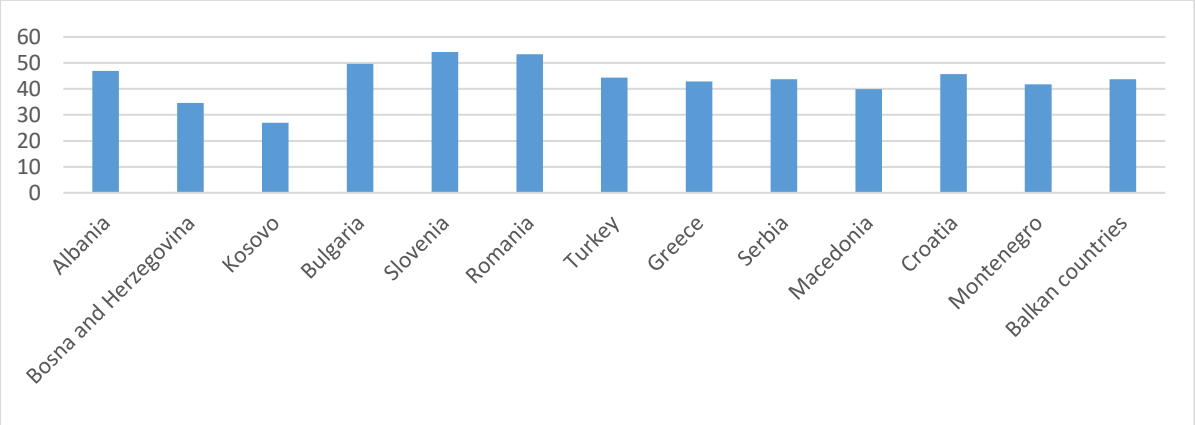



*Figure 3: Average employment to population ratio, 2007-2019*
*(Source: World Bank, Kosovo Agency of Statistics[2], Authors' calculations)*

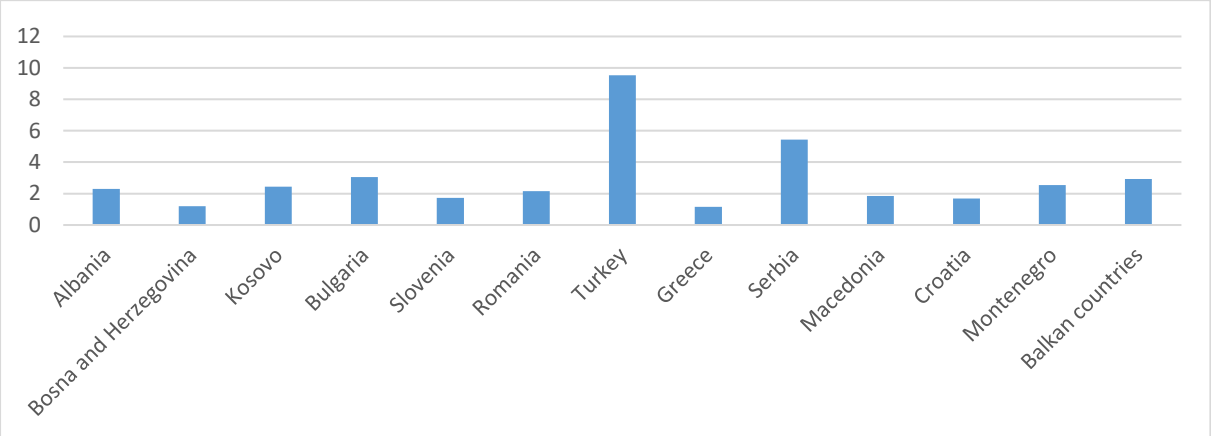



*Figure 4: Average inflation, 2007-2019*
*(Source: World Bank, Authors' calculations)*

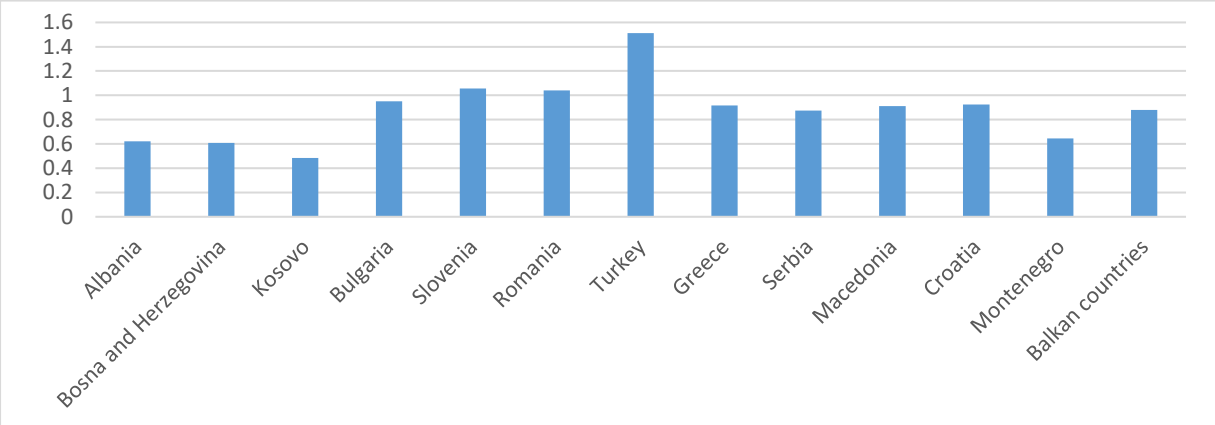



*Figure 5: Exports to imports,2007-2019*
*(Source: World Bank, Authors'calculations)*

Turkey is the top performer in respect to exports to imports ratio, showing its export orientation (Figure 5), especially during the years 2015 through 2019, which contributed to a higher economic growth rates during these years.

[2] For the purpose of employment measurement, the national methodology is used, due to lack of data, based on the International Labour Organization's methodology.

As the DEA could not work with negative values and the GDP growth rate and inflation take negative and positive values, all outputs indicators should be normalized on a scale of 1 to 10. The normalization of indicators would be done my using the approach of Mohamad, Said (2011). Thus, the indicators for GDP growth rate, the ratio of exports to imports and employment to population ratio should be transformed by using the following formula:

$$Y_{nor} = \frac{9*(Y_{act}-Y_{min})}{Y_{max}-Y_{min}} + 1,$$

where:
$Y_{nor}$ - is the value of normalized indicator Y;
$Y_{act}$ - is the actual value of the indicator Y;
$Y_{max}$ – is the maximum value of the indicator Y;
$Y_{min}$ – is the minimum value of the indicator Y.
For the inflation the following transformation is performed:

$$Y_{nor} = \frac{9*(Y_{max}-Y_{act})}{Y_{max}-Y_{min}}+1,$$

where:
$Y_{nor}$- is the value of normalized indicator Y;
$Y_{act}$- is the actual value of the indicator Y;
$Y_{max}$ – is the maximum value of the indicator Y;
$Y_{min}$ – is the minimum value of the indicator Y.
The transformation ensured that indicators Y will receive value between 1 and 10.

## 4. RESULTS AND DISCUSSION

In order to apply the DEA approach, we use the DEAP 2.1.[3] software under the assumption of variable returns to scale, as this is the appropriate model if we take into account market imperfections and failures.

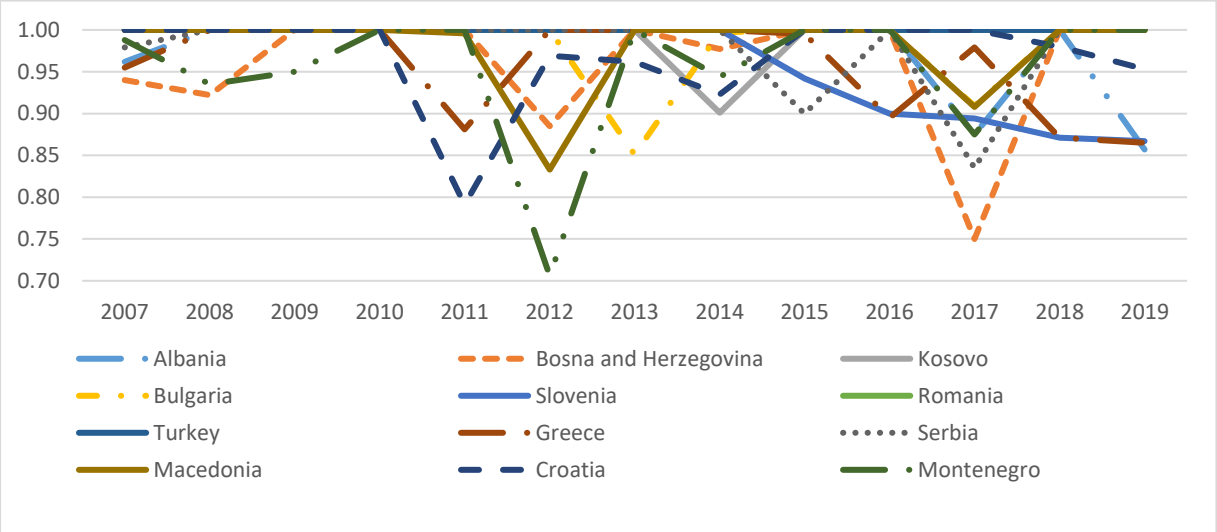



*Figure 6: Balkan countries' technical efficiency, 2007-2019*
*(Source: Authors' calculations)*

[3] For more detail see Coelli, T., (1996) A guide to DEAP 2.1: A data envelopment analysis (computer program). CEPEA working paper, No 8.

The information presented on fig.6 depicts an increasing difference between the estimated technical efficiency scores during the time period under review, i.e. there is a divergence of the technical efficiency of Balkan countries. After 2010 the efficiency scores of the following three countries – Bosna and Herzegovina, Montenegro and Greece are in contrast with the scores of the remaining countries.

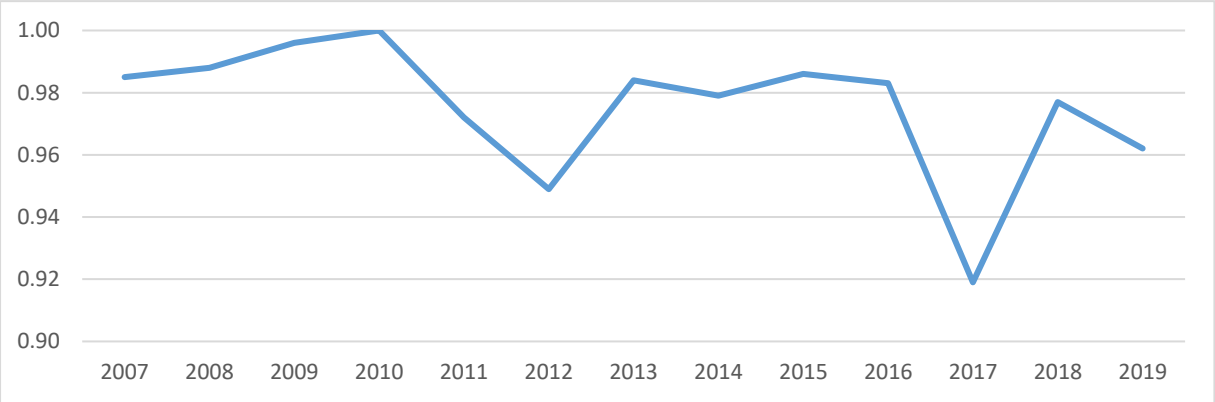



*Figure 7: Technical efficiency, 2007-2019*
*(Source: Authors' calculations)*

The number of efficient units, lying on the production frontier, decreases from 12 in 2010 to 8 in 2019. Thus, the overall efficiency of Balkan countries also drops from 1 in 2010 to 0.962 in 2019 (Figure 7), which means that the countries used effectively all resources in 2010 and ineffectively 3.8% of its inputs in 2019 to produce the respective level of outputs.
The countries with the highest technical efficiency of 1 during the period under review and lying on the production frontier, are Romania and Turkey. Albania and Kosovo are also among the top performance, having average technical efficiency of 0.99. The main feature of these countries as compared with the other Balkan countries (Bulgaria, Slovenia, Croatia, Greece, Serbia, Bosnia and Herzegovina, North Macedonia and Montenegro) is the smaller public sector and the lower government expenditures as % of GDP (Figure 8).

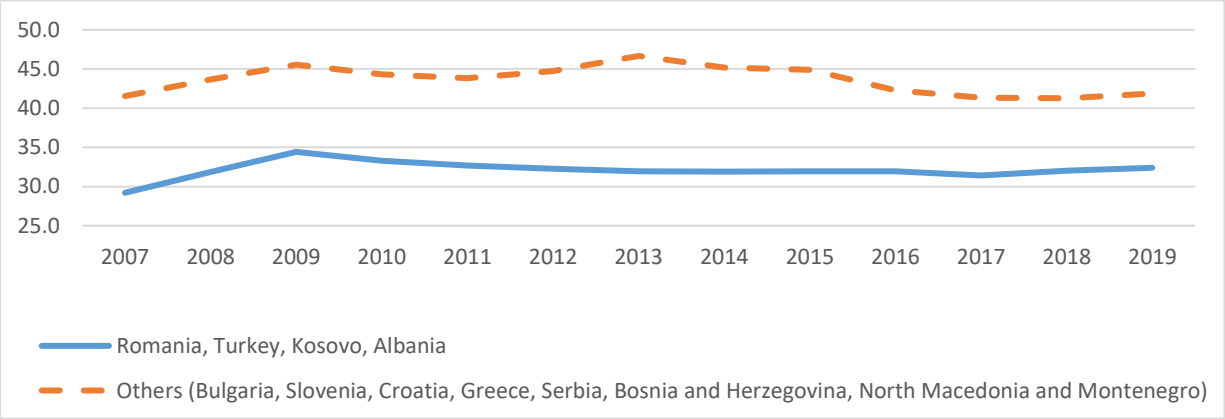



*Figure 8: Government expenditures in % of GDP, 2007-2019*
*(Source: World Bank, IMF, European Commission, Authors' calculations)*

Romania, Turkey, Albania and Kosovo have average technical efficiency of 0.99 and their government expenditures as a % of GDP accounted for about 32% on average for the period 2007-2019. At the same time, the other countries have lower technical efficiency with government expenditures accounting for 43.6% of GDP on average for the whole period. Bosnia and Herzegovina, Greece and Montenegro are the countries, having the worst average

efficiency during the period under review – on the average the share of their government expenditures in GDP is about 47%. Thus, we could come to the conclusion that countries, that have higher government expenditures relative to GDP or so-called large governments have lower countries' efficiency.

## 5. CONCLUSION

Using the DEA approach, we have estimated the technical efficiency of government expenditures of 12 Balkan countries, in particular Bulgaria, Romania, Slovenia, Croatia, Greece, Albania, Serbia, Bosnia and Herzegovina, North Macedonia, Montenegro, Kosovo and Turkey. The years covered is characterized by the presence of two crisis periods - the global financial crisis in 2008 and the European debt crisis in 2012-2013. The results show that the Balkan countries reported a decrease in their technical efficiency during the years 2007 through 2019, starting from relatively high technical efficiency scores in 2007 and reaching its lowest level in 2017. In addition, there was a divergence of the technical efficiency of the Balkan countries during the period under review. The number of efficient countries, which lie on the production frontier decrease over time. Countries, which had higher government expenditures as a % of the GDP, had lower technical efficiency in particular Bosnia and Herzegovina, Greece and Montenegro, showing worse macroeconomic performance as an objective of their fiscal policy.

## LITERATURE:

1. Afonso, A, Schuknecht, L., Tanzi, V. (2003) Public sector efficiency: an international compariso, European Central Bank, Working paper 242.
2. Afonso, A, Schuknecht, L., Tanzi, V. (2006) Public sector efficiency. Evidence for new eu member states and emerging markets, Working paper series, No 581, January.
3. Afonso, A., Schuknecht, L., Tanzi, V. (2007) Public Sector Efficiency: An International Comparison, Fraser Alert.
4. Afonso, A., Jalles, J., Venancio, A. (2019) Taxation and Public Spending Efficiency: An International Comparison, REM working paper series, 080-2019.
5. Baciu, L. Botezat, A. (2014) A Comparative Analysis of the Public Spending Efficiency of the New EU Member States: A DEA Approach
6. Boueri, R., Dowell, M., Pineda, E., Bastos, F. (2014) Analysis of public spending. An evaluation methodology for measuring the efficiency of Brazilian state spending on education. Inter-American Development Bank, Discussion Papers, 361.
7. Coelli, T., (1996) A guide to DEAP 2.1: A data envelopment analysis (computer program). CEPEA working paper, No 8.
8. Coelli T., Rao, D.S. P., O'Donnell Chr., Batesse, G. An introduction to efficiency and productivity analysis. Springer, 2005.
9. Grigoli, Fr., Kapsoli, J. (2013) Waste Not, Want Not: The Efficiency of Health Expenditure in Emerging and Developing Economies. IMF Working paper, 187.
10. Hauner, H., Kyobe, A. (2008) Determinants of Government Efficiency, IMF working papers, 228.
11. Halaskova, M., Halaskova, R., Prokop, V. (2018) Evaluation of Efficiency in Selected Areas of Public Services in European Union Countries, Sustainability, 10.
12. Herrera, S, Ouedraogo, A (2018) Efficiency of Public Spending in Education, Health, and Infrastructure. An International Benchmarking Exercise. World Bank Group, Policy Research Working Paper, 8586.
13. Herrera, S., Pang, G. (2005) Efficiency of Public Spending in Developing Countries: An Efficiency Frontier Approach. World Bank Policy Research Working Paper 3645, June.

14. Hu, Y.,Wu, Y., Zhou, W., Li, T., Li, L. (2020) A three-stage DEA-based efficiency evaluation of social security expenditure in China. PLOS one.
15. Kumar G., Gulati, R. (2008) An examination of technical, pure technical, and scale efficiencies in Indian public sector banks using Data envelopment analysis. Eurasian Journal of Business and Econometrics, 1(2) 33-69.
16. Lin, Tyr., Chia-Chi Lee, Tscui-Fen Chiu. (2009) Application of DEA in analyzing a bank's operating performance. Expert systems with applications, 36.
17. Lovell, C. A. K., Pastor, J. T., Turner, J. A. (1995) Measuring macroeconomic performance in the OECD: A comparison of European and non-European countries, European Journal of Operational Research, 87, pp. 507-518.
18. Mattina, T., Gunnarsson, V. (2007) Budget Rigidity and Expenditure Efficiency in Slovenia. IMF Working paper, 131.
19. Mihaylova-Borisova, G. (2014) Bank efficiency and the economic growth in terms of the currency borad in Bulgaria. Publishing complex – UNWE [in Bulgarian].
20. Mohamad, N. H., Said, F. B. (2011) Assessing Macroeconomic Performance of OIC Member Countries Using Data Envelopment Analysis, DEA, Journal of Economic Cooperation and Development, 32, 4, pp. 21-50.
21. Montes, G., Bastos, J., Oliveira, A. (2019) Fiscal transparency, government effectiveness and government spending efficiency: Some international evidence based on panel data approach. Economic Modeling, 79, pp. 211-225.
22. Nenovsky, N., Mihaylova, G., Ivanov, M. Evalution of the banks' efficiency during the twenties: a DEA approach. Greece Central Bank, Working Papers, 82, 2008.
23. Ouertani, M., Naifar, N., Haddad, H. (2018) Assessing government spending efficiency and explaining inefficiency scores: DEA-bootstrap analysis in the case of Saudi Arabia. Cogent Economics&Finance, 6:1.
24. Rabar. D, (2017), An overview of data envelopment analysis application in studies on the socio-economic performance of OECD countries, Economic Research.
25. Wang, E., Alvi, E. (2011) Relative Efficiency of Government Spending and Its Determinants. Evidence from OECD and Asian Countries.

# A FLEXIBLE TIME MANAGEMENT MODEL PROPOSAL

**Luis Filipe Sardinha**
*Instituto Superior de Administração e Línguas,*
*CIISAL (ISAL Research Center),*
*Rua do Comboio nº 5 - 9050–053 Funchal – Madeira, Portugal*
*luis.sardinha@isal.pt*

**Aurea Sousa**
*Universidade dos Açores,*
*CEEAplA (Centre of Applied Economics Studies of the Atlantic),*
*Ponta Delgada Campus,*
*Rua de Mãe de Deus 9500-321 Ponta Delgada, Portugal*
*aurea.st.sousa@uac.pt*

**Eduardo Leite**
*Universidade da Madeira, School of Technology and Management,*
*CiTUR (Center for Research, Development and Innovation in Tourism),*
*Penteada University Campus,*
*9020-105 Funchal | RAM, Portugal*
*eduardo.leite@staff.uma.pt*

**Humberto Nuno Rito Ribeiro**
*ESTGA, GOVCOPP, Universidade de Aveiro, Santiago University Campus,*
*3810-193 Aveiro, Portugal*
*hnr@ua.pt*

**Andreia Carvalho**
*Instituto Superior de Administração e Línguas, CIISAL (ISAL Research Center),*
*Rua do Comboio nº 5 - 9050–053 Funchal – Madeira, Portugal*
*andreia.carvalho@isal.pt*

***ABSTRACT***

*The current globalized working context, the complexity of organizations, the existence of teams with heterogeneous knowledge and skills, multidisciplinary academics, knowledge workers, and the uniqueness of labour, make it necessary for the employee to have prior self-recognition in favour of better time management (TM). The main objective of this work is to present a proposal for a new flexible TM model, which considered the comparative analysis of different TM models, as well as the study of Philip Zimbardo's time perspectives. For this purpose, the strengths and weaknesses of several models in the literature were analysed, in order to build an improved proposal, essentially in terms of time and individuality. In fact, in general, it was found that the current models do not distinguish between different temporal perspectives, not alluding to the uniqueness of each human being. Thus, to overcome some of the limitations of the current existing models, the proposed model is based on three pillars: time perspective (TP), self-recognition and TM behaviours. The preliminary results of the investigation indicate that, in this way, the proposed flexible time management model may become a more suitable personalized tool.*

***Keywords:*** *Time management models, Time perspective, Decision-making, Time management, Behaviour and Self-recognition*

## 1. INTRODUCTION

Despite the contemporaneousness of the subject, time management (TM) was already discussed in the 1950s and 1960s by several authors, with proposals for new ways of dealing with time issues (e.g., Drucker, 2019; Lakein, 1974 ; Mackenzie & Nickerson, 2009). The growing concern over TM is evident in theoretical and practical publications (e.g., Aeon & Aguinis, 2017; Boniwell & Osin, 2015; Claessens, Van Eerde, Rutte, & Roe, 2007). Some authors' approach focuses on the need to incorporate time into theoretical models. On the other hand, there are authors who focus on how people in organizations manage their time and how their effort can be improved (Claessens, Van Eerde, Rutte, & Roe, 2004). These authors demonstrated that TM behaviours have a positive effect on perceived time control, job satisfaction, stress reduction, job performance, although some results are contradictory. According to Aeon & Aguinis (2017), the investigations do not consider the structures and time norms of organizations, therefore they produce inconsistent conclusions about whether TM actually has a positive effect on job performance. Time-related individual differences show that some people are less likely to benefit from training in TM. Temporal decision-making shows that some by-products of training in TM can be harmful in terms of job performance. It should also be noted that future research should highlight the extent to which time-related individual differences (e.g., time perspective) affect TM. In general, the purpose of time management is to apply a limited time to the process of achieving life goals and achieving better results, efficiency and effectiveness. In other words, this effect is the result of the determined expectation, efficiency is obtained at the lowest cost and performance is the best expected result at the lowest cost. It is clear, therefore, that scientific and reasonable time management will have an important impact, and even a decisive influence, on the quality of life and the achievement of life goals (Wu, 2018). The employees of an organization play an important role (e.g., Sousa, Batista, Medeiros, & Bacelar-Nicolau, 2017). According to Sousa (2009), we live in a "society of organizations". In this context, emerging organizations, as well as those that operate in the market, in order to survive and stand out from the competition, must present competitive advantages over third parties. Besides these reasons, organizations must be able to sustainably deliver more value to their customers. It is in this context that this research is conducted. The objective is to develop a proposal for a flexible TM model based on a set of good TM practices duly analysed. As specific objectives, the following were distinguished: planning and systematizing a set of good TM practices. This paper presents, in the first section, a theoretical framework, followed by the methodology. The results are presented afterwards. Finally, following the conclusions, TM limitations are discussed and suggestions regarding future research developments are outlined.

## 2. LITERATURE REVIEW

### 2.1. Organizational culture

An organization reveals itself as a social group in which there is a functional division of labour and which aims to achieve, through its synchronized performance, certain objectives. From the notion of organization, three essential characteristics are highlighted: physical resources, human resources and organizational structure. Its efficiency and effectiveness depend on the correct allocation of available means and resources. One of the biggest challenges for an organization is to achieve its objectives and those of its employees, so before entering the market, an organization must define the foundations to perpetuate itself. The set formed by the mission, vision and values summarizes the organization's identity, its culture. Bigliardi, Dormio, Galati, & Schiuma (2012) mention that one of the factors that can influence the relationship between organizational commitment and job satisfaction is organizational culture. However, organizational culture differs from one organization to another.

Matsumoto & Juang (2017) conventionally explain culture as a set of values, attitudes and behaviours that are shared by a group of people and communicated between generations. Likewise, more recent studies on organizational culture have focused more on intangible qualities, such as values, behaviours and attitudes, which help in decision-making and development processes (Bendak, Shikhli, & Abdel-Razek, 2020). Thus, a leader must take these variations into account and understand whether to focus on the entire organizational culture or assess different subcultures to determine where there are points in common.

## 2.2. Time Perspective

The time perspective (TP), measured with the ZTPI (Zimbardo Time Perspective Inventory), is considered a variable that considers individual differences, such as personality (Shores & Scott, 2007). TP allows individuals to organize their daily lives in a coherent, orderly and meaningful way, translating into an "essential cognitive process, through which people receive, interpret and negotiate their physical and social worlds" (Holman & Zimbardo, 2009). According to Keough, Zimbardo, & Boyd (1999), TP "is the process, often unconscious, by which the continuous flow of personal and social experiences is decomposed or used in selected categories or time frames that help to give order, coherence and meaning to these events". The ZTPI is a structured questionnaire that includes motivational, emotional, cognitive and social processes that determine TP (Zimbardo & Boyd, 1999). According to these authors, the exploratory factor analysis of the different dimensions revealed five main factors: Past-Negative (PN) - negative and aversive view of the past; Present-Hedonistic (PH) - hedonistic and risk-taking attitude towards time and life, with little concern for future consequences; Future (F) - individuals focused on future goals and rewards. They attach importance to the consequences, contingencies and results of current decisions; Past-Positive (PP) - reflects a warm, pleasant, sentimental and nostalgic attitude towards the past, with an emphasis on maintaining relationships with family and friends; Present-Fatalistic (PF) - fatalistic, helpless and hopeless attitude towards life and the future. Different time perspectives are associated with different health and risk behaviours. The PP perspective was positively associated with positive affection, less anxiety, life satisfaction and friendliness (Hamilton, Kives, Micevski, & Grace, 2003) and negatively associated with low levels of life satisfaction, depression, unhappiness, family conflicts and low social support (Desmyter & De Raedt, 2012; Holman & Zimbardo, 2009; Zhang & Howell, 2011). PN presents a negative and aversive view of the past (Zimbardo & Boyd, 2008). Individuals with a PH dimension are positively associated with risk-seeking behaviours, alcohol and drug use (e.g., Themis Apostolidis, Fieulaine, Simonin, & Rolland, 2006; Fieulaine & Martinez, 2010; Keough, Zimbardo, & Boyd, 1999). The PF perspective is positively associated with destructive health behaviours, aggression, anxiety, suicidal tendencies and depression (e.g., Henson, Carey, Carey, & Maisto, 2006; Laghi, Baiocco, D'Alessio, & Gurrieri, 2009) and physical activity (Hamilton *et al*., 2003) and negatively associated with the consideration of future consequences (Zimbardo & Boyd, 1999), academic results (Mello & Worrell, 2006) and environmental behaviour (Corral-Verdugo, Fraijo-Sing, & Pinheiro, 2006). The Future perspective is positively associated with superior academic performance, less risky behaviour, self-control and protective behaviours and health promotion (e.g., exercise, diet) (e.g., Hamilton, Kives, Micevski, & Grace, 2003), self-efficacy, motivation, organizational skills, sense of responsibility and planning for academic activities (e.g., Cheng, Shein, & Chiou, 2012; Mello & Worrell, 2006), and environmental attitudes and behaviours (Corral-Verdugo *et al*., 2006). On the other hand, the Future dimension is negatively correlated with news and the search for feelings, anxiety and depression (Zimbardo & Boyd, 1999), age (Hamilton *et al*., 2003), substance use (Keough *et al*., 1999) and risky driving (Zimbardo, Keough, & Boyd, 1997). The temporal dimensions, expressed by the five dimensions of the ZTPI, demonstrate that individuals can differ from each other in terms of the

degree to which they fit into a specific dimension. Human behaviour slightly presents all TP dimensions instead of a pure expression of any particular dimension (Zimbardo & Boyd, 2008). However, Zimbardo & Boyd (1999) state that when one perspective is predominant over the others, a skewed and dysfunctional TP appears. On the other hand, a balanced TP allows the flexibility to switch between different time perspectives, depending on the situation, needs and values. These authors present an ideal time profile, supported by different investigations: High "Past-Positive" perspective; Moderate-high "Future" and "Present-Hedonistic" perspectives; Low "Past-Negative" and "Present-Fatalistic" perspectives. This profile has differentiating advantages: (i) a sense of a positive past allows to develop roots and to know one's individuality over time and places. It provides a sense of continuity in life and allows being connected to the family, tradition and cultural heritage; (ii) a future perspective allows us to imagine a future full of hope, optimism and power. The future offers the ability to deal with unexpected challenges that may come one's way; (iii) a hedonistic present generates energy and joy at being alive. This energy leads to exploring people, places and oneself. The hedonistic present is an affirmation of life, in moderation, as it opens the senses to the appreciation of nature and the pleasure of human sexuality. Several studies seek to analyse the equilibrium between balanced temporal perspectives and temporal orientations, and it should be noted that some of these investigations suggest that individuals with balanced temporal perspectives have a higher level of subjective well-being compared to less balanced ones (e.g., Boniwell *et al*., 2010; Stolarski *et al*., 2016; Jia Zhang, Howell, & Stolarski, 2013). Bajec (2019) explored the relationship between various time perspectives and TM behaviours (setting goals and priorities, programming and planning, preference for organization and perceived control of time), in order to determine whether TP is an indicator of TM behaviours and TM behaviours are predicted beyond the five major personality traits. It was demonstrated that the F, PH and PN perspectives foresee the establishment of goals and priorities and the scheduling and planning; the PF, F and PH perspectives predict the preference for the organization, and the PF perspective predicts the perceived control of time beyond the five major personality factors. These authors refer that the time perspective F is the one that most contributes to explain the behaviours of TM, followed by the perspectives PH, NP and PF. Future-oriented individuals invest more time in planning, organizing and understanding that they are in control of time. PH promotes organization and goal setting, while decreasing the preference for organized work. PN orientation, on the other hand, results in a low control of perceived time and a low preference for organization.

### 2.3. Decision in the organizational context

The decision-making process within an organization is a complex, multifaceted, uncertain activity and with a certain degree of risk. However, decision-making is a competency and competencies can be improved. The more experienced in decision-making, the more familiar with the tools and processes that improve confidence (Ahmed & Omotunde, 2012). Varlamova (2008) sought to understand the relationship between TM and decision processes and to identify which aspects of the decision processes are related to TM. The results indicated that the effectiveness of the decision processes depends partially on the factors of TM. From a practical perspective, "the results identified aspects of TM (e.g., setting goals, perceived control of time, the role of organizational supervision) that seem to positively affect decision-making processes".

### 2.4. Time Management Models - Considerations about some models

Proper use of time is critical in terms of performance in several areas (Muste, 2019). This author states that the idea of TM goes beyond its control, moving towards improving the quality of life of individuals. The theme of the TM deserved the attention of contemporary society, with several authors proposing different TM models (Jianing Zhang & Hailong, 2018).

Some of these models are referenced in Table 1, which was developed based on the research conducted by Gilberto Flores (2011). Although they have similar views, these models have some divergences in terms of methodology, elements and terminology.

| | | TM Model's Authors | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Main Points Addressed** | **Brief description of the variables** | **Lakein (1974)** | **Hummel (2013)** | **Macan (1994)** | **Covey (2017b)** | **Drucker (2019)** | **Seiwert *et al.* (2008)** | **Cygler (2005)** | **Barbosa (2018)** | **Allen (2018)** |
| **TP** | It allows to organize daily life in a coherent, orderly and meaningful way, translating into an "essential cognitive process through which people receive, interpret and negotiate their physical and social worlds" (Zimbardo & Boyd, 2008). | | | | | | | | | |
| **Paradigm of importance** | Covey (2017b), through the TM matrix, formalizes that human activities can be guided by urgency and / or importance. It is intended to change the paradigm from urgent to important, starting to value the time factor and placing priorities in first place. | | X | | X | X | X | | X | |
| **Mission, values and objectives** | Defining the mission, vision and personal goals. Vision is essential to bring a sense of effectiveness to the management of daily activities. | | | X | X | | X | X | X | |
| **Annual roles and goals** | Roles must be defined based on the mission, vision and objectives, assuming that the achievement of goals and activities, covering the various areas and individual dimensions, enables a balanced and quality life. Goal setting is essential for daily actions. | | | | X | | X | X | X | |
| **Planning** | It can be done at different levels (strategic, tactical and operational). It is an indispensable role in the effective TM process. | | X | X | X | X | X | X | X | X |
| **Prioritization** | Prioritizing activities from a weekly or daily perspective | X | | X | X | | X | X | X | |
| **Daily execution** | Performing activities daily. | X | X | X | X | X | X | | X | X |
| **Organization** | Organizing environments, as well as daily information. | | | X | | X | X | | X | X |
| **Denial and delegation of tasks** | Essential to deal with excess daily tasks. | | | | X | X | X | | X | X |
| **Behavioural aspects** | Most TM models mention the influence of the way individuals deal with daily activities, different ways and behaviours, and how to deal with procrastination. | | | X | X | X | | X | X | X |
| **Control and evaluation** | Checking for deviations or non-conformities and making the necessary corrections. | | | | X | | X | | | X |

*Table 1: Main points covered in the TM models*
*(Source: Adapted from Gilberto Flores, 2011)*

Most of the aspects presented are referred to in the models considered in this analysis. However, it should be noted that none of the models presented refers to the temporal perspective. Regarding Lakein's ABC model, it is not functional. At the end of the day, individuals performed many activities A and some B, but rarely C (they are optional and often set aside). There is some sense of frustration and failure when activities A and B are not carried out (Barbosa, 2018). Hummel does not present a complete TM model, focusing only on the planning, prioritization and importance of activities / tasks, on a daily and / or weekly basis. Macan, through three TM pillars, found that the perceived control of time influences several activities in a work context. He did not present many references as to the uniqueness of each one at the TP level, as well as other personal aspects that may influence his TM. Covey's model, on the other hand, does not address the organization of environments and information, nor does it explain TM techniques for dealing with time thieves (Estrada, Flores, & Schimith, 2011). According to Augustin (2008, p. 42), "The habits presented are basic and cover most of the fundamental principles of human effectiveness. They represent the internalization of the correct principles, on which happiness and success are based. If well worked, these habits promise to lead the person to the maximum of beneficial results, in the long run". Drucker presents an effectiveness-centred perspective, focusing his attention on the optimization of TM in carrying out the activities. The manager must be aware that he/she is dealing with people and relationships between people, in order to correctly align the individual potential with the objectives of the organization. Seiwert addresses superficially behavioural issues, because, despite providing important solutions on self-discipline and healthy habits, he does not address other essential points, such as procrastination and perfectionism (Estrada *et al*., 2011). Seiwert presents a model divided into four categories with different nomenclatures from the other models. It mentions the elements that make up each of the categories, but does not explain each one in detail (Augustin, 2008). The Cygler model presents areas that are circumscribed in a larger context, but does not comment on these contexts (Augustin, 2008). Barbosa presents a complete TM model, focusing on several variables that allow optimizing TM. However, according to Flores (2011), it does not present sensitivity to the control / evaluation of the process. Allen presents a model that relates TM and productivity. Its focus on activity leaves aside some variables that are related to the uniqueness of each individual that can influence TM. The model we propose intends to overcome some possible limitations of the currently existing models. The development of a flexible TM model considers the analysis of different TM models and Philip Zimbardo's time perspectives. It was found that the current models do not distinguish between different temporal perspectives, not respecting the uniqueness of each human being (vid. Figure 1 below). The current models are based on the assumption that all individuals have the same characteristics and motivation for a TM approach focused on activities, which may be considered to be the tip of the iceberg only.

*Figure following on the next page*

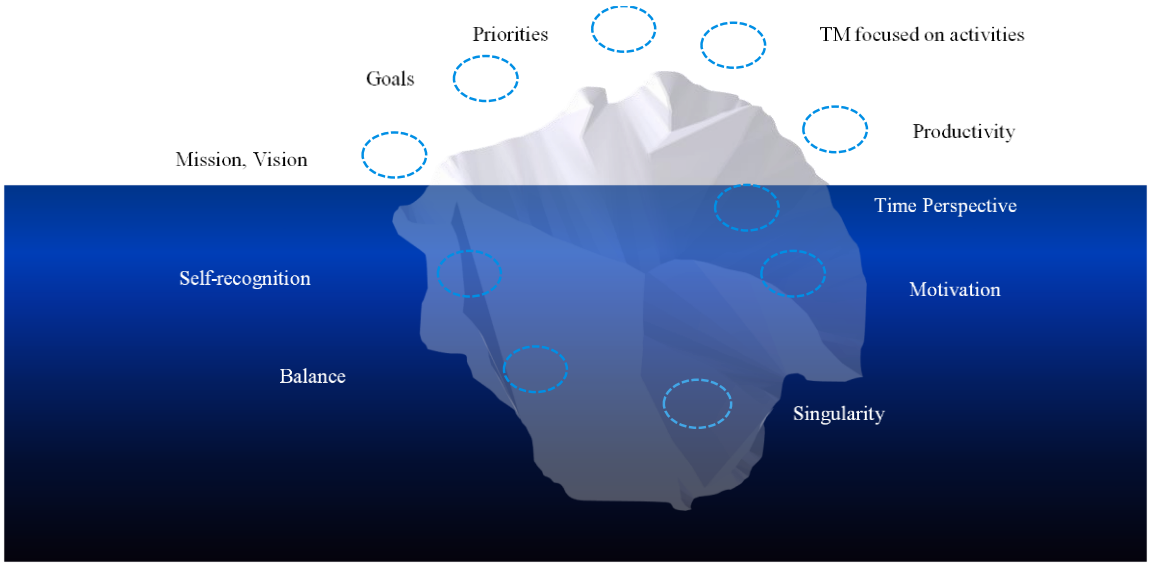



*Figure 1: A new perspective on TM*
*(Source: Own elaboration)*

## 3. A PROPOSAL FOR A FLEXIBLE TIME MANAGEMENT MODEL

The literature review carried out on the subject allowed to check the state of the art on the topic, identify possible gaps, as well as to present solutions for them. In this investigation, in order to develop a flexible TM model, different aforementioned TM models were analysed, which present a sequential logical method, with well-defined steps and phases for practical application. The choice of models referenced in Table 1 does not exclude the existence of other scientific studies, but the characteristics presented do not correspond to the proposed model to be developed. This study may be classified as an exploratory research, since it is used to study models and from there, create a new model version. As for the approach, this research is classified as qualitative, insofar as it is based on the fact that human actions have a value and aim at a meaning, which cannot be captured by simple cause-and-effect relationships. The proposed model is based on three pillars: the notion of temporal perspective, self-recognition and TM (vid. Figure 2 below).

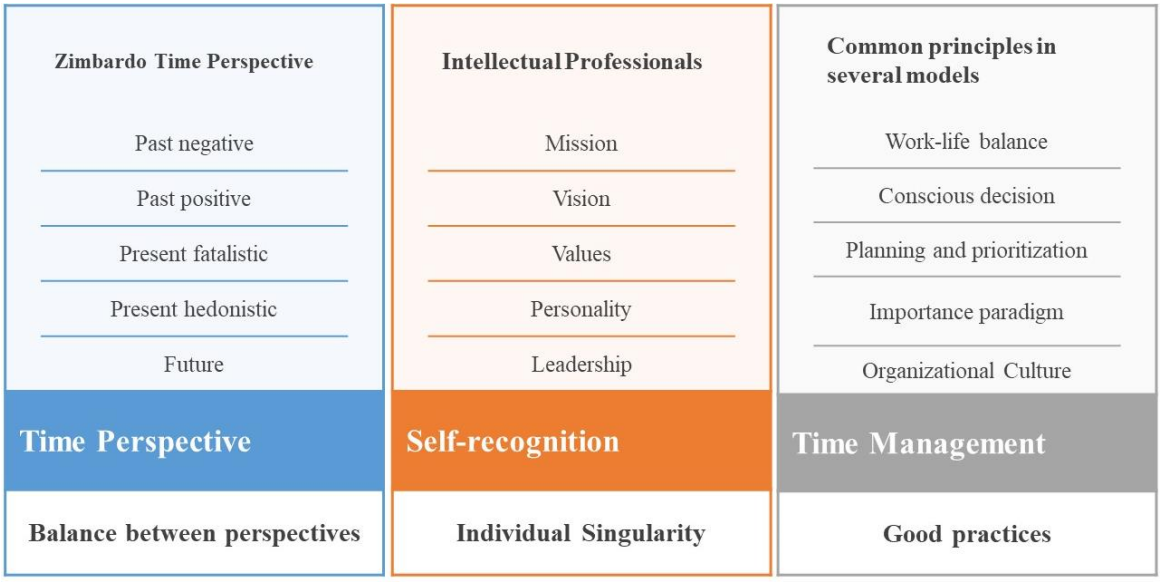



*Figure 2: The three pillars of the proposed Flexible TM model*
*(Source: Own elaboration)*

### 3.1. Notion of TP

The various studies carried out have shown that a balanced TP translates into benefits for individuals (Boniwell *et al*., 2010). It should also be noted that Zimbardo & Boyd (2008) argue that the transition between perspectives is possible and present a set of recommendations. According to Bajec (2019), training in TM should considers the notion of TP. It is possible to change behaviours in TM based on temporal perspectives.

### 3.2. Self-recognition

At the beginning of the twentieth century, there were few specialized activities and individuals adapted what existed (Cunha, Cunha, Rego, Neves, & Cabral-Cardoso, 2007; Drucker, 2019). Currently, there are numerous areas of knowledge, making it possible to choose at a professional level something according to vocations and preferences. It is only by doing what one really like and demonstrating skills that one's may perform an extraordinary job. On the other hand, the range of professions makes decision-making difficult. Today, large organizations depend to a large extent on intellectual work. "More and more, people were educated in the sense of using knowledge, theories and concepts, more than physical strength or manual skill…" (Drucker, 2019, p. 31). Intellectual work is not defined by quantity or expense, but by results. The individual who is fully aware of his/her knowledge, skills and abilities may have better TM skills. The uniqueness of the human being translates into countless ways of being and thinking. Drucker (2019) states that "making forces productive is equally important when it comes to the individual's abilities and work habits". When individuals reach adulthood, they already know when they are more productive, whether in the morning, in the afternoon or at night; if they work better with long or short deadlines, if for a meeting they need all the detailed information or a brief summary, "some are 'readers' and others are 'listeners'". Many of these habits mirror the fundamentals of each person's personality. Just as a company when it establishes its mission, vision and values, an individual must seek, through self-recognition, to establish a mission, vision and values. This allows a correct adaptation to different work contexts and optimization of activities, when facing other sociological contexts (Covey, 2017b; Drucker, 2019). Taking a leadership perspective within one's field of action, based on an explicit statement of one's mission, vision and values, allows for an optimization of the activities developed (Morris, 2009; Schmitt, Highhouse, & Weiner, 2013).

### 3.3. Time management

Some TM-related variables were identified as transversal to the TM models: planning (maximizing activities and results), greater efficiency, productivity, a balance between professional and personal life, the paradigm of importance, awareness of time (Aeon & Aguinis, 2017; Boniwell & Osin, 2015; Claessens *et al*., 2007; Hawkins & Klas, 1997; Malkoc & Tonietto, 2019; Rodrigues *et al*., 2018). Thus, for an effective and efficient TM, the following principles must be considered: 1. Time awareness (temporal perspectives); 2. Mission, vision and personal goals; 3. Paradigm of importance; 4. Planning and prioritization (maximizing and prioritizing activities, avoiding wasted time); 5. Conscious decision-making; 6. Balance between personal and work life; 7. Organizational culture (how one manages and looks at time) - Employee accountability (proactivity within the field of work, choosing the best time to work).

## 4. CONCLUSIONS

The current globalized working context, the complexity of organizations and teams endowed with heterogeneity of knowledge, multidisciplinary academics, knowledge workers and the uniqueness of employees, make it necessary for the employee to have prior self-recognition in favour of a better TM. It is necessary to balance the personal, social and work life, motivation, notion of TP and uniqueness of each individual.

Claessens *et al*. (2007) refer that the results of the various studies on TM are not uniform. The non-uniformity of the results leads to the interpretation that the uniqueness of each of the stakeholders is a variable that may be influencing. Drucker, quoted by (Covey, 2017a), says that the evolution of scientific knowledge has allowed for new working conditions, new equipment and specializations for employees. Currently, Covey (2017a) refers to the age of the "knowledge worker". Knowledge work leverages all other investments made by an organization or a family. Intellectual work is not defined by quantity or expense, but by results. This evolution of knowledge and endowment of technical and scientific competencies in the most varied areas has led to the empowerment (conscious decision-making based on information) of employees, increasing their participation and responsibility in the culture and results of organizations. Its efficiency and effectiveness can be achieved through the correct use of time by the employee. A study by Varlamova (2008) found that the effectiveness of decision-making processes depends partially on TM factors. According to Aeon & Aguinis (2017), three variables can influence TM: temporal norms of the organization, time-related individual differences (temporal perspectives) and temporal decision-making. The model proposed here intends to integrate a holistic view on TM by adding a set of good practices on TM allowing individuals to better self-recognize. TM cannot be taught, but it can be learned. An individual's predisposition is necessary for the assimilation and application of good practices in TM. The flexible TM model was based on the various models analysed and theoretical concepts on the topic and presents a holistic perspective, addressing different contexts that may influence TM in other contexts. For more effective TM models, time should not be devoted to schematics and to-do lists, but to the importance of conscious decision-making. When a mindfulness posture is adopted, decisions are made consciously, allowing the decision-maker to start other activities without remaining in expectation of the decision. The exploration of TM does not end with this work. The proposed model needs to be applied on a large scale and in different contexts. Its holistic and flexible perspective will allow it to adapt to different situations. Furthermore, this proposed model requires validation in order to obtain a broader set of indicators, results and effects.

***ACKNOWLEDGEMENT:*** *This paper is financed by Portuguese national funds through FCT – Fundação para a Ciência e a Tecnologia, I.P., project number UIDB/00685/2020.*

**LITERATURE:**

1. Aeon, B., & Aguinis, H. (2017). It´s about time: New Perspectives and insights on time management. *Academy of Management Perspectives*, *31*(4), 309–330.
2. Ahmed, M. T., & Omotunde, H. (2012). Theories And Strategies of Good Decision Making. *International Journal of Scientific & Technology Research*, *1*(10), 51–54.
3. Allen, D. (2018). *GTD Fazer bem as coisas*. (Conjuntura atual, Ed.). Lisboa.
4. Apostolidis, T., Fieulaine, N., Simonin, L., & Rolland, G. (2006). Cannabis use, time perspective and risk perception: Evidence of a moderating effect. *Psychology and Health*, *21*(5), 571–592. https://doi.org/10.1080/14768320500422683
5. Augustin, E. (2008). *Planejamento Pessoal E Sua Ligação Com O Planejamento Estratégico Organizacional*. Universidade Federal de Santa Maria. Retrieved from https://repositorio.ufsm.br/bitstream/handle/1/8076/EZIANESAMARAAUGUSTIN.pdf
6. Bajec, B. (2019). Relationship Between Time Perspective and Time Management Behaviours. *Psihologija*, *52*(2), 197–215.
7. Barbosa, C. (2018). *A tríade do tempo*. Buzz Editora.

8. Bendak, S., Shikhli, A. M., & Abdel-Razek, R. H. (2020). How changing organizational culture can enhance innovation? Development of the innovative culture enhancement framework. *Cogent Business and Management*, *7*(1). https://doi.org/10.1080/23311975.2020.1712125
9. Bigliardi, B., Dormio, A. I., Galati, F., & Schiuma, G. (2012). The impact of organizational culture on the job satisfaction of knowledge workers. *The Journal of Information and Knowledge Management Systems*, *42*(1), 36–51. https://doi.org/10.1108/03055721211207752
10. Boniwell, I., Osin, E., Alex Linley, P., & Ivanchenko, G. V. (2010). A question of balance: Time perspective and well-being in British and Russian samples. *Journal of Positive Psychology*, *5*(1), 24–40. https://doi.org/10.1080/17439760903271181
11. Boniwell, I., & Osin, E. N. (2015). Beyond time management: time use, performance and well-being. *Organizational Psychology*, *5*(3), 85–104.
12. Cheng, Y. Y., Shein, P. P., & Chiou, W. Bin. (2012). Escaping the impulse to immediate gratification: The prospect concept promotes a future-oriented mindset, prompting an inclination towards delayed gratification. *British Journal of Psychology*, *103*(1), 129–141. https://doi.org/10.1111/j.2044-8295.2011.02067.x
13. Claessens, B., Van Eerde, W., Rutte, C., & Roe, R. (2004). Planning behavior and perceived control of time at work. *Journal of Organizational Behavior*, *25*(8), 937–950. https://doi.org/10.1002/job.292
14. Claessens, B., Van Eerde, W., Rutte, C., & Roe, R. A. (2007). A review of the time management literature. *Emerald*, *36*(2), 255–276. https://doi.org/10.1108/00483480710726136
15. Corral-Verdugo, V., Fraijo-Sing, B., & Pinheiro, J. Q. (2006). Sustainable Behavior and Time Perspective: Present, Past, and Future Orientations and Their Relationship with Water Conservation Behavior. *Interamerican Journal of Psychology*, *40*(2), 139–147.
16. Covey, S. (2017a). *O 8º hábito da eficácia à grandeza*. (G. Valente, Ed.) (1ª). Rio de Janeiro: Gradiva.
17. Covey, S. (2017b). *Os 7 Hábitos das Pessoas Altamente Eficazes Lições poderosas para a transformação pessoal*. (Gradiva, Ed.).
18. Cunha, M., Cunha, R., Rego, A., Neves, P., & Cabral-Cardoso, C. (2007). *Manual do Comportamento Organizacional e Gestão*. (E. RH, Ed.) (6ª Ed.). Lisboa.
19. Cygler, J. (2005). *Quem Mexeu na Minha Vida? A fórmula do sucesso e da felicidade, sem estresse*. (Alegro, Ed.). Rio de Janeiro.
20. Desmyter, F., & De Raedt, R. (2012). The relationship between time perspective and subjective well-being of older adults. *Psychologica Belgica*, *52*(1), 19–38. https://doi.org/10.5334/pb-52-1-19
21. Drucker, P. (2019). *O Gestor Eficaz*. (C. A. Editora, Ed.). Lisboa: Papelmunde.
22. Estrada, R., Flores, G., & Schimith, C. (2011). Gestão do tempo como apoio ao planejamento estratégico pessoal. *Revista de Administração Da UFSM*, *4*(2), 315–332. https://doi.org/10.5902/198346593349
23. Fieulaine, N., & Martinez, F. (2010). Time under control: Time perspective and desire for control in substance use. *Addictive Behaviors*, *35*(8), 799–802. https://doi.org/10.1016/j.addbeh.2010.03.022
24. Flores, G. T. (2011). *Gestão do Tempo como Contribuição ao Planejamento Estratégico Pessoal*. Universidade Federal de Santa Maria. Retrieved from https://repositorio.ufsm.br/bitstream/handle/1/4577/FLORES%2CGILBERTOTIMM.pdf?sequence=1&isAllowed=y

25. Hamilton, J. M., Kives, K. D., Micevski, V., & Grace, S. L. (2003). Time perspective and health-promoting behavior in a cardiac rehabilitation population. *Behavioral Medicine, 28*(4), 132–139. https://doi.org/10.1080/08964280309596051
26. Hawkins, F., & Klas, L. (1997). Time Management as a Stressor for Helping Professionals: Implications for Employment. *Journal of Employment Counselling*, *34*(1), 2–6. https://doi.org/10.1002/j.2161-1920.1997.tb00451.x
27. Henson, J. M., Carey, M. P., Carey, K. B., & Maisto, S. A. (2006). Associations among health behaviors and time perspective in young adults: Model testing with boot-strapping replication. *Journal of Behavioral Medicine*, *29*(2), 127–137. https://doi.org/10.1007/s10865-005-9027-2
28. Holman, E. A., & Zimbardo, P. G. (2009). The social language of time: The time perspective-social network connection. *Basic and Applied Social Psychology*, *31*(2), 136–147. https://doi.org/10.1080/01973530902880415
29. Hummel, C. (2013). *Tyranny of the Urgent*. IVP Books.
30. Keough, K. A., Zimbardo, P. G., & Boyd, J. N. (1999). Who's smoking, drinking, and using drugs? Time perspective as a predictor of substance use. *Basic and Applied Social Psychology*, *21*(2), 149–164. https://doi.org/10.1207/S15324834BA210207
31. Laghi, F., Baiocco, R., D'Alessio, M., & Gurrieri, G. (2009). Suicidal ideation and time perspective in high school students. *European Psychiatry*, *24*(1), 41–46. https://doi.org/10.1016/j.eurpsy.2008.08.006
32. Lakein, A. (1974). *How to get control of your time and your life* (1th ed.). New York: The New American Library.
33. Macan, T. (1994). Time management: test of a process model. *Journal of Applied Psychology*, *79*(June 1994), 381–391. https://doi.org/10.1037/0021-9010.79.3.381
34. Mackenzie, A., & Nickerson, P. (2009). *The Time Trap: The Classic Book on Time Management*. (Amacon, Ed.) (4th ed.). New York. Retrieved from http://www.amazon.ca/exec/obidos/redirect?tag=citeulike09-20&path=ASIN/081447926X
35. Malkoc, S. A., & Tonietto, G. N. (2019). Activity versus outcome maximization in time management. *Current Opinion in Psychology*, *26*, 49–53. https://doi.org/10.1016/j.copsyc.2018.04.017
36. Matsumoto, D., & Juang, L. (2017). *Culture and Psychology*. *Identical Twins* (Sixth Edit). Boston: Cengage Learning.
37. Mello, Z. R., & Worrell, F. C. (2006). The Relationship of Time Perspective to Age , Gender , and Academic Achievement ... *Psychology*, *29*(3), 271–289.
38. Morris, T. (2009). *Se Aristóteles Fosse Administrador da General Motors - A alma do negócio*. (D. Quixote, Ed.). Alfragide: Guide Artes Grágicas, Lda.
39. Muste, D. (2019). Time Management applied in education. In *The European Proceedings of Social & Behavioural Sciences* (pp. 77–82).
40. Rodrigues, A. S., Corrêa, J., Mendonça, A., Carlos, A., Geanie, M., & Rocha, M. (2018). Gestão do tempo aplicada à produtividade, qualidade de vida e desempenho: Análise de publicações do banco de dados da CAPES e do Google Académico. In *Congresso Internacional de Administração*. Retrieved from https://admpg.com.br/2019/anais/2018/arquivos/06022018_190629_5b131a853d259.pdf
41. Schmitt, N., Highhouse, S., & Weiner, I. (2013). *Handbook of psychology industrial and organizational psychology* (second edi). New Jersey: John Wiley & Sons.
42. Seiwert, L., & McGee-Cooper, A. (2008). *Como chegar depressa, indo devagar*. (Centro Atlântico, Ed.) (1a ed.). Lsiboa: Papelmunde – SMG, Lda.
43. Shores, K., & Scott, D. (2007). The relationship of individual time perspective and recreation experience preferences. *Journal of Leisure Research*, *39*(1), 28–59. https://doi.org/10.1080/00222216.2007.11950097

44. Sousa, A. (2009). *Introdução à Gestão*. (Verbo, Ed.) (1ª Edição). Lisboa.
45. Sousa, Á., Batista, G., Medeiros, M., & Bacelar-Nicolau, H. (2017). Classificação de Dados de Natureza Complexa no Contexto da Avaliação 360º. In *24th APDR Congress "Intellectual Capital and Regional Development: New landscapes and challenges for space planning* (pp. 814–819).
46. Stolarski, M., Vowinckel, J., Jankowski, K. S., & Zajenkowski, M. (2016). Mind the balance, be contented: Balanced time perspective mediates the relationship between mindfulness and life satisfaction. *Personality and Individual Differences*, *93*, 27–31. https://doi.org/10.1016/j.paid.2015.09.039
47. Varlamova, V. (2008). *The Relationship between Time Management and Decision-Making Processes*. University of Canterbury.
48. Wu, Y. (2018). Analysis on the Problems and Countermeasures of College Students' Time Management. In *International Conference on Education, Management and Information Technology* (pp. 819–822).
49. Zhang, J. W., & Howell, R. T. (2011). Do time perspectives predict unique variance in life satisfaction beyond personality traits? *Personality and Individual Differences*, *50*(8), 1261–1266. https://doi.org/10.1016/j.paid.2011.02.021
50. Zhang, Jia, Howell, R., & Stolarski, M. (2013). Comparing Three Methods to Measure a Balanced Time Perspective: The Relationship Between a Balanced Time. *Journal of Hap*, (14), 169–184. https://doi.org/10.1007/s10902-012-9322-x
51. Zhang, Jianing, & Hailong, J. (2018). Study on the Time Management and Self-controlled Learning of Students in Local Colleges and Universities in Transition. In *Advances in Social Science, Education and Humanities Research* (Vol. 205, pp. 188–192).
52. Zimbardo, P., & Boyd, J. (2008). *The Time Paradox*. (Free Pass, Ed.). New York.
53. Zimbardo, P. G., & Boyd, J. (1999). Putting Time in Perspective: A Valid , Reliable Individual-Differences Metric. *Journal of Personality and Social Psychology*, *77*(6), 1271–1288. https://doi.org/10.1037/0022-3514.77.6.1271
54. Zimbardo, P. G., Keough, K. A., & Boyd, J. N. (1997). Present time perspective as a predictor of risky driving. *Personality and Individual Differences*, *23*(6), 1007–1023. https://doi.org/10.1016/S0191-8869(97)00113-X

# CONCEPTUALIZATION OF SOFT SKILLS FOR TOURISM EMPLOYEES'

**Valentina Kraljic**
*Graduated from University of Rijeka,*
*Faculty of Tourism and Hospitality Management, Croatia*
*kraljicv62@gmail.com*

**Ana Cuic Tankovic**
*University of Rijeka, Faculty of Tourism and Hospitality Management, Croatia*
*anact@fthm.hr*

**Marina Perisic Prodan**
*University of Rijeka, Faculty of Tourism and Hospitality Management, Croatia*
*marinap@fthm.hr*

***ABSTRACT***

*Soft skills are most often associated with the characteristics, attitudes, and abilities characterizing communication and relationship with people. They allow the individual to adapt to a dynamic environment and effectively cope with the challenges of professional and private life, and in this way, to perform well and communicate successfully in their environment. Besides having professional knowledge, tourism service providers need to have expressed soft skills such as kindness, professionalism, a positive attitude, and others' understanding. Because not enough attention is paid to the impact and importance of soft skills, this research seeks to offer a conceptual representation of the soft skills needed by all service providers in today's dynamic business environment.*

***Keywords:*** *soft skills, service marketing, conceptualization*

## 1. INTRODUCTION

In the dynamic and changing world, technical competencies alone are no longer enough for employees to achieve successful business and outstanding business results that every organization strives for success. As a set of characteristics, attitudes, and abilities, soft skills allow individuals to communicate with others, develop, learn successfully, and achieve their goals (Moss & Tilly, 1996). In this way, they help an individual adapt to the situation to cope effectively with professional and everyday life (Hurrell, 2016). The importance of soft skills needed to work in tourism and hospitality has been researched for many years and includes a wide range of interpersonal and social qualities and competencies. A large number of such researches highlight soft skills as crucial competencies (Wilks & Hemsworth, 2011; Sisson & Adams, 2013; Weber et al., 2013), and among them, the communication skills of tourism service providers are ranked in very high positions (Robles, 2012; Majid *et al*., 2012; Succi and Canovi, 2019). Awareness of the importance of soft skills is still underdeveloped. Therefore, there are differences in the importance of soft skills and their ranking between managers and young people entering the labor market (Raybould & Wilkins, 2006; Succi & Canovi, 2019; Suh, West & Shin, 2012). It is not easy to define soft skills accurately because they consist of many elements. Different authors also use different names for these skills, such as *generic* (Raybould & Wilkins, 2006), *social* (Deming, 2017), *interpersonal* (Levasseur, 2001; Hayes, 2002; Testa and Sipe, 2012), *twenty-first-century skills* (Moore & Morton, 2015). Different definitions of soft skills include the definition of skills that allow an individual to understand his actions better and work with others (Muzio & Fisher, 2009). On the other hand, as all non-technical characteristics and behaviors of an individual that are necessary for successful career

coordination and which allows him to effectively use technical skills and knowledge (Klaus *et al.*, 2007) or targeted behaviors that an individual uses when interacting with others to achieve the desired goal (Hayes, 2002). Ranade *et al.* (2010) identify soft skills as behavior that make employees more effective in what they do. Also, they point out that the development of soft skills has a significant impact on achieving the goals of individuals, teams, and organizations. Organizations that recognize the importance of soft skills can improve the candidate selection process, facilitate hiring, improve the organization's development program, and reduce operating costs and increase their profitability (Weber *et al.*, 2009). This research seeks to present a conceptual framework of soft skills required for tourism professionals in the current dynamic market, without addressing communication skills, which require separate analysis.

## 2. LITERATURE REVIEW

Services in tourism and hospitality are often viewed through two components - one focusing on the technical aspect such as wait time, cleanliness, and organization. In contrast, the other focuses on the interpersonal aspect that includes service providers' relationship with tourists. Intangibility and the human element in service delivery are some of the main features of service industries (Nickson, Warhurst & Dutton, 2005). As part of the tourism product, the human element, which includes a desire to work, love of work, and emotional intelligence, is crucial for providing quality tourism services (Laškarin Ažić, 2018). Testa and Sipe (2012) state that a tourist service must include both components to have a high-quality level and meet tourists' needs. From their perspective, the service's technical aspect is expected, while the expressed interpersonal aspect often exceeds their expectations about the service. Quality tourism service is achieved when tourists feel satisfied and keep coming back, using the service again or recommend it to others (Fuller and Smith (1991). According to this, tourism service providers need to recognize and make decisions on the spot about what they think will please certain people, stimulate positive emotions in them and thus contribute to their satisfaction with the overall tourism service (Nickson, Warhurst & Dutton, 2005). The importance of the human element and soft skills in tourism and hospitality is recognized by Burns (1997), who explains how tourism service providers become an integral part of the final tourism product: tourism service providers are expected to be kind and understanding and to be in a positive, friendly and even playful mood. These skills are often not recognized *as skills*, but rather as part of the natural order of tourism services, even though they create a standard of quality and distinguish successful tourism organizations (Burns, 1997). Tas (1988) divided tourism service providers' competencies into three categories: essential competencies, competencies of considerable importance, and moderate importance competencies. All the skills that were in the essential category, six of them, were soft skills: (1) Manages guest problems with understanding and sensitivity; (2) Maintains professional and ethical standards in the work environment; (3) Demonstrates professional appearance and poise; (4) Communicates effectively, both in writing and orally; (5) Develops positive customer relations; (6) Strives to achieve a positive working relationship with employees based on perceptions of work interactions. Most recent research (Baum, 1990; Christou & Eaton 2000; Kay & Russette, 2000; Christou, 2002; Testa & Sipe, 2012) divides the knowledge, skills, and abilities needed to work in tourism hospitality into two categories - hard and soft skills. Hard skills represent specific professional abilities that can be learned, usually require the acquisition of knowledge, and are significantly influenced by the intelligence quotient (Ciappei & Cinque, 2014). Unlike hard skills, soft skills are difficult to measure or prove because they are closely related to an individual's attitudes and result from their personality, preferences, and experiences (Balcar, 2016). Although many authors and employers are increasingly emphasizing the importance of soft skills over hard ones, it cannot be said that soft skills are a substitute for hard skills (Andrews & Higson, 2010). They are complementary, and so combined soft and hard skills create potential and lead to success.

People who develop both soft and hard skills can continuously learn and develop. In this way, hard skills allow an individual to be what he is, and on the other hand, soft skills allow him to act as an individual, to be different from others, and they give him the necessary flexibility to be able to develop and to keep up with the changing environment. By synthesizing research, we can identify essential soft skills groups that are an integral part of business communication, where the most commonly mentioned skills are communication skills (listening, presentation, negotiation skills, and verbal and nonverbal communication skills), interpersonal skills (teamwork, providing services, conflict resolution), emotional intelligence (self-control, working under pressure, empathy, adaptation) and professionalism (Tesone & Ricci, 2005; Weber et al., 2009; Wilks & Hemsworth, 2011; Robles, 2012; Testa & Sipe, 2012; Weber et al., 2013; Wang & Tsai, 2014; Succi & Canovi, 2019; Weber, Lee & Crawford; 2019).

## 2.1. Interpersonal skills

Interpersonal skills include all forms of behavior that enable an individual to efficiently and constructively participate in social life and resolve conflicts where necessary (Goleman, 2010). They are composed of various competencies that facilitate communication and are thus crucial for inclusion in society, building and maintaining quality interpersonal and business relationships, personal fulfillment and development, and achieving desired business results. Jukić (2012) believes that interpersonal skills are crucial in developing good business relations and cooperation opportunities among employees.

Interpersonal skills can be divided into four basic categories - developing good relationships, influencing others, counseling and training, and networking (Bahtijarević-Šiber, Sikavica & Pološki-Vokić, 2008). In addition to basic interpersonal skills, we can include conflict management, group, time management, and employee motivation (Jukić, 2012).

### *2.1.1. Developing good relationships and cooperation*

Teamwork involves a group of people working together on specific tasks, and their product in the form of synergy allows for greater speed of decision-making and the flow of information within the organization. In this way, creativity, usability, and productivity are enabled, which no individual can offer on their own (Turkalj, Fosić & Marinković, 2012). Johnson and Johnson (2006) consider that a team comprises a series of interpersonal interactions, structured to achieve the set goals. Rozman, Kovač & Koletnik (1993) describe a team's main characteristics that they must have to be successful: they state that the work tasks must be goal-oriented, and team members must identify with the goals of teamwork in order to successfully solve work tasks. A team's success depends on its members' internal connection, where large teams, due to connectivity problems, may have less efficiency. Teams can be composed of two to twelve members, and according to most authors, the optimal number is six members. However, regardless of the number of members, the team cannot function without quality communication, mutual exchange of information, experiences, knowledge, and trust. Trust is the foundation of interpersonal relationships and is most often based on the interrelationship of information, social influence, and control.

### *2.1.2. Giving and receiving useful feedback*

Feedback is a direct management tool used to guide and monitor employee behavior and progress. Its essential purpose is to give another person information about our impression of their behavior and actions (Žižak, Vizek Vidović & Ajduković, 2012). Feedback is necessary to motivate employees, encourage positive behavior, raise awareness of employee behavior, encourage thinking about behavior, and achieve long-term goals and development, and without feedback, it is impossible to maintain or improve performance (Ružić, 2007). In addition to feedback, good performance is also influenced by appropriate rewards, which encourage

additional effort to achieve the desired results. Nevertheless, unlike the reward itself, the feedback also encourages the development of individual employee competencies. Just like giving, receiving feedback can be extremely helpful. Only by listening and accepting information it is possible to reach the desired goal - regardless of whether it is a promotion, salary increase, education, or something else. Appropriate feedback directs the employees to personal and professional development (Ružić, 2007).

*2.1.3. Motivation*

Emotions move people to achieve their goals, and motives trigger perception and shaping activities, which means that great work begins with great emotions (Goleman, 2010). Human motives are most often based on needs, whether conscious or subconscious, and motivation mainly refers to a whole set of instincts, needs, desires, or other forces. Motivation is vital for high business standards, it encourages creativity, innovation, and it is significant for the professional development of employees and their retention in the company (Buntak, Drožđek & Kovačić, 2013). If a person is unmotivated, it cannot give his maximum contribution, leading to lower business results. The task of management is to choose the right motivation techniques, depending on the specific circumstances (Žižak, Vizek Vidović & Ajduković, 2012).

## 2.2. Emotional intelligence

Goleman (1997) described emotional intelligence as competencies such as the ability to self-motivate and persist despite difficulties and frustrations; restraining impulsivity and postponing moments of receiving a reward; regulating moods, and preventing agitation from blocking the ability to think; compassion and hope. Feelings are psychic processes related to the senses and are often a reflection of a person's objective reality that occurs when a person assesses that something significant and important is happening, while emotions have a subjective character related to a person's personality. They occur in a state of excitement caused by a subjectively significant stimulus or reaction to an event (Hercigonja, 2018). People who have highly developed emotional intelligence can manage their emotions, clearly talk about them, explain them, and understand different emotions' patterns. Based on the research (Goleman, 1998), 67% of the skills considered key to business excellence is emotional skills. He also explains how emotional skills can be achieved based on emotional intelligence, and emotional intelligence lies in five elements: self-awareness, motivation, self-control, empathy, and adaptability (Goleman, 2010). One of the specifics of emotional intelligence is the assumption that, unlike IQ, emotional intelligence can develop (Takšić, Mohorić & Munjas, 2006).

*2.2.1. Intrapersonal intelligence*

The ability to manage own mood, temperament, motivation, and intentions and, as such, the ability to create an accurate model of assessing own personality and own abilities is called intrapersonal intelligence (Hercigonja, 2018). A person who possesses a high level of intrapersonal intelligence can access their own emotions and feelings and recognize, understand, and control their behavior. Self-awareness is a skill related to knowing their inner state, preferences, talents, and insight (Goleman, 2010). A person who possesses emotional self-awareness can recognize their inner feelings and, in this way, consciously influence their own decisions and actions. Self-control refers to the control of personal attitudes, instincts, and potentials that may interfere. A person who can control feelings and instincts can also manage impulsive and restless urges, accept changes, and take responsibility for their actions (Goleman, 2010). Panek (2014) states that people with highly developed self-control and better anger management show better psychological adjustment and also have more self-esteem. Motivation is an inner urge that encourages an individual to behave in a way by which he can achieve his goals and meet his needs (Tudor *et al*., 2010), and it consists of three essential elements -

strength, persistence, and goal orientation (Pupavac, 2015). Each person has their unique desires and needs that motivate them and give them the will to change. Goleman (2010) defined motivation as an emotional tendency that leads to goal achievement and, at the same time, makes it easier to achieve them.

*2.2.2. Interpersonal intelligence*

Interpersonal intelligence primarily refers to the ability to perceive differences in others in terms of their mood, temperament, motivation, and intentions that allow for understanding and working with others (Hercigonja, 2018). A person who possesses a high level of interpersonal intelligence possesses the ability to understand others: what motivates them, how they function, how to cooperate with them (Goleman, 1997). Empathy is the awareness of the feelings, interests, and needs of others. Although some authors consider it a personality trait, empathy can also be understood as an emotional and cognitive reaction stimulated by someone's experience (Brdar & Pokrajac-Bulian, 1993). This ability, which allows us to know what someone else is feeling, is accessible in a very wide range of life domains (Goleman, 1997). Empathy includes identifying other people's feelings, their emotional understanding, personal interpretation, unconditional acceptance, respect, and honesty without the presence of condemnation (Ionnidou and Konstantikaki, 2008). Assertiveness is a skill that allows people to fight for themselves and their interests without harming others and is manifested through a positive attitude, direct communication, goal orientation, and the ability to interact (Čanić, 2017). Assertive people can accept disagreements as a regular and everyday occurrence and that everyone has the right to their own opinion. In such situations, they try to maintain equality, considering the need to maintain their self-esteem and the self-esteem of the interlocutor (Miljković-Krečar and Kolega, 2013).

*2.2.3. Stress management*

Stress stimulates several physical, emotional, and cognitive reactions in the body, ultimately preventing the successful performance of tasks and reducing life quality and may even contribute to developing certain diseases (Telebec, 2016). A person's stress reaction can be recognized by some of its most common symptoms - dilated pupils, sweating, increased heart rate, rapid breathing, muscle tension, a state of heightened sensitivity and concentration (Pašić, 2007). Stress management is a skill that contributes to better coping with various stressors and different factors that cause stress in a person and their consequences, which can contribute to a better quality of life, productivity, and health. The causes of stress at work can be different - from the job itself, its quantity and pace, working hours, work-life balance, organizational culture, interpersonal relationships, role in society to the position, earnings, or lack of progress in his career (Juras *et al.*, 2009). One way to manage stress is to deal with the source of the stress itself - some stressful situations can be prevented or at least mitigated. Depending on the goal, coping with stress can be divided into three groups: problem-oriented coping; coping focused on emotions; avoidance (Telebec, 2016). Various educations and stress management training lead to stress reduction by relieving stressors, and in this way, common risk factors and predictable stress-related problems can be avoided (Juras *et al.*, 2009).

*2.2.4. Change management*

Adaptation is no longer just a matter of personality or coping mechanism but has become imperative in the business environment and synonymous with success (Calarco & Gurvis, 2006). In addition to the quotient of intelligence and emotional intelligence, the notion of the quotient of adaptability also appeared. The adaptability quotient primarily refers to an individual's ability to absorb new information and adapt to changes in real-time (Forbes, 15/6/2020).

Adaptability describes an individual's ability to distinguish the irrelevant, overcome difficulties, and reject knowledge that does not benefit him, which is very important when a large amount of information surrounds us. This may mean developing new skills, a new way of interacting, or something else needed to overcome difficulties and adopt new information. (Burke, Pierce & Salas, 2006). Adaptability can mean developing new skills, a new way of interacting, or something else needed to overcome difficulties and adopt new information. People with developed adaptability quotient are open-minded and very curious, and often their motivation encourages others to explore the world around them. Calarco and Gurvis (2006) explain three necessary adaptability components - cognitive, emotional, and dispositional adaptability. Cognitive adaptability refers to using different thinking strategies and mental frameworks and indicates an interest in adopting new approaches, insight and utilization of new information and connections, and a tendency to good collaboration. Emotional adaptability is the ability to deal with their own and others' emotions and feelings and implies adjusting and considering all participants' emotions that have a significant impact on the outcome of communication. Dispositional adaptability is based on a person's ability to remain optimistic, where change is seen as an opportunity rather than a threat. In order to make change management successful, the individual must understand the change process itself. It is necessary to strengthen the forces that drive change in order to increase the success of change, ensuring competitive pressure, new technologies, and weaken the resistance forces that prevent or slow down change, such as fear of new or loss of status and power, habits (Levasseur, 2001).

## 2.3. Professionalism

In modern business, politeness, business etiquette, work ethic, and a positive attitude significantly contribute to good business relations and successful business operations. Guffey and Loewy (2016) highlighted six main workplace behavior dimensions: courtesy and respect, appearance and appeal, tolerance and tact, honesty and ethics, reliability and diligence, collegiality, and sharing.

### *2.3.1. Business ethics*

Standards for ethical and socially responsible behavior are a part of every individual, and the attitudes, norms, and beliefs of that person influence his ethical decision-making and moral development (Aleksić, 2007). Work ethic and questions of what is ethical and what is unethical arise from the contradiction of business practice and the conflict of interest of individuals and organizational goals. In this context, work ethic considers personal and social; public moral and private needs; ethics of the common good and personal interests; higher goals of the human community and current benefits; benefits of imminent goals and meaning of long-term actions (Osredečki, 2000). On the one hand, it is an action that aims at own well-being, material success, and satisfaction of own needs, and on the other hand, it is an action that involves a moral dimension. Such a course of action means obtaining direct or indirect personal benefit but also benefit others. Therefore, business ethics means acting by the spiritual, sociological, and natural laws of man and his environment (Aleksić, 2007).

### *2.3.2. Constructive conflict resolution*

Conflicts are an inevitable part of professional relationships, and even the most capable, most moral, or most intelligent people sometimes cannot agree with each other on the conclusions that need to be made (Žitinski, 2010). At the same time, conflict can contribute to a better understanding between the conflicting parties; primarily, it leads to a better understanding of their desires and needs and the desires and needs of others. Conflicts can be approached constructively or destructively (Žižak, Vizek Vidović & Ajduković, 2012). The most common causes of conflict include differences in opinions, core beliefs, and standards applied when

evaluating, selecting, or deciding. Robbins and Judge (2010) believe that there are five fundamental causes of a conflict situation: conflict of opinion, conflict of interest, personalities, communication, structural problems. They also state that conflicts of interest and conflicts of opinion are the only justified sources of conflicts. In conflicts, it is necessary to recognize the chance for development and find a resolution for accumulated problems. That is why a good manager often encourages conflicts himself and dissolves them in cooperation with team members, where he can control and reduce their consequences (Lamza-Maronić & Glavaš, 2008). Most conflict resolution strategies are directly related to negative emotions, from resentment, intolerance and anger to fear, disappointment, and anxiety, only the problem resolution strategy is related to positive emotions such as relief, pride, satisfaction (Žižak, Vizek Vidović & Ajduković, 2012). Relationships based on mutual respect is a foundation for constructive conflict resolution through agreement and cooperation. In such an environment, conflicted sides feel confident enough to express negative feelings such as anxiety, fear, or dissatisfaction, but without a hostile tone toward the other side. Both sides, in such an environment, can recognize a sign of goodwill and respect differences in opinions and attitudes (Žižak, Vizek Vidović & Ajduković, 2012).

*2.3.3. Time management*

People who do not plan their time are often brought into a 'time constraint' and find themselves in a position where they are not able to complete the agreed work obligations or look for a shortened path, and by such behavior, even the most successful communicators reduce their effectiveness (Osredečki, 2000). Time management implies effective use of the time envisioned to perform certain activities, and it most often involves two phases (Francis-Smythe and Robertson, 1999: 4): (1) *time planning* and (2) *monitoring the plan*. It is essential to beware of '*time thieves'* who negatively affect the optimality of the realization of work tasks and thus achieve goals. Gohn (1996) believes that time thieves are unproductive habits, problematic people, and poorly written corporate policies. Time management in the literature is often imposed as a critical organizational resource nowadays (Guoqing & Yongxin, 2000). Successful time management contributes to a better quality of work with less effort, meeting deadlines, lower frequency of errors, better balancing between business and private life, reducing stress and tension at work, and achieving the desired goals.

## 3. CONCLUSION

Tourism and catering are labor-intensive services that require direct communication while working with people. Modern tourism business places various challenges to tourism service providers where they must possess more than just technical knowledge and competencies to perform tasks. Each person has certain qualities and abilities that make us who we are and characterize our attitudes, habits, and how we communicate with people. Soft skills are a precondition for successful business performance, so each individual must focus on their improvement and continuous development. A tourism product becomes an experience that tourists perceive, and tourism service providers are an integral part of that product. That is why they are often expected to be kind, understanding, and friendly and to recognize and make decisions on the spot about what they think will please certain people, stimulate positive emotions in them and thus contribute to the satisfaction of tourists with communication and overall provided service. Soft skills can be divided into three essential groups that are an integral part of business communication if we exclude communication skills. The first group refers to the interpersonal skills needed to participate in teamwork, develop good relationships and cooperation, provide services to others, motivate others. Emotional intelligence includes intrapersonal and interpersonal intelligence related to self-control, possession of empathy, ability to work under pressure, and ability to adapt.

The third group of soft skills refers to professionalism, which is most often defined through the possession of work ethic and knowledge of business etiquette and the ability to resolve conflicts and manage time constructively. Starting from this conceptual review of constructs, which includes the literature researched in this field so far, the aim was to provide future and current tourism service providers with a comprehensive overview of the reach of the science of soft skills. Further research imposes the challenge of analyzing soft skills in the digital and online environment, the communication skills of new generations, and the interdependence of these constructs.

***ACKNOWLEDGEMENT:*** *This paper was funded under the project line ZIP UNIRI of the University of Rijeka, for the project ZIP-UNIRI-116-4-19.*

**LITERATURE:**

1. Aleksić, A. (2007). Poslovna etika – element uspješnog poslovanja. *Zbornik Ekonomskog fakulteta u Zagrebu.* Vol. 5, No. 1, pp. 419-429.
2. Andrews, J., Higson, H. (2010). Graduate Employability, Soft Skills Versus Hard Business Knowledge: A European Study. *Higher Education in Europe.* Vol. 33, No. 4, pp. 411-422.
3. Bahtijarević-Šiber, F, Sikavica, P., Pološki-Vokić, N. (2008). *Suvremeni menadžment: Vještine, sustavi i izazovi*. Zagreb: Školska knjiga.
4. Balcar, J. (2016). Is it better to invest in hard or soft skills?. *The Economic and Labour Relations Review*. Vol. 27, No. 4. pp. 453–470.
5. Baum, T. (1990). Competencies for Hotel Management: Induppy Expectations of Education. *International Journal of Contemporary Hospitality Management*. Vol. 2, No. 4., pp. 3-8.
6. Brdar, I., Pokrajac-Bulian, A. (1993). Predstavlja li empatija dio socijalne kompetencije? *Godišnjak Zavoda za psihologiju*, Vol. 2, pp. 23-29.
7. Buntak, K., Drožđek, I. i Kovačić, R. (2013). Materijalna motivacija u funkciji upravljanja ljudskim potencijalima. *Tehnički glasnik*. Vol. 7, No. 1, pp. 56-63.
8. Burke, C. S., Pierce, L. G., Salas, E. (2006). Understanding adaptability: A prerequisite for effective performance within complex environments. *Emerald Group Publishing*. Vol. 6, pp. 3-39.
9. Burns, M. P. (1997). Hard-skills, soft-skills: undervaluing hospitality's 'service with a smile'. *Progress in Tourism and Hospitality Research.* Vol. 3, No. 3, pp. 239-248.
10. Calarco, A., Gurvis, J. (2006). *Adaptability: Responding effectively to change*. Greensboro: Center for Creative Leadership.
11. Čanić, D. (2017). Asertivno upravljanje ljudskim resursima u knjižnici. *Vjesnik bibliotekara Hrvatske.* Vol. 60, No. 2-3, pp. 279-293.
12. Christou, E. (2002). Revisiting Competencies for Hospitality Management: Contemporary Views of the Stakeholders. *Journal of Hospitality &Tourism Education*. Vol. 14, No. 1, pp. 25-32.
13. Christou, E., Eaton, J. (2000). Management Competencies for Graduate Trainees. *Annals of Tourism Research.* Vol. 27, No. 4, pp. 1058-1061.
14. Ciappei, C., Cinque, M. (2014). *Soft skills per il governo dell'agire*. Milano: Franco Angeli.
15. Demnig, D. J. (2017). The Growing Importance of Social Skills in the Labor Market. *The Quarterly Journal of Economics.* Vol. 132, No. 4, pp. 1593-1640.
16. Forbes (2019) How (and Why) to Boost Your Adaptability Quotient. Retrieved 15.06.2020 from https://www.forbes.com/sites/robertcerone/2019/12/20/how-and-why-to-boost-your-adaptability-quotient/#116c29576918,

17. Francis-Smythe, J. A., Robertson, I. T. (1999). On the relationship between time management and time estimation. *British Journal of Psychology,* Vol. 90, No. 3, pp. 333-346.
18. Fuller, L., Smith, V. (1991). Consumers' Reports: Management by Customers in a Changing Economy. *Work, Employment & Society.* Vol. 5, No. 1, pp. 1-16.
19. Gohn, C. (1996). *Offering time-management tips for tired managers,* Nation's Restaurant News. Vol. 30, No. 19, pp. 44.
20. Goleman, D. (1998). What makes a leader? *Harvard Business Review*. Vol. 76, No. 6, pp. 92-102.
21. Goleman, D. (2010). *Emocionalna inteligencija u poslu.* Zagreb: Mozaik knjiga.
22. Guffey, M., Lowey, D. (2016). *Essentials of Business Communication.* Deseto izdanje. Boston: Cengage Learning.
23. Guoqing, Y., Yongxin, Z. (2000). *Gender differences of China's managers in time management*. Women in Management Review. Vol. 15, No. 1, pp. 33-43.
24. Hayes, J. (2002). *Interpersonal Skills at Work.* Second edition. East Sussex: Routledge.
25. Hercigonja, Z. (2018). *Emocionalna inteligencija u odgoju i obrazovanju.* Varaždin: Fronta Impress.
26. Hurrell, S. A. (2016). Rethinking the soft skills deficit blame game: Employers, skills withdrawal and the reporting of soft skills gaps. *Human Relations,* Vol. 69, No. 3, 605-628.
27. Ioannidou, F., & Konstantikaki, V. (2008). Empathy and emotional intelligence: What is it really about?. *International Journal of caring sciences*, Vol. 1, No. 3, 118.
28. Jukić, D. (2012) Uloga interpersonalnih vještina u suvremenom školskom menadžmentu. *Ekonomska misao i praksa.* Vol. 21, No. 1, pp. 157-178.
29. Juras, K., Knežević, B., Golubić, R., Milošević, M., & Mustajbegović, J. (2009). Stres na radu: mjere prepoznavanja, rješenja i prevencija. *Sigurnost: časopis za sigurnost u radnoj i životnoj okolini*, Vol. 51, No.2, pp. 121-126.
30. Kay, C., Russette, J. (2000) Hospitality-management competencies: Identifying managers' essential skills. *Cornell Hotel and restaurant administration quarterly. Vol.* 41, No. 2, pp. 52-63.
31. Klaus, P. (2007). *The hard truth about soft skills: Workplace lessons smart people wish they'd learned sooner*. New York, NY: Harper Collins.
32. Lamza-Maronić, M., Glavaš, J. (2008). *Poslovno komuniciranje*. Osijek: Studio HS internet d.o.o.; Ekonomski fakultet u Osijeku.
33. Laškarin Ažić, M. (2018). *Upravljanje odnosima s gostima u turizmu i ugostiteljstvu.* Rijeka: Sveučilište u Rijeci, Fakultet za menadžment u turizmu i ugostiteljstvu, Opatija.
34. Levasseur, R. E. (2001). People Skills: Change Management Tools – Lewin's Change Model. *Interfaces.* Vol. 31, No. 4, pp. 71-73.
35. Majid, S., Liming, Z., Tong, S., Raihana, S. (2012). Importance of Soft Skills for Education and Career Success. *International Journal for Cross-Disciplinary Subjects in Education*. Vol. 2, No. 2, pp. 1036-1042.
36. Miljković-Krečar, I., Kolega, M. (2013). *Psihologija u poslovnom okruženju*. Zagreb: Grupa VERN d.o.o.
37. Moore, T., Morton, J. (2015). The myth of job readiness? Written communication, employability, and the 'skills gap' in higher education. *Studies in Higher Education*. Vol. 42, No. 3, pp. 591-609.
38. Moss, P., Tilly, C. (1996). "Soft" skills and race: An investigation of black men's employment problems. *Work and Occupations*. Vol. 23, No. 3, pp. 252-276.
39. Muzio, E., Fisher, D. (2009). Soft Skill Quantification (SSQ): Human Performance vs. Metric. *Cost Engineering;* Vol. 51, No. 3, pp. 26-31.

40. Nickson, D., Warhurst, C., Dutton, E. (2005). The importance of attitude and appearance in the service encounter in retail and hospitality. *Managing Service Quality*. Vol. 15, No. 2, pp. 195-208.
41. Osredečki, E. (2000). *Poslovno komuniciranje & poslovni bonton.* Samobor: Naklada Edo.
42. Panek, E. (2014). Left to their own devices: College students "guilty pleasure" media use and time management. *Communication Research*. Vol. 41, No. 4, pp. 561-577.
43. Pašić, M. (2007). *Pobijedite stres.* Zagreb: Dušević i Kršovnik.
44. Pupavac, D. (2015). The ghost of Herzberg motivational theory: motivators and demotivators. *International Journal Vallis Aurea*, Vol.1, No. 1, 15-25.
45. Ranade, S. *et al*. (2010). Mapping competencies. *Mechanical engineering.* Vol. 132, No. 2, pp. 30-34.
46. Raybould, M. Wilkins, H. (2006). Generic Skills for Hospitality Management: A Comparative Study of Management Expectations and Student Perceptions. *Journal of Hospitality and Tourism Management*. Vol. 13, No. 2, pp. 177-188.
47. Robbins, P. S., Judge, A. T. (2010). *Organizacijsko ponašanje*. Dvanaesto izdanje, Zagreb: Mate d.o.o.
48. Robles, M. M., (2012). Executive Perceptions of the Top 10 Soft Skills Needed in Today's Workplace. *Business Communication Quarterly.* Vol. 75, No. 4, pp. 453–465.
49. Rozman, R., Kovač, J., Koletnik, F. (1993). *Management*. Ljubljana: Gospodarski vestnik.
50. Ružić, B. (2007). *Povratna informacija – temelj za profesionalni razvoj*, Poslovni savjetnik.
51. Sisson, L. G., Adams, A.R. (2013). Essential Hospitality Management Competencies: The Importance of Soft Skills. *Journal of Hospitality & Tourism Education.* Vol. 25, pp. 131–145.
52. Succi, C., Canovi, M. (2019). Soft skills to enhance graduate employability: Comparing students and employers perceptions. *Studies in higher education.* pp. 1-14.
53. Suh, E., West, J. J., Shin, J. (2012). Important competency requirements for managers in the hospitality industry. *Journal of Hospitality, Leisure, Sport & Tourism Education*. Vol. 11, pp. 101–112.
54. Takšić, V., Mohorić, T., Munjas, R. (2006). Emocionalna inteligencija: teorija, operacionalizacija, primjena i povezanost s pozitivnom psihologijom. *Društvena istraživanja.* Vol. 4-5, No. 84-85, pp. 729-752.
55. Tas, R. F. (1988). Teaching Future Managers. *Cornell Hotel and Restaurant Administration Quarterly*. Vol. 29, No. 2, pp. 41–43.
56. Telebec, S. (2016). Sigurnost i zaštita na radu: Stres na radu. *Kemija u industriji: Časopis kemičara i kemijskih inženjera Hrvatske.* Vol. 65, No. 1-2, pp. 115-118.
57. Tesone, D. V., Ricci, P. (2005). Job Competency Expectations for Hospitality and Tourism Employees: Perceptions of Educational Preparation. *Journal of Human Resources in Hospitality & Tourism*. Vol. 4, No. 2, pp. 53-62.
58. Testa, M. R., Sipe, L. (2012). Service-leadership competencies for hospitality and tourism management. *International Journal of Hospitality Management.* Vol. 31, pp. 648-658.
59. Tudor, G. *et al*. (2010) *Vođenje i motiviranje ljudi*. Zagreb: M.E.P. d.o.o.
60. Turkalj, Ž., Fosić, I., Marinković, R. (2012). Transformacija organizacije u timski organizacijski pristup i efikasno korištenje timskim radom u kontekstu okružja. *Ekonomski vjesnik: časopis Ekonomskog fakulteta u Osijeku.* Vol. 15, pp. 247-260.
61. Wang, Y., Tsai, C. (2014). Employability of Hospitality Graduates: Student and Industry Perspectives. *Journal of Hospitality & Tourism Education*. Vol. 26, pp. 125-135.
62. Weber, M. R. *et al.* (2009). An exploratory study identifying soft skill competencies in entry-level managers. *Tourism and Hospitality Research*. Vol. 9, No. 4, pp. 353–361.

63. Weber, M. R., Crawford, A., Lee, J., & Dennison, D. (2013). An exploratory analysis of soft skill competencies needed for the hospitality industry. *Journal of Human Resources in Hospitality & Tourism*, Vol. 12, No. 4, 313-332.
64. Weber, M. R., Lee, J. J., Crawford, A. (2019). A suggested best practices for enhancing performance of soft skills with entry-level hospitality managers. *Anatolia: An International Journal of Tourism and Hospitality Research*. Vol. 31, No. 1, pp. 76-87.
65. Wilks, D., Hemsworth, K. (2011). Soft Skills as Key Competencies in Hospitality Higher Education: Matching Demand and Supply. *Tourism & Management Studies.* Vol. 7, pp. 131-139
66. Žitinski, M. (2010). *Kultura poslovnog komuniciranja.* Dubrovnik: Sveučilište u Dubrovniku.
67. Žižak, A., Vizek Vidović, V., Ajduković, A. (2012). *Interpersonalna komunikacija u profesionalnom kontekstu*. Zagreb: Sveučilište u Zagrebu, Edukacijsko-rehabilitacijski fakultet.

# ELECTRONIC FREIGHT EXCHANGES IN THE BUSINESS ACTIVITY IN TSL SECTOR

**Sławomir Skiba**
*Gdynia Maritime University, Poland*
*s.skiba@wpit.umg.edu.pl*

***ABSTRACT***

*The increasing role of trade in the global economy poses new challenges for the entire TSL sector, in particular for all modes of transport. The efficiency of trade depends on the efficiency and effectiveness of the commodity exchange whose effects can be expressed in the form of optimization of logistics costs (Skiba, 2013, pp. 999-1006). The benefits of globalization and increased transport efficiency reflect particularly clearly in road transport, where the smooth flow of goods is viewed as a top priority. In response to competition, road-transport companies must not only live up to qualitative and quantitative challenges, but also deal with the issue of costs. The effectiveness of the performed transport tasks depends to an increasingly greater extent on the degree of use of innovative ICTs. These technologies are primarily software applications that support the work of carriers, shippers and logisticians. One of the examples of the use of IT solutions in logistics are electronic freight exchanges, enabling not just a more efficient flow of information and new business relationships, but also contributing to the optimization of logistics costs. The article takes up the problem of electronic freight exchanges as safe, virtual markets that favor the growth of road transport in Europe and serve as an important element of cost optimization in transport. The main goal of the article is to present the forms and types of mechanisms of electronic freight exchanges, as well as to identify the risks and benefits of using electronic exchanges in the TSL sector.*

***Keywords:*** *Electronic freight exchanges, TSL sector*

## 1. THE ESSENCE AND MODELS OF ONLINE FREIGHT EXCHANGES

Many interpretations of the term *electronic freight exchange* can be found in the literature. One of the first such attempts defines the term *electronic exchange* as an area where a possible range of actions spans across various areas of activity of individual enterprises. Exchange websites are online platforms for signaling free cargo spaces and free loads, with the goal for users to choose the offer that best suits the needs of their company. Freight exchanges offer facilities that accelerate and secure transactions by providing additional services and access to extended applications (Lewandowski, Dziechciarz, 2011, pp. 1125-1126). In another interpretation, freight exchanges are seen as indispensable market tools for many carriers and shipping companies, where global platforms help create business ties and consolidate the economy (Karaś, 2020, pp. 425-430). The platforms' main feature comes down to posting information on loads and free vehicles ready to fulfill transport services, as well as to providing contact details of dispatchers. Electronic exchanges can also be interpreted as an e-commerce tool, where electronic auction uses the reverse bidding mechanism with the aim of lowering the purchase prices of goods and services. The freight rate is usually determined by auction of both interested parties, although in most cases it is the offeror who determines the starting rate. The reverse auction mechanism often enables obtaining better transaction terms than with traditional negotiations, with the formal process of negotiating being reduced to a minimum (Książkiewicz, 2011, pp. 264). Bearing in mind all these definitions, it could be said that an electronic freight exchange is a kind of virtual market in which the exchange of information and transport offers occurs. It is a tool that not only enables access to the pan-European freight market and streamlines the offer selection process, but also a system which enables simultaneous communication between many contractors.

Platform users can post offers related to the availability of free cargo space or the need to transport a specific load on a specific route. Freight exchanges are now an indispensable element of shippers' work, while carriers having a surplus of free rolling stock on given routes can establish better business contacts. The analysis of electronic exchanges and how they work prompts a conclusion that they are visually very similar to regular auction websites as well as to online stores. A number of different tasks and functions performed by exchange platforms can be distinguished. The first concerns documentation and communication. It is about the elimination of paperwork through using only electronic records, as well as departure from traditional meetings between contractors in favor of virtual conferences. Table 1 shows a breakdown of electronic freight exchanges.

| Criterium | Breakdown |
|---|---|
| Reach | - local<br>- domestic<br>- European<br>- international<br>- continental |
| Fees | - free<br>- paid |
| Type | - general exchanges: covering the entire logistics industry<br>- specialized exchanges: covering a specific type of cargo |
| Exchange area | - loads exchange: includes transport offers<br>- vehicle exchange: collects information on free vehicles ready to go on the road |
| Database usage system | - offline freight exchange<br>- online freight exchange |
| Access | - open<br>- dedicated |

*Table 1: Breakdown of electronic freight exchanges*
*(Source: own study based on: Bartczak, Barańska, (2016), pp. 162-164.)*

Areas and types of activity of various organizations have an impact on the type of relations they have with other local actors. These relations lead to the adoption of different business models in the electronic economy (Table 2).

*Table following on the next page*

| | Government (G) | Business (B) | Customer (C) |
|---|---|---|---|
| Government (G) | **G2G**<br>Process coordination, internal document flow | **G2B**<br>Flow of economic information | **G2C**<br>Flow of administrative information |
| Business (B) | **B2G**<br>Public procurement | **B2B**<br>Conventional e-business, relations between entities consist in concluding and fulfilling orders, payments and establishing business contacts | **B2C**<br>Conventional e-commerce, transactions concluded between businesses and individual customers |
| Customer (C) | **C2G**<br>Taxes | **C2B**<br>Price comparison, transactions between individual consumers, organized and controlled by business entities | **C2C**<br>Online auctions, social networks, area of activity - trade from private users (purchase and sale transactions) |

*Table 2: Relations between the main actors in the electronic economy (Source: own study based on: Combe, (2006), p. 67.)*

Each business entity offering services online uses a specific business model which answers the basic question of how to generate income. Lack of a clearly defined business model is one of the most common barriers to successful e-business activity (Nojszewski, 2006). It is crucial to distinguish three actors (government, business and customer) and their mutual relations. The relationships that occur are the most important elements of the economic environment in which the company operates within a network. The nature of concluding transactions on the electronic exchange market can be associated with the B2B (Business-to-Business) model, since the platforms act as a virtual, central online market whose main distinguishing feature is the fact that many entrepreneurs operate simultaneously on both its ends (as service providers and service recipients). A common synonym for *electronic freight exchange* is the term *Electronic Trading Hub* (Szpringer, 2005, pp. 112). B2B systems are an offer tool for manufacturers, trade intermediaries, distributors and wholesalers. On the other hand, they are also used as a purchasing, bidding and auction platform. B2B platforms have a number of advantages, most notably:

- streamlining and improving communication with business partners,
- automated control of trade exchange standards,
- improved management of relationships between business partners,
- reducing fulfillment time,
- automating the processes of order placement, ordering, invoicing etc. (Mamcarz, 2008, p. 4).

B2B markets are characteristic in that they require relatively low entry costs and yet high exit costs. Low entry costs are often due to the fact that they are financed to a large extent from the operator's own resources to lure in potential contractors. On the other hand, the exit barrier is most often created by clauses in participation agreements (e.g. an agreement imposing a

minimum period of market access) (Salomon, 2001). The way of organizing trade in B2B relations is most often implemented via two models: auction-tender and catalog. Special combinations of these models are purchasing cooperatives (purchasing alliances), barter markets and vertical markets (commodity exchanges - including freight exchanges).

## 2. BENEFITS AND RISKS FOR USERS OF ELECTRONIC FREIGHT EXCHANGES

The Internet is nowadays an effective and common trading mechanism. Electronic freight exchanges provide a platform for B2B transactions with a view to breaking satisfactory profit. With Industry 4.0 already settled in, Internet users focus on high-parameter network connections and mobility of applications. Operators of electronic exchanges follow suit, as these factors are prerequisites for gaining competitive advantage. The expectations to be met by these platforms are becoming increasingly higher and are constantly changing. Regardless of the size and reach of the website, operators also incur costs and struggle with many obstacles (Skiba, 2020, 339-344). The first such threat emerges at the initial stage of functioning in cyberspace, namely the difficulties associated with attracting a decent number of users. The stock exchange itself is not an attractive solution - it is the users who ultimately decide its success and popularity. Competition is another threat. The desire to make the platform stand out and the expectations of users require a number of improvements and tweaks as well as introduction of versatile and mobile solutions that call for significant investment outlays. This last one does not concern the operator directly, but instead rests on the network provider. Possibilities offered by online platforms are largely neutralized by the need to pay monthly subscription fees for access. The impact of the virtual market on the company's operations is significant, but online orders should not be the only source of income. Diversification of income sources can be an important determinant of competitiveness in the TSL market. A useful feature offered by freight exchanges is a barometer that provides users with access to information about the current market demand and supply to better adjust the freight rates. In addition to reducing empty runs, it is also possible to obtain offers for less-than-container loads (LCLs) and merge them into loads that fill the entire cargo space. Another important benefit is the possibility of acquiring permanent business partners. Recurring issues with drivers or high minimum-wage rates do not leave transport and shipping companies with much room to maneuver. Long-term relationships and contracts concluded via exchange platforms have therefore a positive effect not only for the carrier, but also for the client (Starkowski, Zielińska, 2016). In the era of Industry 4.0, the range of the Internet should be considered infinite. We cannot currently imagine the economy without access to online resources. And while universal access to the worldwide web comes with many benefits, it also poses serious threats, including cyber attacks that defy computer security. As a result, using protective shields – or firewalls - on websites becomes necessary. In practice, however, the effectiveness of this type of protection depends on the skills of the hacker (Sosnowski, Nowakowski, 2015, pp. 169-170). Users of exchange platforms should be aware of partners with whom they enter into transactions. The main issues are associated with receiving payment for services as well as theft of transport loads by fraudulent carriers. It is then no wonder that ensuring the security of all exchange participants has become a top priority. The expectations of transport companies towards exchange operators have to do primarily with minimizing the risk resulting from centering into business contracts with new partners whose profiles cannot be sufficiently trusted. This is where verification of company documents from both the client and the contractor becomes markedly important. When concluding a transaction, the party ordering freight to a new carrier may also be hesitant about the quality of services provided (Sosnowski, Nowakowski, 2015, pp. 160-161). Doubts may arise regarding timely substitution of the means of transport, delivery time, loss or damage of goods (Kuzia, 2019, pp. 294-300). Failure to keep deadlines may lead to costly warehouse downtimes and therefore lack of smooth shipments.

This is similar in the case of damage to the parcel where costs may arise due to disposal works, repair or re-transport. Late payment of receivables is one of the most common issues for contractors. Additionally, the flow of funds in TSL companies usually takes as many as 60 days, meaning difficulties for subcontractors to stay afloat financially. In order to address these problems, freight exchange platforms allow in their offer for broader interference in the scope of transport contracts by selecting those users who meet the condition of transferring payments within the statutory period of 30 days applicable in Poland (Sosnowski, Nowakowski, 2015, pp. 162).
Table 3 shows the benefits and risks associated with using electronic freight exchanges.

| Benefits | Risks |
|---|---|
| - access to the market anytime anywhere,<br>- freight barometer,<br>- access to a rich cargo offer and businesses placing orders in one place,<br>- speed of searching for offers,<br>- freedom of information exchange,<br>- mobile application available,<br>- convenient access to the communicator,<br>- possibility of acquiring new business partners,<br>- possibility of planning transport throughout Europe,<br>- ability to choose customers and service providers,<br>- access to additional services (route planning, transaction settlement),<br>- access to current offers,<br>- comparing and negotiating freight rates,<br>- cost reduction (time, empty runs),<br>-relatively inexpensive acquisition of business partners,<br>- user records,<br>- ability to verify reliability and solvency of contractors,<br>- possibility of purchasing additional services, such as debt collection. | - chance of dealing with dishonest contractors,<br>- performing services contrary to arrangements,<br>- non-payment for services ,<br>- subscription fees to access the platform<br>- access to the Internet,<br>- threat of malware and hacking attack |

*Table 3: Benefits and risks of using freight exchanges.*
*(Source: own elaboration based on: Bartczak, Barańska, (2016), pp. 163-164.)*

Operators of freight exchanges offer different security systems and packages, including solutions such as:

- securing access to the account with login and password,
- detailed verification of new users: verification of all users is to ensure a secure transaction environment. Most often it requires providing company setup documents, transport license, carrier insurance, forwarder insurance, time in business, etc.,
- company catalogs containing detailed information about exchange platform users: activity profile, credibility,
- user forums: cross-evaluation of contractors. This tool enables simple and effective user analysis. Rankings are often created based on ratings and reviews, with the possibility of excluding unreliable or fraudulent entities from the group,
- debt collection services: concerning assistance in the recovery of funds from unpaid invoices (Kos, B., 2011, pp. 592-594),
- remote monitoring of the order fulfillment status: applies to all operations related to the performance of the service and the tracking of formal activities.

All these services and solutions are aimed at improving the security of business operations conducted via electronic freight exchanges while showing how serious operators are about the security of their exchange platforms.

## 3. CONCLUSION

The current market situation forces businesses to maximize the use of freight potential in road transport while minimizing the volume of road traffic and reducing fuel consumption and greenhouse emissions. By implementing these assumptions, companies focus not only on solutions related to modern and environment-friendly rolling stock, but also on innovative tele-information technologies such as freight exchanges. Electronic freight exchanges strive to provide full security of transactions concluded via their platforms. In addition, their very existence has made the work of shipping and transport companies easier. However, despite the rapidly growing road transport market, TSL companies are still facing number of barriers, such as: shortage of drivers, rigorous procedures on international markets and high costs related to running transport activities. On the other hand, the development of electronic freight exchanges has triggered an increase in the volume of road transport in Europe while also helping to solve problems related to insufficient rolling stock. As exchange services will continue to grow, so will the innovation activities pursued by platform operators. Modern mapping technologies and integration of telematic systems are becoming the norm. Exchange platforms have always been quick to embrace innovative solutions, including mobile, and this is not likely to change in the near future. Further development of exchange platforms in the area of buyer-and-seller verification by operators is expected.

## LITERATURE:

1. Bartczak, K., Barańska, A., (2016), *Wpływ giełd transportowych na funkcjonowanie przedsiębiorstw z branży logistycznej,* Logistyka, 2016 No. 1, pp. 163-172.
2. Combe, C., (2006), *Introduction to E-business, Management and Strategy,* Elsevier, London-Oxford.
3. Dojszewski, D., (2006), *Przegląd modeli e-biznesowych,* Retrieved 05.11.2020 from https://www. www.e-mentor.edu.pl/artykul/index/numer/17/id/375.
4. Karaś, A., (2020), *Investment directions for the development of seaports,* Economic and Social Development: Book of Proceedings, Porto, pp. 425-430.
5. Kos, B., (2011), *Internetowe giełdy transportowe w działalności przedsiębiorstw TSL (Transport-Spedycja-Logistyka),* [from:] Zeszyty Naukowe Uniwersytetu Szczecińskiego. Ekonomiczne Problemy Usług, Wydawnictwo Naukowe Uniwersytetu Szczecińskiego, Szczecin, pp. 587-595.
6. Książkiewicz, D., (2011), *Rola Internetu w usługach logistycznych,* [from:] Usługi logistyczne – teoria i praktyka, Rydzkowski, W., Biblioteka logistyka, Poznań.
7. Kuzia, M., (2019), *Urban mobility model in the context of global trends,* Economic and Social Development: Book of Proceedings, Moskwa, pp. 294-300.
8. Mamcarz, P., (2008), *Rynek elektronicznych systemów B2B,* Polska Agencja Rozwoju Przedsiębiorczości, Warsaw.
9. Salomon, A., (2001), *Rynek B2B – stan obecny i perspektywy rozwoju,* Namiary na morze i handel, No. 17/568.
10. Skiba, S. (2013), *Analiza ograniczeń i możliwości związanych z ewidencją kosztów logistyki,* Logistyka, 2013/6, pp. 999-1006.
11. Skiba, S. (2020), *Outsourcing as a method of recruitment in the tsl sector*, Economic and Social Development: Book of Proceedings, Porto, pp. 339-344.
12. Sosnowski, J., Nowakowski, Ł., (2015), *Elektroniczne giełdy transportowe,* Difin, Warsaw.

13. Starkowski, D., Zielińska, J., (2016), *Wykorzystanie giełdy transportowej Wtransnet w systemie planowania operacji transportowej przez spedytora w przedsiębiorstwie transportowym i spedycyjnym z wykorzystaniem elektronicznego biznesu,* Autobusy, No. 12/2016, pp. 1863-1870.
14. Szpinger, W., (2005), *Prowadzenie działalności gospodarczej w Internecie,* Wydawnictwo Difin, Warsaw.

# COMPETITIVENESS OF SCIENTIFIC AND PEDAGOGICAL WORKERS IN THE CONDITIONS OF FORMATION OF THE NATIONAL SYSTEM OF QUALIFICATIONS

**Svetlana Sotnikova**
*Novosibirsk State University of Economy and Management, Russian Federation*
*s.i.sotnikova@nsuem.ru*

**Elena Mikhailova**
*Novosibirsk State University of Economy and Management, Russian Federation*
*e.m.mihajlova@nsuem.ru*

***ABSTRACT***

*The purpose of this conceptual article is the analysis of very tectonics of independent assessment of qualification. Independent assessment of qualification is considered as the tool of assessment of competitiveness of human resources of the higher school. The term «assessment of competitiveness of teachers» was not widely adopted still in domestic practice owing to high methodological and methodical uncertainty. For methodical judgment of the mechanism of assessment of competitiveness of human resources of the higher school the primary value has knowledge of parameters of a status and characteristics of very tectonics of independent assessment of qualification. The very tectonics of independent assessment of qualification is integrated formations of components, correlation and which interaction causes validation of qualification of the persons claiming for implementation of a pedagogical type of work. In article the role of independent assessment of qualification as independent branch of business assessment of competitiveness of employees of the higher school is justified. In article the authoring interpretation and interpretation of social and economic contents, an entity of backbone components of very tectonics of independent assessment of qualification is given. The author's research allows to develop understanding of need and a role of independent assessment of qualification as method of assessment of competitiveness of teachers. Independent assessment of qualification allows to operate with technologies of detection and assessment of anomaly of supply and demand of qualifications in the market of teaching work. Independent assessment of qualification allows to create connections of the higher education with labor market and civil society.*

***Keywords:*** *higher education, national system of qualifications, market of educational programs, market of qualifications, independent assessment of qualification, employee assessment*

## 1. INTRODUCTION

The global labour market, as an element of the global economy, is undergoing significant changes, leading to a competitive rivalry between national labour markets, as the external environment of the national market becomes more complex, global integration processes are intensifying and international economic ties are developing. Integration processes are accompanied by an increase in the disproportions between labour supply and labour demand and, therefore, an increase in the imbalances in the levels of labor productivity between different countries, in the levels of income and material wealth inequality within and between countries, a rising shadow employment, etc. National labour markets are becoming an important tool in countries' confrontation for leadership in economic development. The need to protect the national labour market requires the formation of a modern, transparent system of recognition of the qualifications of Russian citizens by other WTO member countries, as well as those of citizens of WTO member countries in Russia, which complies with basic international

approaches. In this regard, the role of higher education can hardly to be overestimated, since it is designed to be a tool for shaping the national qualification market and the main incentive for the formation of long-term competitive advantages of the country's human resources. By recognising the qualification of an employee as capital, the society encourages the education system to carry out capital-saving labour training processes and to react to the behaviour of state and non-state institutions on the labour market in order to meet their need for competitive employees. As a matter of fact, there is an objective need in Russian society to move from a market of educational programmes, where an employee's qualification is determined by the volume and structure of residual knowledge of mastered educational disciplines in an educational institution (i.e. diploma), to a market of qualifications, where the value of knowledge, skills, professional skills and experience of an employee is determined by his or her real readiness for quality work within the frameworks of a certain work activity or profession (Table 1).

| Comparing criteria | Educational programme market | Qualification market |
|---|---|---|
| **Target** | Mastering a certain type of professional activity | Satisfying market needs for the quality of human resources |
| **Object of the competition** | Educational program – a set of basic characteristics of education (volume, content, planned results), organizational and pedagogical conditions, forms of certification | Qualification of an employee - level of knowledge, competencies, professional skills and experience |
| **Subject-matter of competitionи** | Official recognition in the form of a diploma/certificate of mastering a certain type of professional activity | Labour efficiency as recognition of learning outcomes that link education to the labour market and civil society |
| **Descriptors** | Residual knowledge assessment | Execution of labor duties or employment action |
| **Supply side** | Educational institutions | Organizations that carry out educational activities (including training centers for professional qualification, activities in the workplace).<br>Self-education . |
| **Demand side** | Employable citizens wishing and mastering an educational program | Market need for workforce provided with wage and living funds |
| **Price** | Price of the educational program | Estimated (assumed) increase in income, reflecting the efficiency of possession of a certain qualification |
| **Market organisation principle** | National educational levels | National qualification levels |
| **Attitude to non-formal learning** | Non-formal education is not recognized | Recognition of non-formal learning (self-learning) |
| **Market benefit** | Continuity of educational programs at different levels | Creation of conditions for labor mobility of able-bodied people, international and intersectoral comparability of qualification levels |
| **Market limitations** | Mismatches between labor supply and labor demand | Bulky infrastructure |
| **Market management target** | Training of bachelors, specialists, masters, researchers | Balance of demand for workers' qualification from the labor market and supply of qualifications from the education and training system |

*Table 1: Comparative characteristics of the present «educational programme market» and the forthcoming «qualification market»*

The transition to the qualification market raises broader issues. These are, firstly, to improve the competitiveness of the national economy, labour productivity and quality of life by bringing together market requirements for the quality of human resources and the content of vocational education and training programmes; secondly, to facilitate labour mobility of Russian and foreign citizens through the creation of conditions for international and inter-sectoral comparability of qualification levels. A change in the key benchmarks in education «leads to complication of the content of teaching work and changes in its traditional functions» [Bagirova A.P., et al., 2016, p.3].

## 2. SETTING THE RESEARCH OBJECTIVE

The most important condition for the transition from the market for educational programmes is the competitiveness of the university's scientific and pedagogical workers (hereinafter – the SPW). Competitiveness of the SPW is the ability of teachers to maintain or strengthen the position of an educational service in the market. Both the efficiency of education and the competitiveness of higher education institutions depend on their competitiveness. The current status of human resources in higher education does not quite match the trends in the accelerating process of knowledge renewal. Despite the growing scale of the higher education system and the development of postgraduate and doctoral studies, science and higher education are facing an acute shortage of highly qualified scientific and scientific-pedagogical personnel. Insufficient social and material assessment of university educators' work, their low standard of living and quality of life have provoked an outflow of highly qualified pedagogical staff from higher education to other areas of activity. Deterioration of the qualification characteristics of scientific and pedagogical personnel of higher education institutions, observed in recent years, is accompanied by the physical ageing of the scientific and pedagogical staff of higher education institutions: the average age of university educators is steadily increasing, while the share of educators under 35 years of age with a PhD degree is not high. The actions taken to ensure the competitiveness of the SPW are in most cases formal. The number of participants in conferences at various levels has decreased due to the lack of sufficient funds for such events at universities. Educators are less and less frequently attending training centres that are not located in the city. Moreover, educators' desire to work together to ensure a decent standard of living leaves them little time for research and development, professional development and self-development. At the same time, in modern economic conditions, a large amount of professional knowledge is not simply used; it is becoming more and more specific, which makes it difficult to transfer intellectual resources from educators to students. In order to effectively train specialists to work in the economy, educators no longer have enough personal experience, intuition and training programmes, which include exchange of experience at scientific and methodological conferences, round tables, communication with colleagues at special seminars, allowing them to demonstrate their own achievements, achieve their recognition and receive new incentives for development. A modern teacher is professionally responsible not only for transferring, storing and using knowledge, but also for multiplying it. Modern educators need to have, maintain and periodically update classical knowledge in the professional field and at the same time rebuild their own lifestyle and work style in relation to market requirements. Without an assessment of the SPW's competitiveness, effective and high-quality teaching in modern conditions is impossible. Thus, reforming the national education system necessitates the establishment and development of a new approach to assessing the competitiveness of the SPW in higher education. The estimation of competitiveness of SPW becomes one of the main social and economic factors of preservation and development of the best traditions of higher education institution, its scientific schools.

The higher education institutions which will be able to adjust an effective system of an estimation of competitiveness of the educators, can adapt to changing conditions, will generate image of attractive high school, and business structures, in turn, will be interested in mutually advantageous cooperation with higher school.

## 3. COMPETITIVENESS OF SCIENTIFIC AND PEDAGOGICAL WORKERS: A METHODOLOGICAL APPROACH TO ITS EVALUATION

Despite the growing interest in the theoretical, methodological and applied issues of increasing the competitiveness of the SPW, the process of institutionalisation of its conceptual and terminological apparatus has not yet been completed. The analysis of available literature on the considered problem allows to ascertain, that use of the term «competitiveness» SPW (the educator, the faculty, the personnel of higher education institution, human resources of higher school, etc.) is widespread enough phenomenon. In their majority, scientists and practitioners adhere to and develop the point of view on the competitiveness of higher education institution educators proposed by Ulyanovsk researchers under the guidance of Professor V.N. Lazarev. Competitiveness of higher education institution staff is understood as «a complex characteristic reflecting the degree of development of scientific and pedagogical potential of higher education institution pedagogical staff, determining its ability to carry out scientific and pedagogical activities and ensuring the achievement of the quality level of educational services that meet the established standards of education and consumer demands, and the objectives of the higher education institution» [Lazarev V.N., Pirogova .V., 2010, p.12]. In this regard, the indicators of competitiveness of university educators are the availability of scientists and honorary titles, the number of prepared and published abstracts of reports, articles, monographs, textbooks, manuals, organization, holding and participation in scientific and practical conferences at various levels, the amount of funds for research, the number of trained personnel of higher qualification through postgraduate and doctoral studies, the number of defended theses for a degree, etc. [Abakumova N.N., 2014, pp. 162-172; Bedrachuk I.A., Mitina O.V., 2015, pp.39-52; Lazarev V.N., Pirogova .V., 2010, p.12; Milyaeva L. G., Milyaev V. D., 2014, pp.14-21; Naidenko I. S., Zadorozhna E. K., Kuizheva S. K., 2017, pp.479-488; Ozernikova T.G., Gainullina O.I., 2011, pp.28-32; Petsol'dt K., Vorob'eva I. V., Inozemtseva E. S., 2010, pp.433-438]. However, it should be noted that the competitiveness of the SPW is due not only to the qualitative characteristics of the workforce, which most fully correspond to the improvement of the quality of higher education, but also to the socio-economic and production conditions under which the abilities of educators in this work are used. In this regard, the competitiveness of the SPW should be understood as the ability of educators to achieve corporate achievements in work that contribute to the implementation of organizational goals of the university in the most effective way. The competitive advantage of the SPW is those creative competencies of educators and the properties of teaching, which create a certain advantage for the university over the SPW of competitive universities in the implementation of the educational programme. The competitive advantage of the SPW is, therefore, relative, determined in comparison with the SPW of a competitor higher education institution which holds the best position in a particular market for educational services. The competitive advantage of the SPW can be considered in the *personal (static)* and *activity (process)* contexts. *Personal competitiveness* $C_p$ exists as a potential for pedagogical activities. It defines a educator's ability to perform his or her functions with quality and with minimal mistakes (without errors), to master new things successfully and to adapt quickly to changing conditions. This competitiveness reflects the multifaceted, complex characteristics of teachers' work opportunities in different situations and with different subjects of educational activity – colleagues, management, subordinates, students, representatives of companies and other higher education institutions.

The prospects for the formation of a renewed and unified qualification space for the SPW of higher education dictate the need to identify indicators for assessing personal competitiveness, which will open up in connection with the adoption of the professional standard «Educators of vocational training, vocational education and additional vocational training» approved by Order № 608n of the Ministry of Labour and Social Protection of the Russian Federation dated 8 September 2015. Personal competitiveness for the SPW of higher education $C_p = f(c_1, c_2, c_3, c_4)$ must meet the following qualification requirements:

- *the authority and responsibility* (c1), reflecting the requirements for the general competence of the SPW and characterising the degree of independence of an employee in his or her professional activities, the scope of functions performed by the employee, and the share of autonomous work without the supervision of experienced qualified employees;
- *the nature of skills* (c2), which reflect the complexity of professional activity, the multiplicity (variability) of ways to solve professional tasks, the need to choose or develop these ways in the uncertain and unpredictable development of the working situation;
- *the nature of knowledge* (c3), describing the volume and complexity of the information used, the innovativeness and abstractedness of knowledge in professional activity in the context of the increasingly complex process of transferring intellectual resources from educators to students;
- *the main ways to achieve a level of qualification* (c4) are typical educational trajectories for mastering a certain qualification. These include, for example, master's or specialist's programmes, additional professional programmes, postgraduate (adjunct) training for scientific and pedagogical staff, residency programmes, apprenticeship programmes and practical experience.

*Operational competitiveness* $C_o$ is an economic form of implementing the personal competitiveness of an educator in its joint movement with material factors. It is the extent to which personal competitiveness is brought into a functioning state. Operational competitiveness, being a complex intellectual, practical and socially conditioned substance that ensures effective educator practice, not only determines the result of the educator's activity, but also the very course of his thinking and activity. The professional standard «Educator of vocational training, vocational education and additional vocational training» sets out the need to assess performance competitiveness in the $C_o = f(J, I, H, E, D, B)$ following six generalised job functions:

1) postgraduate (adjunct), residency, apprenticeship and additional professional programme oriented towards the relevant qualification level (J);
2) teaching in the bachelor's, specialist's, master's and additional professional programmes focused on the relevant qualification level (I);
3) teaching in the bachelor's degree programmes and additional professional programmes focused on the relevant qualification level (H);
4) conducting vocational guidance activities with schoolchildren and their parents (legal representatives) (E);
5) organisational and pedagogical support for a group (course) of students in higher education programmes (D);
6) organisation and implementation of the training and production process in the implementation of educational programmes of various levels and directions (B).

The SPW's personal and operational competitiveness is characterised not only by the presence of certain components (subsystems), but also by complete links between them.

The competitive advantages of the SPW are inextricably linked to the personality of the educator and can be formed and developed both in the process of mastering formal vocational training programmes and in the course of work as experience is gained. At the same time, the formed competitive advantages may not manifest themselves as the ability to provide qualitatively increasing educational services over time. Also, when implemented at work, the competitive advantages of teachers are subject to changes: some of their characteristics acquire new properties that cause the dynamics of teaching efficiency. Thus, in order to gain and maintain an advantage in modern education, it is necessary to have advantages both in the personal (static) and activity (process) context of competitiveness. In other words, the high parameters of the creative competencies of the SPW itself will not give the university a competitive advantage in the field of human resources if the parameters of the organization of pedagogical activities do not act as factors in the implementation of these competencies. Otherwise, a educator 's productive creative activity will be replaced by formal performance of duties, where the only motive in work is the desire to protect one's own status and income, one's current position. Thus, the essence of the approach to management of competitiveness SPW consists in correctly defining directions of search and realisation of SPW's long-term competitive advantages of higher education institution and not to lose time and forces, moving in a wrong direction. According to this approach, not all educators are of equal value to the university, and therefore it makes no sense to invest in the human capital of those who give the minimum return on the invested capital. Competitiveness programmes should therefore be different for different segments of educators and appeal to the values that are most common among members of this segment. At least four strategies for increasing the competitiveness of educators can be identified depending on personal competitiveness $C_p$ and operational competitiveness $C_o$ (Table 2).

| **Strategic orientation of the university** | **Competitive advantages of educators** | |
|---|---|---|
| | **Available** | **New (potential)** |
| **Preservation of the educational services market** | Specialization of qualification | Diversification of qualifications |
| **Expansion of the educational services market** | Trans-professionalisation of qualifications | Expansion of qualification |

*Table 2: Strategies to extend the life cycle of corporate competitiveness of the SPW*

The strategy for *Specialization of qualification* implies that the educator who offers the highest quality of functional work provides the greatest benefit to the university. In this regard, the university supports and encourages the use of various models of accumulation of human capital by research and pedagogical staff in a particular professional field of activity. The strategy for *Diversification of qualifications* involves the expansion of teaching experience associated with the expansion of tools and areas of scientific and pedagogical activity, i.e. mastering competitive advantages related to the performance of work, the so-called «horizontal» level of complexity, namely, teaching, methodological, research, career guidance and organizational and educational. Essentially, this strategy is related to building scientific, methodological and pedagogical competencies. The strategy for *Trans-professionalisation of qualifications* is focused on accumulating and using new competitive advantages that open up to educators, allowing for a change in work with the lowest economic and social costs in the changing conditions of the university's external and internal environment.

This strategy assumes the acquisition of qualifications in a related profession. In an environment where a university cannot guarantee that all the best educators will work in line with increased competitive advantages in the foreseeable future, the strategy for *Expansion of qualification* is becoming increasingly relevant. This strategy involves extending the life cycle of individual educator competitiveness through the use of outsourcing schemes and expanding the geography of higher education institutions of employment. In an innovative economy where changes are taking place more and more quickly, those higher education institutions that not only attract the best educators, but also know how to make full use of their potential by developing and improving the strengths of their SPW are likely to have competitive staff. Maintenance of competitiveness SPW of high school is one of the main purposes of strategic management of human resources (as it is critical for success of education in the global market) [Masalova Yu. A., 2015, p. 81].

## 4. INDEPENDENT QUALIFICATION ASSESSMENT AS A TOOL TO IMPROVE THE COMPETITIVENESS OF THE SPW

An analysis of the available literature on labour evaluation in the Norilsk Industrial District makes it possible to state that methods of assessing the results of pedagogical work [Abakumova N.N., 2014, pp. 162-172; Bedrachuk I.A., Mitina O.V., 2015, pp.39-52; Milyaeva L. G., Milyaev V. D., 2014, pp.14-21; Naidenko I. S., Zadorozhna E. K., Kuizheva S. K., 2017, pp.479-488; Ozernikova T.G., Gainullina O.I., 2011, pp.28-32; Petsol'dt K., Vorob'eva I. V., Inozemtseva E. S., 2010, pp.433-438] and methods of educator competences (subject, methodical, personal-communication, expert-consulting, managerial, etc.) [Bagirova A. P. et al, 2016, pp. 129-131; Popova E. A., Ibragimova M. Kh., 2017, pp.53-64], which are aimed at making managerial decisions to stimulate efficient work, prevail. These methods are based on programme and other documents of the Ministry of Education and Science of the Russian Federation, strategic goals set by the Government of the Russian Federation, as well as local intrauniversity regulations. At the same time, there are practically no approaches to assessing their competitiveness in the existing methods of assessing the SPW, i.e. to recognising that the qualification requirements for an employee applying for pedagogical work are not only met, but also represent a competitive advantage over educators who are competitors. An independent assessment of their qualifications can be used as a methodological approach to assess the competitiveness of the SPW. The key elements of the National Competence Assessment (NCA) system were reflected in the adoption on 3 July 2016. The State Duma of the Federal Law «About NCA», the subject of which is the relations arising during the NCA of employees or persons applying for a certain type of employment. This draft law has conceptually defined the status of an NCA as a completely different system that does not replace the certification of employees of organisations that has existed since the planned economy and is still in force. The need to understand the mechanism for assessing the competitiveness of the SPW of higher education involves learning the parameters of the state and characteristics of the architectonics of independent qualification assessment. Architectonics of independent qualification assessment is an integrated education of components, the interrelation and interaction of which leads to the validation of the qualification of an able-bodied person who applies for a certain type of work. Architectonics' knowledge makes it possible to identify system-forming elements that express the deep essence of qualification assessment and reveal the nature of internal unity of components, interrelation and interaction of which determines the functional properties that contribute to the formation of effective educational and career trajectories [Shaimakova Zh. B., 2009, pp. 49-50] for each able-bodied citizen in order to meet the needs of the labour market as human resources. NCA of able-bodied employees applying for scientific and pedagogical work are a targeted process of confirming that the qualitative parameters of an employee's qualification (knowledge, skills, professional skills and experience) meet the provisions of the

professional standard1 or the qualification requirements established by federal laws and other regulatory legal acts of the Russian Federation. The NCA has at least an information and motivation function. The draft law does not provide for a fixed administrative function. The *information function* of the NCA is to create an information infrastructure for the development of management decisions on how to achieve the various qualification levels and how to expand the set of qualifications themselves, and to inform all interested parties about these decisions. It should be noted that the identification of the most optimal (suitable) vectors for achieving the relevant (market) level of qualification in various life situations will not necessarily be linked only to mastering the heights of professionalism (raising the qualification level) and the successful progressive advancement of an employee «forward and up» on the organizational and service ladder (promotion, improvement of social status, increase in remuneration, etc.). The vector may also cover the sequence of qualification levels, firstly, the 'horizontal' scale of complexity of work, i.e. the complex of knowledge, skills and experience in performing work related to related occupations of equal complexity; secondly, the 'vertical' scale of complexity of work, i.e. raising (lowering) the qualification level both when mastering a new, more complex profession and within the profession by mastering work functions which require more responsibility and independence, or by mastering advanced work methods and techniques, increasing the service area and mastering related operations and functions. The transition from one qualification level to another (both with and without changing the educational and career paths) is not a border with clearly defined contours, but rather a zone of growth and/or enrichment of features (structural elements) of the previous level at the new qualification level. Since the structural elements of the previous qualification level are inherited by the new one, the information function makes it possible to identify the competitive qualification advantages of an employee and those areas of his/her work which may significantly affect the measure of individual contribution to market goals. In addition, the information function of the NCA makes it possible to create an information base for international, state and inter-sectoral comparability of the SPW qualification levels of different countries, recognition of the equivalence of educational programmes in terms of their content, and the competence of the assessment subjects of a country to certify vocational education and training programmes. The *motivation function* is an important means of regulating the economic behaviour of the SPW and higher education institutions. On the one hand, the NCA encourages the SPW, who are aware of the limits of freedom and responsibility for self-fulfilment, to master and improve their professional activities, to master the various skills, competencies that complement and develop them, to set boundaries and forms and to focus on achieving competitive sustainability2. This situation promotes «the development of competition between employees for a more advantageous area of application of their competitive advantages on the basis of free work and the growth of personal income. A peculiar form of economic coercion is being developed to find a market niche for the employee, which favours his competitiveness and provides him with a sustainable competitive advantage in the market» [Sotnikova S.I., 2014, p. 46]. Ultimately, the motivational function contributes to the formation of the SPW's internal world (needs, values, orientations, etc.), moral qualities and work morality through income differentiation and qualification and professional status depending on the employee's qualification assessment. On the other hand, NCA is interested in preserving and multiplying intellectual capital both through recognition of informal education, inheritance of structural elements (units) of qualifications in the process of changing scientific and pedagogical educational and career paths (professional and functional rotation) and spontaneous, random and unorganised process of improvement of knowledge,

[1] A professional standard is a characteristic of the qualification required for an employee to perform a certain type of activity (see: Article 195.1 of the Russian Labour Code).
[2] Competitive stability is an employee's ability to maintain and develop competitive advantages when changing jobs or working in changing conditions.

skills, professional skills, accumulation of public work experience, development of proposals to improve the production and commercial activities of the company, temporary performance of a certain service role at a level that is not rigidly formalised in the organizational structure; organization of internships for potential managers with leading organizational managers, etc. This assessment serves as a protection against stagnation in educational activities, helps to accumulate resources for creativity and creation, encouraging the identification of new opportunities to improve the competitiveness of the internal labor market. Interested participants in NCA are at least the lecturer himself, the head of the department and the university rectorate. Each of the parties involved solves its own private tasks. *Educator* – takes an opportunity to get an opinion on his or her level of qualification, possible ways to improve it and express professional expectations. The head of department as the *direct head* – to define qualifying potential of subordinates of SPW, to reveal requirements in their development, the facts and reasons of low efficiency of labour activity. *Rectorate* – to provide the consecutive, organised approach to measurement of SPW qualification and working out of programs on its improvement taking into account strategy of development of higher education institution. NCA as a formalized process for objectively confirming the compliance of an applicant's qualification with the provisions of a professional standard or the qualification requirements established by federal laws and other regulatory legal acts of the Russian Federation in accordance with Federal Law № 238-FZ «About NCA», ideally there can be no one-off («once for life»), as scientific and technological progress requires employees to master new knowledge, skills, professional skills and experience, which must be confirmed in the course of their work. Apparently, the periodicity standards must be defined for each type of work and recorded in the relevant professional standard. An NCA is effective if its organization meets certain requirements:

- *independence* – means that the qualification assessment centre, as an independent entity, exercises the powers granted to it by the NCA, regardless of any natural or legal persons, based on the beliefs derived from a clear knowledge of the law and the specific current situation. Independence means that any influence on the procedure and results of qualification assessment by a qualification applicant, specific employer, educational organisation, etc. is excluded;
- *voluntary* – provides for the free expression of the will of an able-bodied citizen who has applied (including on a referral from the employer) to a qualification assessment centre to confirm his or her qualifications in accordance with the procedure established by Federal Law № 238-FZ «About NCA» dated 3 July 2016;
- *accessibility* – this implies the establishment of a certain guarantee and compensation for employees when they go through the NCA and the creation of the necessary number of appropriate qualification assessment centres;
- *competence* – means a clear understanding by experts of their rights and obligations, opportunities and limitations, knowledge of the essence of a certain type of work and the specifics of its manifestation in specific conditions and situations, possession of the evaluation tools for carrying out NCAs, techniques and productive technologies for performing functional duties;
- *openness* – means consistent and timely provision of information in a form that provides easy and accessible public perception of the activities (goals, objectives, plans and results) of the National Qualification Development Agency, professional qualification councils and qualification assessment centres, access to which is not specifically restricted by federal laws, acts of the President and Government of the Russian Federation;
- *impartiality* – presupposes the presence of an objective position of experts formed using scientifically based tools and technology that are adequate for the purpose of evaluation and

are independent of the subjective opinion or requirements of the applicant, a particular employer, an educational organization or other third parties;

- *confidentiality* – provides for the protection of personal data and does not allow for the deliberate or accidental dissemination of information that could compromise a qualification applicant, a particular employer, an educational organization, etc.

The goal of NCA is to validate the educator's compliance with the requirements of the labour market, as reflected in federal laws and other regulatory acts of the Russian Federation, in order to build an educational and career path. An inventory of the educator's qualifications is carried out using a dichotomous assessment scale («meets – does not meet») based on the «qualification – professional standard» criterion. The subject of an NCA is a qualification assessment centre, i.e. a legal entity that carries out NOC activities in accordance with Federal Law No. 238-FZ «About NCA». An NCA is carried out by the qualification assessment centre in the form of a professional examination in accordance with the procedure established by the Government of the Russian Federation. As a rule, the professional examination takes place in three stages: the first stage, the entrance stage, the purpose of which is to fill in an electronic questionnaire, download the required set of assessment tools, and also a technical examination of the set of documents, establishing their compliance with the requirements of the professional standard; the second stage, the theoretical stage, the purpose of which is to computer test existing knowledge and process the results of this test; and the third stage, the practical stage, the purpose of which is to evaluate the performance of a work sample, a practical task, and the results of this examination. The NCAof higher school educators will improve the level of teaching and the prestige of Russian education, as well as the competitiveness of Russian universities both in the domestic and international markets.

## 5. CONCLUSION

Thus, one of the key tasks in establishing a national market for qualifications should be to develop a coherent and consistent system of NCAs, which will ensure the constant growth of the competitiveness of higher education educators. And it is precisely this system that creates the basis for the development of an updated and unified qualification space in the Norilsk Industrial District that uses technologies to detect and assess an anomalies in the supply and demand for higher education educators' qualifications on the labour market, in order to identify unique opportunities to form competitive advantages. It is necessary to face a reality which consists that educational institutions should constantly reveal competitive advantages and vulnerable positions in qualification of the SPW so that to predict, simulate and choose the most effective ways helping each teacher to become more productive and to reach the market purposes taking into account favorable (an input in a new segment of the labour market, the unsatisfied consumer demand in a labour force, labour diversification, etc.) and unfavourable opportunities (reduced demand for labour, growing unemployment, falling living standards for the working population, vulnerability to competition, unfavourable demographic situation, etc.). In a changing business environment, the NCA, recognizing the strategic value of human resources quality, is a complex and multidimensional phenomenon designed to «serve as a passport to professional competence» [Sotnikova S.I., Volyanskii G.N., 2012, pp. 45-55] of SPW. The prospects that open up in this connection dictate the need for further knowledge and competent organization of the NCA's architecture, which makes it possible to obtain relevant information for management decisions aimed at improving the efficiency and competitiveness of the educational business.

**LITERATURE:**

1. Abakumova N. N. (2014). Effektivnyi kontrakt v vysshem obrazovanii: «za» i «protiv» [The effective contract in the higher education: pro and contra]. *Vestnik NGUEU* [Vestnik NSUEM], No. 3, pp. 162-172.
2. Bagirova A. P., Klyuev A.K., Notman A.K., etc. (2016). *Prepodavatel'skii trud v sovremennoi Rossii: transformatsiya soderzhaniya i otsenki: monografiya* [Teaching work in modern Russia: transformation of contents and assessment], M-vo obrazovaniya i nauki Ros. Federatsii, Ural. federal. un-t., Ekaterinburg, Izd-vo Ural. un-ta.
3. Bedrachuk I. A., Mitina O. V. (2015). Effektivnyi kontrakt s prepodavatelem kak instrument povysheniya effektivnosti deyatel'nosti vuza [Effective contract with the teacher as instrument of increase in efficiency of activity of higher education institution]. *Universitetskoe upravlenie: praktika i analiz* [University management: practice and analysis]. No. 1, pp. 39-52.
4. Lazarev V. N., Pirogova E. V. (2010). *Upravlenie konkurentosposobnost'yu personala vysshego uchebnogo zavedeniya* [Management of competitiveness of personnel of a higher educational institution]. Ul'yanovsk, UlGTU.
5. Masalova Yu. A. (2015). Sistema upravleniya kachestvom chelovecheskikh resursov [Quality management system of human resources]. *Vestnik Omskogo universiteta. Seriya: Ekonomika* [Herald of Omsk university, series «Economics»]. No.1. pp. 81-85.
6. Milyaeva L. G., Milyaev V. D. (2014). Otsenka dolevogo vklada nauchno-pedagogicheskikh rabotnikov vysshikh uchebnykh zavedenii v dostizhenie analiziruemykh pokazatelei obrazovatel'noi programmy [Assessment of the share contribution of scientific and pedagogical workers of higher education institutions in achievement of analyzed indicators of the educational program]. *Gumanizatsiya obrazovaniya* [Humanization of education]. No. 3, pp. 14-21.
7. Naidenko I. S., Zadorozhna E. K., Kuizheva S. K. (2017). Ekonomiko-matematicheskie metody v individualizirovannoi otsenke chelovecheskogo kapitala vuza [Economic-mathematical methods in the individualized assessment of university"s human capital]. *Kreativnaya ekonomika* [Creative Economy]. Vol. 11, No. 4, pp. 479-488.
8. Ozernikova T.G., Gainullina O.I. (2011). Razvitie stimulirovaniya truda professorsko-prepodavatel'skogo sostava vuzov na osnove sistemy sbalansirovannykh pokazatelei [Development of university faculty motivation based on balanced score card]. *Izvestiya Irkutskoi gosudarstvennoi ekonomicheskoi akademii (Baikal'skii gosudarstvennyi universitet ekonomiki i prava)*[ Bulletin of Baikal state university]. No. 5, pp. 28-32.
9. Petsol'dt K., Vorob'eva I. V., Inozemtseva E. S. (2010). Reputatsiya prepodavatelya i ee rol' v povyshenii konkurentosposobnosti vuza na mirovom rynke obrazovatel'nykh uslug [Professor's reputation and its role in increasing the competitiveness of the higher educational institution on the market for educational services]. *Problemy sovremennoi ekonomiki* [Problems of modern economy]. No. 2, pp. 433-438.
10. Popova E. A., Ibragimova M. Kh. (2017). Otsenka personala kak neobkhodimyi element sistemy strategicheskogo upravleniya universitetom [Personnel evaluation as an essential element of the university strategic management]. *Universitetskoe upravlenie: praktika i analiz* [University management: practice and analysis]. No. 2, pp. 53-64
11. *Soveshchanie po voprosu razrabotki profstandartov ot 9 dekabrya 2013 goda* [Meeting on development of professional standards of December 9, 2013], available at: http://kremlin.ru/events/president/news/19812
12. Sotnikova S. I., Volyanskii G. N. (2012). Dvizhenie personala kak mekhanizm povysheniya korporativnoi konkurentosposobnosti v nestabil'noi srede [The movement of personnel as the mechanism of increase in corporate competitiveness in the unstable environment]. Vestnik NGUEU [Vestnik NSUEM]. No. 2, pp. 45-55.

13. Sotnikova S.I. (2014). O kar'ernom prostranstve v rossiiskom obshchestve [About career space in the Russian society]. *Izvestiya Baykal'skogo gosudarstvennogo universiteta* [Bulletin of Baikal state university]. No. 3, pp. 46-52.
14. Shaimakova Zh.B. (2009). *Rol' innovatsionnoi kompetentnosti v razvitii konkurentosposobnosti prepodavatelya vysshei shkoly* [Role of innovative competence of development of competitiveness of the teacher of the higher school], Doctor's thesis, Tambov.

**Supported by:**