

UNIVERSITY OF NIŠ



ISSN 0354-4699 (Print)  
ISSN 2406-050X (Online)  
COBISS.SR-ID 87230727

# FACTA UNIVERSITATIS

Series  
**ECONOMICS AND ORGANIZATION**  
Vol. 17, № 3, 2020



Scientific Journal **FACTA UNIVERSITATIS**  
UNIVERSITY OF NIŠ

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Publication frequency – one volume, four issues per year.

Published by the University of Niš, Republic of Serbia

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Financial support: Ministry of Education, Science and Technological Development of the Republic of Serbia

Printed by "UNIGRAF-X-COPY" – Niš, Republic of Serbia

ISSN 0354 – 4699 (Print)  
ISSN 2406 – 050X (Online)  
COBISS.SR-ID 87230727

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*SERIES ECONOMICS AND ORGANIZATION*

Vol. 17, N° 3, 2020



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**Manuscript format.** A brief abstract of approximately 100 to 150 words in the same language and a list of up to six key words should precede the text body of the manuscript. Manuscripts should be prepared as doc. file, Word version 6.0 or higher. Manuscript should be prepared using a Word template (downloaded from web address <http://casopisi.junis.ni.ac.rs/index.php/FUEconOrg/about/submissions#authorGuidelines>).

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**Equations** should be typewritten and, with the number, placed in parentheses at the right margin. References to equations should be in the form "Eq. (2)" or simply (2). For equations that cannot be entered in a single line, use the Equation Editor in MS Word. In equations and in the text, *italicize* symbols that are used to represent variables or parameters, including subscripts and superscripts. Only use characters and symbols that are available in the Equation Editor, in the *Symbol font* or in *Times New Roman*.

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## **STAFFING FOR SCENARIOS OF SUSTAINABLE DEVELOPMENT OF KHARKIV REGION ECONOMIC SECTORS**

*UDC 331.5:502.131.1(477 Harkov)*

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**Abstract.** *The article is devoted to the study of the emergence and deepening of staffing gaps that affect the development of the region under the influence of transforming production dominants in the conditions of Economy 4.0. In the course of the study, the system of factors for the emergence of staffing gaps that affect the sustainable development of the region is generalized. A matrix approach to determining staffing gaps is proposed and sectorial scenarios for preventing them in Kharkiv region economy are developed. The assumption about the perspective structure of economy sectors in Kharkiv region according to the scenarios of inertial and innovative ways of development of Ukraine is formed.*

**Key words:** *Economy 4.0; human resources; staffing gaps; technology; sustainable development.*

**JEL Classification:** J21, M54, R11

### INTRODUCTION

Over the last decade in the conditions of Economy 4.0, the transformation of production dominants based on ICT and global automation has led to significant adjustments to existing levels of economic sectors and employment patterns (Brynjolfsson et al., 2014). Modern challenges create contradictions such as technological pressure on jobs and it determines deepening of staffing gaps in both individual regions and the country as a whole. Regular monitoring of staffing gaps allows for timely redistribution of labor force, improvement of

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Received May 01, 2020 / Revised June 03, 2020 / Accepted June 08, 2020

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education system and training of skilled and flexible workforce. Exactly these qualities of human capital are important components of competitiveness and they contribute to attracting investment and developing economics.

An increase in the employment of high-skilled workers and a corresponding decrease in employment among low-skilled workers has caused global digitalization (Balsmeier et al., 2019). Thus, in developed economies, there is a growing polarization of labor market opportunities between high-skilled jobs, unemployment and underemployment, especially among young people, and stagnant incomes for a large proportion of households (McKinsey Global Institute, 2017).

According to The Future of Jobs Report 2018 World Economic Forum, by 2022 the number of new jobs should increase from 16% to 27% of the total number of employees in large firms worldwide. However, jobs that are currently affected by lack of technology should decrease from 31% to 21% (The Future of Jobs, 2018). 75 million current jobs may be shifted because of changes in the division of labor between humans, machines, and algorithms, while 133 million new jobs may be created simultaneously (Kvasniy et al., 2014).

The transformation of production dominants in Economy 4.0 directly affects reduction and even complete destruction of jobs. According to research by Oxford University, by 2033 in the US, robots with artificial intelligence will replace 47% of workers (Vartanova, 2018, p.38).

Thus, the changes taking place in the world labor market under the influence of the transformation of production dominants in the conditions of Economy 4.0 require appropriate changes in the structure of employment and proper solutions to the issues of filling staffing gaps.

Inertial development of economic sectors of the regions of Ukraine creates an asymmetry of the regional labor market, which will become a threat to the economy as a whole in the face of new opportunities and challenges (Semykina et al., 2012).

Solving the problem of formation, use and development of human resources in accordance with the rapidly changing aspects of the external and internal environment of the country, regional or individual industry necessitates certain prospects and options for future socio-economic development of the territory.

As for the objectives of the study, the work is organized as follows: the first part of the article considers the methodology of building a matrix to study staffing gaps within the region. To determine and further forecast future strategic gaps, the analysis of the economic portfolio for each sector of the economy of Kharkiv region was used. The second part identifies the factors of strategic staffing gaps, calculates labor productivity by sectors of the economy of Kharkiv region, and applies the matrix approach to determine the mismatch of staffing needs to human resources by sectors of the economy. Also based on the scenario method, scenarios for managing strategic staffing gaps for each sector of the economy have been developed on the example of Kharkiv region. The final part of the article presents relevant conclusions of the study.

## 1. METHODOLOGY

In the course of research, the following general scientific and special methods were applied: theoretical generalization – when determining the content of the basic categories of research; content analysis and bibliographic search – when studying global trends that shape the modern workplace; logical and structural approach – when generalizing the system of

factors for the emergence of staffing gaps for the development of the region; calculation – when determining labor productivity by types of economic activity in Kharkiv region; matrix approach – when doing the strategic analysis of staffing development of Kharkiv region; scenario forecasting – when developing sectorial scenarios for Kharkiv region. The basis of sectorial scenarios of staffing is the assumption that the present and past state of the region economy determine its future to a significant extent (Kyfyak, 2016).

To determine staffing gaps using matrix approach, we propose the following methodology. According to the method of portfolio analysis, one has to determine the matrix parameters which will evaluate the efficiency of using human resources in the implementation of labor activities in foreign trade (growth rate of labor productivity by sector and relative productivity levels); to take the average values of selected parameters as such that divide the axis of the matrix in half; to calculate the values of selected parameters for each segment in the economic activity of the region; to distribute the types of economic activity of the region in one of the four quadrants of the matrix, basing on preliminary calculations; to classify the sectors of the regional economic activity by the number of the quadrant to which they belong, namely: I, II, III, IV.

The characteristics of matrix quadrants for the study of staffing gaps that affect the development of the region are given in Table 1.

**Table 1** Characteristic of matrix quadrant

Indexes	Quadrants of Matrix			
	I	II	III	IV
Labor productivity	Low	High	Average	Low
Growth rates of labor productivity	Average / High	High	Low	Low
Realive level of productivity	Low	High	Average	Low
Part of employees	Growing	Growing	Constant	Falling

*Source: Authors'*

## 2. RESULTS AND DISCUSSIONS

### 2.1. Identification and analysis of staffing gaps that affect the development of Kharkiv region

The prerequisite for the emergence of staffing gaps is the transformation of production dominants in the conditions of economy 4.0, which focuses on the mobilization of all national resources, including personnel, in order to accelerate technological changes.

Different literary sources often suggest that the broad economic impact of innovation determines such phenomena as polarization and inequality between highly qualified personnel resources in advanced industries and less qualified personnel in the field of personal services. For example, a study of cities with strong high-tech economies suggested that, though an increase in the employment of skilled workers may create new jobs for unskilled workers, the latter are still not well-paid (Lee et al., 2019).

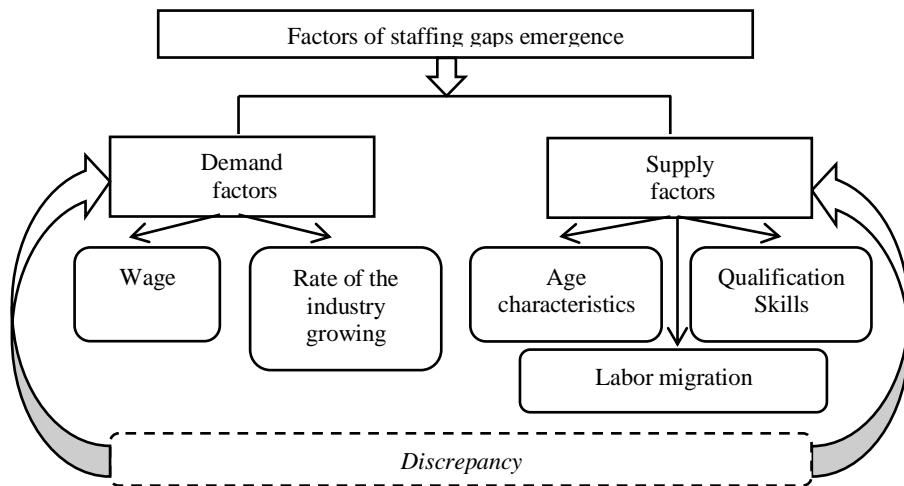
There is another viewpoint on the relationship between innovation and employment. According to the “Theory of compensation”, which was supported by such classical economists as D. Ricardo, K. Marx and others, the introduction of innovations affects the increase in labor efficiency, which in turn reflects in the growth of demand and hence

employment (Vincent, 2018). These mechanisms have a positive effect only in competitive markets. As in monopolistic markets, where there is low elasticity of demand and no competition, the introduction of innovations in the short term can cause a reduction in employment. However, compensation mechanisms may be more or less effective in maintaining or creating new jobs, depending on existing economic conditions. The expectations of consumers and sellers also determine the extent to which the latest technologies affect employment (Nerdrum et al., 2001).

Recent studies show that patented innovations are fully friendly to employment in the newest sectors of the economy with high elasticity of demand and significant technological opportunities, in which the effect of creating new products prevails over the replacement of existing ones (medical and optical equipment, electrical appliances and electronics, etc.) (Vincent, 2018).

Meanwhile in Ukraine, more traditional and low-tech approaches to production and service prevail and this will become a threat to the staffing of the country as a whole in the conditions of new opportunities and challenges of the economy.

Factors that affect the emergence of staffing gaps (see Fig. 1).



**Fig. 1** Factors that contribute to the emergence of staffing gaps in the region

Source: Authors'

These factors are divided into demand factors and supply factors. It is the demand factor, through the growth of supply and wages for higher salary and the desire to work in the economy with high added value, which generates a supply of workers with appropriate qualifications, an increase in working-age population and reduction in migration. Thus, staffing gaps should be considered as a mismatch between the factors of supply and demand in the labor market, namely, the mismatch of the need for personnel to the human resources potential, which has already been formed or should be formed at each level of economic activity.

Thus, the identification and analysis of “strategic staffing gaps” should be carried out on the way to the strategic management of staffing for Kharkiv region.



## 2.2. Matrix approach to the analysis of staffing gaps that affect the development of Kharkiv region

The main criterion for the efficiency of economy, which forms the economic basis for the growth of life quality of the population, is labor productivity. The level of labor productivity against the background of market relations determines the competitiveness of the country's economy as a whole. After all, this indicator makes it possible to assess the efficiency of production of goods and services, knowledge and understanding of what is necessary for a qualitative increase in added value.

In the regional context, labor productivity is determined through the proportions of gross regional income and demand for human resources and employment of the population of the region by sectors of the economy. At the same time, the dynamics of these indicators allows us to assess the degree of increase in efficiency in the management of economic processes. The higher labor productivity in the sectors of the region economy gets, the higher the level of meeting social needs becomes and the more opportunities to reproduce the quality of human resources appear (Fagerberg, 2000).

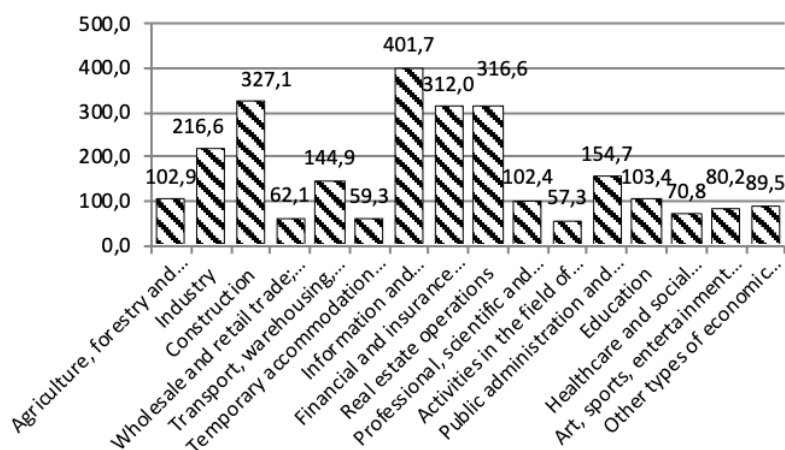
To analyze the productivity of Kharkiv region, the following formula was used:

$$LP = \frac{GVAn}{En}, \quad (1)$$

where: LP – labor productivity by type of economic activity; GVA – gross value added; E – number of employees; n – type of economic activity.

The results of the calculations are presented in Fig. 2.

A matrix approach can be used to diagnose and further manage strategic staffing gaps in the region. It will allow us to compare the current state and dynamic characteristics of labor productivity in the region. The analysis is carried out on the example of Kharkiv region.



**Fig. 2** Labor productivity by spheres of economic activity in Kharkiv region in 2017, thousand UAH

Source: Authors'

The logic of the approach to the assessment of staffing gaps takes into account three features. The first one is dynamic, which is a measurement of global technological changes that determine the change in productivity of a particular industry compared to the previous periods of time. The second one is relative, which reveals the specifics of local conditions of the economy when comparing the productivity of the industry and the region as a whole. The third one is structural, which characterizes employment of a particular industry in comparison with others.

To construct the matrix we propose using the following indicators:

- growth rates of labor productivity by sectors of the economy (%) (horizontally). Calculated as the ratio of labor productivity of a particular sector of the economy for the reporting period (2017) to labor productivity of a particular sector of the economy for the base period (2012);
- relative level of labor productivity or relative share of the economic link in terms of labor productivity (%) (vertical). Calculated as the ratio of labor productivity of a particular sector of the economy to labor productivity in all sectors of the region;
- ball diameter is the share of employees, which is calculated as the ratio of the number of employees in a particular sector of the economy to the number of employees in the whole region in 2017.

This view allows us to identify the sectors of the economy where staffing gaps are at the high level, or which sectors are promising, or to which sectors to redistribute human resources. The appearance of gaps is associated with the imbalance of supply and demand in the labor market both in terms of the ratio of their volumes, and in the direction of professional and qualification imbalance of supply and demand. The possibilities of structural transformation of the economy largely depend on the qualitative and quantitative characteristics of the available labor force.

Thus, Quadrant I of the matrix will include sectors of the economy in which relative labor productivity is low and the growth rate of labor productivity is high. Such sectors require significant investment in their development. As a rule, these sectors are characterized by high employment, but low profitability. Those employed in such sectors tend to receive low wages, which does not attract skilled workers. For the sectors of this quadrant, interventionist measures aimed at state support of the inflow of human resources are recommended.

Quadrant II will include sectors of the economy in which the relative productivity and productivity growth are high. As a rule, these sectors of the economy are actively developing and are promising in the future. In these industries, there is high demand and supply of labor, as well as owing to retraining from other sectors.

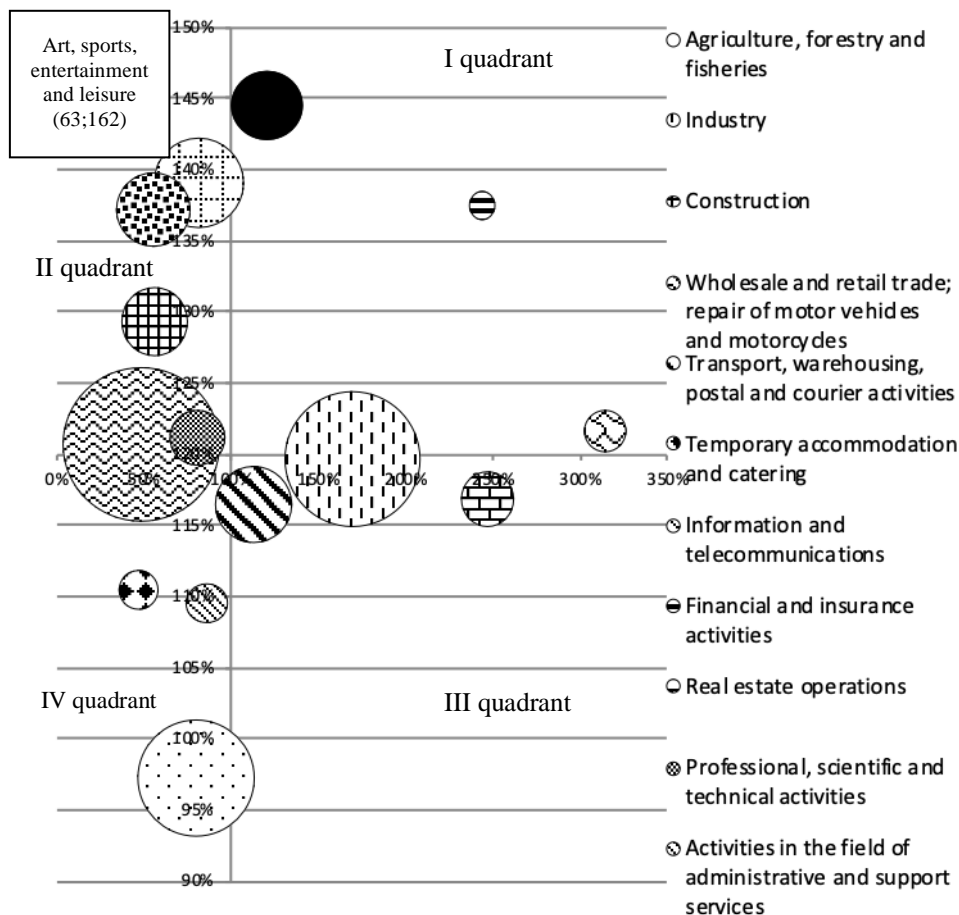
Quadrant III will include sectors of the economy in which relative labor productivity is high and the growth rate of labor productivity is low. As a rule, these sectors of the economy have a stable demand for labor, but need constant updating of skills in order to be attractive and grow steadily.

Quadrant IV will include sectors of the economy in which both relative productivity and productivity growth are low. These sectors tend to have a slow pace of development, and therefore require measures aimed at controlled disposal of human resources on condition of providing support to such sectors.

In the course of the strategic analysis of staffing that affects the development of Kharkiv region applying the suggested approach, we used the calculations of labor productivity by the spheres of economic activity in Kharkiv region (Fig. 2), as well as the

data of the State statistics service of Ukraine. The results of the study of staffing in Kharkiv region are given in Fig. 3.

Most sectors of Kharkiv regional economy were included in Quadrant I. Among these sectors, it is possible to distinguish those branches that provide mainly non-market services. Such services per se do not ensure conditions of economic development; the state provides and supervises their provision. This group includes the following sectors of Kharkiv region economy: “Professional, scientific and technical activities”, “Healthcare and social assistance”, “Education”, “Art, sports, entertainment and leisure”.



**Fig. 3** Matrix of research of staffing that affects the development of Kharkiv region

Source: Authors'

The low relative level of labor productivity in these industries is due to the social, auxiliary, scientific and technological basis of their functioning. The outdated system of financing and public administration limits the possibilities of creating added value in these industries. At the same time, most of these sectors of the economy have an urgent

need for personnel because the wage is lower than the average value of the corresponding indicator in the region. It can be argued that the increase in wage in 2017 in the fields of “Professional, scientific and technical activities”, “Healthcare and social assistance”, “Education”, “Art, sports, entertainment and leisure” by 13%, 16%, 21% and 10%, respectively had the nature of compensation. This means that the inflation rate played a key role in raising wages in these sectors of Kharkiv region economy. However, this measure did not consider the increase in prices for goods and services for the population, due to which there was a decrease in the number of employees by 1-2% in 2017 in “Healthcare and social assistance”, “Education”, “Art, sports, entertainment and leisure”. The functioning of these sectors of the economy is an integral element of the social infrastructure of the state. According to the authors, the growth opportunities of these sectors are determined by the possibility of transforming the model of their functioning through changing the model of public services to the model of profitable sectors of the economy with different sources of financing.

“Wholesale and retail trade; repair of motor vehicles and motorcycles” sector is also included in the quadrant. On the contrary, here we witness the largest share of employment among the industries of Kharkiv region with slightly above average growth rates of labor productivity in the region. After all, this sector of the economy is dominated by relatively low input requirements regarding the level of education of human resources, relative to other sectors of Kharkiv region economy, with an average level of real wage. Overstaffing of this economy sector determines high turnover of personnel, predominance of low-skilled personnel and a significant proportion of unofficially employed people.

Such sectors of Kharkiv region economy as “Information and telecommunications”, “Industry”, “Public administration and defense; compulsory social insurance”, “Financial and insurance activities” fell to Quadrant II of the matrix. “Information and telecommunications” branch is characterized by high productivity among the sectors of Kharkiv region economy (as of 2017 – UAH 401.7 thousand per person). It is worth noting that the real relative share of employment in “Information and telecommunications” sector is much higher through a significant percentage of unofficial employment.

The leading consulting company PricewaterhouseCoopers conducted an in-depth analysis of the preconditions for staffing gaps by order of the IT cluster in the city of Kharkiv. It clearly shows that even IT sector that is growing rapidly and offers highly competitive wage will have staffing shortages because the lack of skilled professionals remains a significant problem today (Kharkiv IT Research, 2018).

According to Kharkiv IT-Research, in 2018, 31% of the total number of recruited IT professionals were students (Kharkiv IT Research, 2018). Therefore, the task of managing the strategic aspects of staffing for Kharkiv region in “Information and telecommunications” sector should be to increase employment by establishing a network of contacts between universities and the private sector. Such measures will help to meet the needs of employers who search for the relevant skills of human resources.

In Kharkiv region economy, “Industry” sector also got to Quadrant II and took the second place after “Trade” sector with the proportion of the employed that remained constant in 2015 – 2017. Therefore, in the context of staffing, redistribution of the employed in specified sector of Kharkiv region economy should be done among other industries that appeared in Quadrants III and IV.

As for “Public administration and defense; compulsory social insurance” sector, during 2016-2017 there was an increase in labor productivity by 44%, its level exceeds UAH 154

thousand per one employee. Taking into consideration the economic situation in the country, this trend of labor productivity in this industry seems illogical, despite the fact that within the framework of economic production it is considered in accordance with the SNA methodology (Kryvusha, 2017).

Quadrant III includes the following sectors of Kharkiv region economy: “Transport, warehousing, postal and courier activities” and “Real estate operations”. These sectors of the economy are characterized by a high relative level of labor productivity at low growth rates of labor productivity during 2016-2017. In the context of bridging staffing gaps in the development of Kharkiv region, the main strategic impacts for economic activities that are located in Quadrant III should focus on increasing productivity growth by attracting staff to the relevant sectors through the development of locally adapted skills policies.

We should pay special attention to the sectors of Kharkiv region economy, which are located in Quadrant IV, especially “Agriculture, forestry and fisheries”. After all, this sector, according to the results of the analysis, has the lowest growth rates of labor productivity (97%) and a low relative level of labor productivity (80%), with a significant share of employed residents of the region (13.8%). One of the tasks of bridging staffing gaps in “Agriculture, forestry and fisheries” sector of Kharkiv region should be a set of measures to form a network of public-private partnerships to reduce the discrepancy between skills that are priority for employers and skills that human resources receive on the basis of training at the higher education institution.

### **2.3. No-change scenario for different sectors of Kharkiv region economy on condition of available staffing**

One of the tools that allows us to determine the future condition and make an effective management decision taking into account the conditions, specifics and features of the territory is scenario planning. The use of this forecasting tool made it possible to form an assumption about the prospective structure of the sectors of Kharkiv region economy according to the scenarios: constant (inertial) productivity and growth of labor productivity to the world level.

According to the no-change scenario of the territorial development, relative socio-economic stability is ensured, but there is a certain conservation of the traditional sectors of the region’s economy. Due to this, the main risk of the development of economic activities on condition of available staffing is the loss of competitiveness of human resources and the region economy as a whole (Blyzniuk et al., 2018).

According to the no-change scenario, such traditional sectors of economic activity as “Industry”, “Agriculture, forestry and fisheries” and “Wholesale and retail trade; repair of motor vehicles and motorcycles” will remain the basis of socio-economic development of Kharkiv region. After all, today, Kharkiv region is characterized by industrial, agricultural and trade specialization of the economy (Development Strategy of Kharkiv region, 2015).

For a certain period, specified kinds of economic activities will develop trends that have developed in 2016-2017, but in the long term, we can expect a significant reduction in GVA in the economic complex of the region, the deterioration patterns of consumption and decline in the living standards of the population as a whole.

There may be expected a slight decrease in GVA in the sectors of industry and agriculture due to the deterioration of the material and technical base and the inability to obtain funds from commercial investors. The number of the employed will remain unchanged or there will

be a slight increase in their number at the expense of low-skilled labor. However, the increasing mismatch of skills to the needs of employers in the industrial and agricultural sectors and the spread of migration processes will deepen the acute shortage among certain specialists in these sectors of the region's economy. Thus, during 2015-2017, skilled agricultural and industrial workers were quite active before leaving abroad and accounted for 20.2% and 43.9%, respectively, of the total number of labor migrants who worked before leaving abroad (Ukrainian society: a migration dimension, 2018).

As a result, the shortage of human resources of a certain profession (tractor driver, tailor, electric and gas welder, locksmith, etc.) in the mentioned sectors of economic activity can affect the aggravation of competition in the regional labor market. This trend, on the positive side, can affect the improvement of working conditions and increase the salary of a deficit worker. However, in terms of constant (inertial) labor productivity, there might appear human resources for positions that are above their skill level and available human capital (Lewis, 1954). There will also be a reduction in the production of agricultural products and an increase in the cost of production due to an increase in wage.

In "Wholesale and retail trade; repair of motor vehicles and motorcycles" sector, an increase in the number of employees is projected, a significant proportion of which will be unofficially employed persons, which reduces the possibility of increasing the degree of protection of labor and social rights of labor resources in the region. This social and economic phenomenon will affect the increase in overstaffing in "Wholesale and retail trade; repair of motor vehicles and motorcycles" sector. The following situation can lead to mass dismissal among persons who were employed in the specified sector of Kharkiv region economy during 10 years.

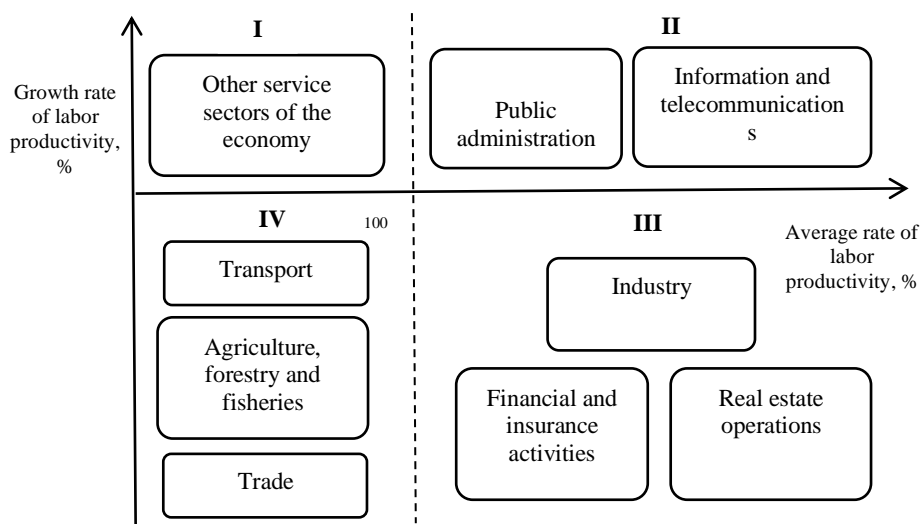
Under conditions of the no-change scenario for the development, Kharkiv economic branches that provide non-market services will not be able to meet social needs of the population completely due to the inability to attract funds from international grant organizations. It is expected to reduce the number of people employed in these economic activities through the preservation of compensatory nature of wages, which does not allow for the increase in prices for goods and services for the population.

There is also a threat for Kharkiv region to lose its title as "the center for educational services" because there is the lack of opportunities to update the material and technical base and infrastructure. That is why Kharkiv universities might attract students from less solvent and demanding sectors, including Asian one (Development Strategy of Kharkiv region, 2015). Thus, there might happen an outflow of the best domestic students for quality education to the capital of Ukraine or abroad. Thus, in 2016-2017 academic year, almost 77.5 thousand Ukrainian students (about 8% of the total number of full-time students) were studying abroad, which is almost three times as many as the corresponding figure in 2018 (Ukrainian students abroad, 2018).

In the sector of "Information and telecommunications" of Kharkiv region, there will be an increase in the percentage of unofficial employment with constant labor productivity. After all, according to the "Theory of compensation", the introduction of innovations to the latest sectors of economy with high elasticity of demand and significant technological capabilities affects the increase in labor efficiency, which in turn is reflected in the growth of demand, and hence employment (Vincent, 2018). At the same time, it might increase the outflow of the most qualified specialists of the IT sector abroad. In addition, the transfer of achievements of Kharkiv IT specialists abroad will increase.

The functioning of the sectors of Kharkiv region economy under the scenario of constant (inertial) labor productivity by type of economic activity allows us to make assumptions about the future structure of the sectors of the region economy (Fig. 4).

According to Figure 1, most sectors of Kharkiv region economy that provide services may fall into Quadrant I of the matrix: including: “Education”, “Healthcare and social assistance” and others. High growth rates of labor productivity and low relative level of labor productivity are characteristic to these sectors.



**Fig. 4** Perspective structure of sectors of Kharkiv region economy according to the no-change scenario

*Source: Authors'*

Quadrant II includes “Public administration and defense; compulsory social insurance” sector with high relative labor indicators. Such tendency exists due to the prospective increase in material and technical base because of the military conflict in the East of Ukraine. “Information and telecommunications” sector also got to Quadrant II and it will be able to keep its positions due to the use of the latest technologies and a decrease in the average growth rate of labor productivity.

Such sectors of Kharkiv region economic activity as “Industry” and “Financial and insurance activities” will move from Quadrant II to Quadrant III. “Real estate operations” sector will remain in Quadrant III.

Quadrant IV of the matrix includes the following sectors of Kharkiv region economy: “Agriculture, forestry and fisheries” and “Transport, warehousing, postal and courier activities”; they are represented with the lowest relative labor indicators. “Wholesale and retail trade; repair of motor vehicles and motorcycles” sector will also go to Quadrant IV. In the strategic perspective, we can expect a “boom in unemployment” because overstaffing and low growth rates of the industry will affect mass dismissal of those employed in the field of trade.

Therefore, functioning of the sectors of Kharkiv region economy under the scenario of constant (inertial) labor productivity for 5-10 years will provide positive indicators of the development of traditional sectors of economic activity for the territory, as well as for IT sector. However, the level of overall competitiveness of the region against the background of aging logistics and inefficient employment system will decline.

#### **2.4. Modernization scenario for different sectors of Kharkiv region economy on condition of available staffing**

Benchmarks for implementing modernization scenario for developing sectors of territorial economy is re-orienting the region's specialization based on competitive advantages, ensuring the optimal structure of employment, creating certain conditions for the successful implementation of the decentralization strategy, improving the efficiency of international integration in the region and so on.

The main prerequisite for the development of various economic activities on condition of available staffing in Kharkiv region is to reduce restrictions on the development of economic and public relations in the international space (Development Strategy of Kharkiv region, 2015). Promotion of economic interests of Kharkiv region to international markets will strengthen the position of the region in the international space, not only in the markets with traditional (for Kharkiv region) specialization (industrial, agricultural, service and trade sectors), but also in the latest high-tech markets.

In the framework of modernization scenario, "Industry", "Education" and "Information and telecommunications" will become the drivers of sustainable economic development of Kharkiv region. Moreover, labor productivity growth in these sectors may lead to a corresponding increase in other parts of the economic activities.

In the industrial sector, the increase in labor productivity to the world level will be due to the improvement of the state of fixed assets and the introduction of new technologies to the traditional branches of the processing industry (New industrialization - a real chance for Ukraine, 2018). Attraction of world brands to the industry will allow receiving consultations on professional training and provide further training to workers.

The increase in the real wage in this area will reduce the rate of migration of relevant professionals abroad. Taking into account the number of citizens who have already left Ukraine, according to the modernization scenario, scientific research indicates the gradual return of those emigrants who have already formed or will form readiness for re-emigration (Blyzniuk et al., 2018).

The increase in labor productivity in "Education" sector, in particular by improving social infrastructure of universities, will increase the attractiveness of Kharkiv region as a center for providing educational services in Europe and develop academic mobility among teachers and students. This, in turn, will affect the increase in productivity in "Professional, scientific and technical activities" sector through the transfer of knowledge, the commercialization of new technologies and the development of innovative entrepreneurship.

According to the modernization scenario, "Information and telecommunications" sector may increase the demand for human resources. Increasing youth employment in this sector in Kharkiv region will take place if a network of contacts between universities and the private sector is established. Expanding sectors that focus on digital solutions in Kharkiv region will increase the creation of GVA in other economic activities.



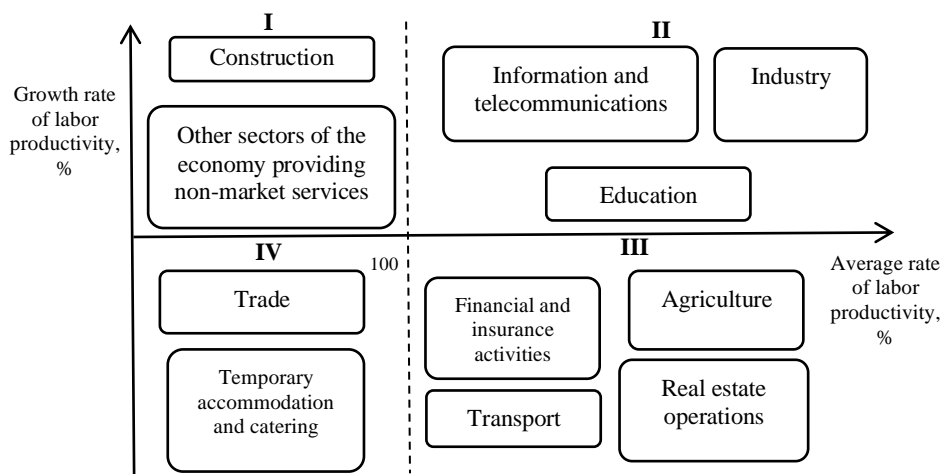
The growth of labor productivity to the world level in the field of agriculture will occur due to the intensive use of land and the introduction of new technologies for processing agricultural products. On condition of creation of public-private partnership in a strategic perspective in this sector of Kharkiv region economy, it will be possible to overcome the existing mismatch in the skills of human resources in accordance with the needs of employers of the agricultural complex.

The functioning of the sectors of Kharkiv region economy according to the scenario of growth of labor productivity by types of economic activities to the world level allows making assumptions about the optimal structure of economic sectors in the future (Fig. 5).

It is predicted that Quadrant I of the matrix will include most sectors of Kharkiv region economy that provide non-market services: “Healthcare and social assistance”, “Art, sports, entertainment and leisure”, “Activities in the field of administrative and support services” and others. Quadrant I will also include “Construction” sector.

As expected, Quadrant II will include such sectors as “Information and telecommunications”, “Industry”; “Education” sector will be added.

Economic activities such as “Financial and insurance activities” and “Agriculture, forestry and fisheries” will move to Quadrant III of the matrix from Quadrants II and IV respectively. This quadrant will also include “Real estate operations” and “Transport, warehousing, postal and courier activities”.



**Fig. 5** Perspective structure of sectors of Kharkiv region economy in the framework of modernization scenario

Source: Authors'

According to the indicator of labor productivity, Quadrant IV of the matrix will include the following types of economic activity: “Wholesale and retail trade; repair of motor vehicles and motorcycles” and “Temporary accommodation and catering”.

Thus, in the strategic perspective, functioning of the sectors of Kharkiv region economy on condition of available staffing under the scenario of labor productivity growth to the world level will ensure sustainable economic development of the territory in accordance with the European principle of “Smart specialization”.

The diversity of research areas and the search for approaches to personnel management, including the regional level, sustainable development have been highlighted in the scientific works of foreign and domestic scientists: L. G. Kvasniy, W. Lewis, V.V. Onikienko, E. M. Libanova, S. McGuinness, V. V. Blyzniuk and others. The problem of the relationship between innovation and employment is the subject of scientific research by such foreign scientists as V. V. Roy, B. Balsmeier, M. Woerter, N. Lee, D. Acemoglu, D. Autor. The works of many scientists, including J. Fagerberg, S. Kryvusha, A. Tertichny, L. Makarova and others, are devoted to various aspects of the study of labour productivity as a catalyst for the effective use of human resources. At the same time, we should question the verification of the scenario direction of future staffing gaps that are determined by no-change dynamics of quantitative traits of human resources and the turbulence of technological changes in different sectors of the regional economy and when the corresponding changes in demand for human resources occur.

### CONCLUSION

Based on the calculation of labor productivity by kinds of economic activities of Kharkiv region, we justified the policy of transformation for Kharkiv region economy, which is oriented to growing sectors with high productivity. In the strategic perspective, this policy will determine the formation of an effective employment structure, in accordance with the global challenges that shape modern workplace.

The use of a matrix approach to the definition of strategic staffing gaps according to the sectors of Kharkiv region economy is proposed. Quadrant I includes most sectors of the region economy that provide non-market services, as well as the sphere of trade, with high growth rates and a small relative share of labor productivity. Quadrant II includes "Information and telecommunications", "Industry", "Financial and insurance activities" and others with the highest indicators of labor productivity. Quadrant III includes such sectors of the economy as "Real estate operations" and "Transport", with low growth rates and a significant relative share of labor productivity. The quadrant with the lowest productivity indicators includes "Agriculture, forestry and fisheries", "Administrative services" and others. The scenarios of redistribution of human resources to the industry with high productivity and the corresponding changes in the employment structure of Kharkiv region were given.

The development of sectorial scenarios for the development of Kharkiv region on condition of available staffing, specifics and features of the territory provides an opportunity to form recommendations for effective management of human resources in the region, which will further settle the contradictions of sustainable development of the territory.

It is revealed that the functioning of the sectors of Kharkiv region economy, under the scenario of constant (inertial) labor productivity for 5-10 years, will provide positive indicators of the development of the traditional sectors for the territory, as well as for the IT sector. Nevertheless, the level of overall competitiveness of the region against the background of aging logistics and inefficient employment system will decline. This will negatively affect the ability to attract funds to the region and the functioning of industries that provide non-market services. This, in turn, will affect the degradation of residential areas in Kharkiv region, the reduction of the working-age population, the increase in the load on one working person at the expense of pensioners, and it will create prerequisites for the outflow of human resources.

It is determined that “Industry”, “Education” and “Information and telecommunications” sectors will become the drivers of sustainable economic development of Kharkiv region in the long term. These sectors of Kharkiv region economy will only function on condition of available staffing in the framework of modernization scenario. Labor productivity growth will provoke a corresponding increase in other parts of the economic activities of the region. In addition, it is argued that the development of Kharkiv region under the scenario of productivity growth will ensure sustainable economic development of the territory in accordance with the European principle of “Smart specialization”.

Therefore, the trends of staffing should be considered as one of the central directions of the regional development under the influence of the fourth industrial revolution. Creation of infrastructure, protection of resources, and formation of the business climate are strategically important measures to introduce positive changes to the territory in the face of new opportunities and challenges. However, bridging strategic staffing gaps can become the basis for intensive development of the territory.

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## ZAPOŠLJAVANJE ZA SCENARIJE ODRŽIVOG RAZVOJA EKONOMSKIH SEKTORA U REGIONU HARKOVA

*Ovaj članak se bavi proučavanjem pojave i produbljavanja jaza u zapošljavanju koji utiče na razvoj regije pod uticajem transformišuće proizvodne dominante u uslovima Ekonomije 4.0. U sklopu rada, daje se generalizacija sistema faktora za pojavu jaza u zapošljavanju koji utiče na održivi razvoj regije. Predstavljena je matrica koja određuje jaz u zapošljavanju i razvijeni su sektorski scenariji za sprečavanje ovog jaza u regionalnoj ekonomiji Harkova. Stvorena je pretpostavka o mogućoj strukturi ekonomskih sektora u regionu Harkova prema scenarijima inertnog, odnosno inovativnog načina razvoja Ukrajine.*

*Ključne reči: Ekonomija 4.0; ljudski resursi; jaz u zapošljavanju; tehnologija; održivi razvoj*

## **ANALYSIS OF SOCIOECONOMIC STATUS, GENDER, AND ACADEMIC ACHIEVEMENTS INFLUENCE ON STUDENT CAREER MATURITY**

*UDC 159.923.2.072-057.875*

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**Abstract.** *Career maturity is defined as a person's ability to identify and prepare for a career choice. Career maturity will be necessary for students because as the level of career maturity increases, the achievement of their work will also increase. This study aims to determine the factors that influence student career maturity. The type of research used is correlational research with quantitative methods. Data were collected using a questionnaire method and data analysis techniques using multiple linear regression. The results of the regression analysis showed that gender variables influenced career maturity, while academic achievement and socioeconomic status do not have a significant influence on student career maturity.*

**Key words:** *Career Maturity, Academic Achievement, Socioeconomic Status.*

**JEL Classification:** J16, A23, O15.

### 1. INTRODUCTION

An increase in the number of graduates with no education is accompanied by an increase in the absorption of teacher personnel, resulting in increasingly fierce levels of competition for graduate education. In response to this, career maturity is essential for students. Simply stated, career maturity is interpreted as a person's ability to determine and prepare for their chosen career. Super and Knasel (1981) say that career maturity defines as readiness in determining career choices, attitudes, and competencies as well as relevant information needed in determining career choices.

Creed (2001) states that career maturity includes the ability of individuals to make appropriate career choices, including considerations when making reliable and consistent

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Received April 08, 2020 / Revised April 21, 2020 / Revised June 13, 2020 / Accepted June 22, 2020

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decisions. Besides, career maturity also involves various aspects of a person. Janeiro (2010) states that the development of one's career behavior requires complex processes, including interactions between cognitive, motivational, and affective dimensions. The cognitive dimension consists of decision-making skills, while the affective dimension includes attitudes in the decision-making process.

Furthermore, Super and Knasel (1981) divided the stages of a person's career development into five stages, namely: (1) the stage of growth at the age of 0-14 years; (2) the exploration stage when someone is 14-24 years old; (3) stabilization stage; (4) maintaining stage; and (5) the release stage. At the exploration stage, there are three sub-stages, namely: the tentative stage when a person is 15-17 years old, then the crystallization stage of job choices, and the stage of job choice specifications. At each stage, some separate tasks and characteristics must be fulfilled.

Determination of one's career maturity is influenced by various aspects, including socioeconomic status, parental support, gender, academic achievement, learning motivation, and so on. These factors determine the level of maturity in one's career. There has not been much research that examines the factors that influence student career maturity.

Choi et. al (2012) state that parental support has a positive effect on a person's career maturity. Parent intervention influences decisions in determining careers. Other research conducted by Luzzo (1995) examined the impact of gender differences on the career maturity of students; the results of this study stated that there were differences in career maturity between male and female students. Nevertheless, empirically there are still many differences in the career maturity levels of male and female students in various contexts.

Some studies state that there is no significant difference in career maturity between male and female students, for example, the research of Lee and Hughey (2001). Research conducted by Jawarneh (2016) revealed the same results. The study involved 284 students in Jordan, with a majority of female participants as much as 91.5% (260 students) and men as little as 8.5% (24 students). The study concluded that there were no differences in the level of career maturity based on gender. Still, there were differences in the dimensions of career planning between second-year students and final year students. Heo and Kim (2016) conducted a study to examine the relationship between self-esteem and adolescent career maturity in South Korea. This longitudinal study was carried out over four years and used stratified multistage cluster sampling in determining samples. The results of the study stated that there were differences in the level of self-esteem of participants from year to year. Still, there were no differences in the level of career maturity between female and male participants.

On the other hand, several studies have different results from the above studies. Other studies suggest that women are more mature than men, as Lee (2001) and Patton and Creed (2003) research. In line with the results of the above study, the research of Yon, Choi, and Goh (2013) shows that gender and socioeconomic status variables correlate with one's career maturity. But in the analysis conducted by previous researchers, the career maturity of students from various levels of social status is relatively the same, or there is no real difference, even though students from higher socioeconomic status have lower career maturity levels (Rinanda and Ghofur, 2019).

As previously mentioned, the research conducted by Jawarneh (2016) in Jordania and Heo and Kim (2016) in South Korea equally concluded that gender does not affect the level of career maturity. The results were in contrast to the research conducted by Koumoundourou, Kounenou, and Siavara (2012), stating that there is a difference in career maturity between male and female students. The research of Patton and Creed (2002) examining the level of

career maturity involving 377 adolescents in Australia, also concluded that girls have a higher score than teenage boys in terms of career planning, workplace information, and career decision-making. Research related factors affecting the level of career maturity have different outcomes. Many factors affect the difference in these outcomes. Therefore, current research aims to continue previous research.

When viewed in terms of age, according to Super and Knasel (1981), students enter a period of crystallizing work tendencies, that is, a time when someone already has realistic considerations when entering the workforce, choosing work preferences, and developing realistic self-concepts. Career maturity is essential for students to have because it will have an impact on work performance. A well-prepared career will have a positive effect on future career success (Spurk et al. 2015). As the level of career maturity gets higher, the achievement of one's work will also increase. On the contrary, when the level of career maturity is low, the individual does not have a plan regarding what career will be chosen, what competencies are needed, and how to prepare to achieve the chosen career.

Based on observations in the field, not all students have a high level of career maturity. There are still students who do not yet have a career planning or grasp of the future. How to prepare themselves, whether the chosen majors by the field of work should be pursued, as well as what skills are needed to achieve that career. Also, some students do not even know what they will become after graduating from college. So, when they enter the world of work, there are students who work not following the area of expertise learned during college, though learning on campus is an integral part of one's career (Stephen and Burke, 1994).

The learning experience on campus is also very closely related to how students can build their careers; students who focus on learning related to the chosen career can develop careers more easily (Kim and Shin, 2020). The learning experience will also encourage students to strive for optimal learning outcomes; of course, they will try to get the best grades in those lectures that are closely related to their chosen career. The value of learning outcomes is often considered a measure of one's competence (Chhinzar and Russo, 2018; Rothman, 2017).

Knowing the level of student career maturity is needed by various parties, especially managers of a university. Knowing some critical factors related to student career maturity can be important initial information for future learning policymaking. Career maturity plays a vital role in the stages of one's career development. The ability to determine and prepare for a career needs to be conditioned to run according to the stages. Therefore, this study aims to examine the relationship between socioeconomic status, gender, and academic achievement on student career maturity.

## 2. LITERATURE REVIEW

### 2.1. Career Maturity

Crites and Savickas (1996) state that career maturity is the ability and readiness of a person to determine their career choices both now and in the future, whereas Patton and Creed (2001) state that career maturity includes the ability of individuals to make appropriate career choices, including considerations when making reliable and consistent decisions. A person's career maturity can be used to measure the level of affective and cognitive career development that has been achieved. Janeiro (2010) states that the development of one's career behavior involves complex processes, including interactions

between cognitive, motivational, and affective dimensions. "The cognitive dimension consists of decision-making skills, while the affective dimension includes attitudes in the decision-making process." Crites (1973) argues that a person's career maturity divided can be seen in five aspects. Namely: "(a) involvement in the choice process; (b) orientation toward work; (c) Independence in decision making; (d) preference for vocational choice factors; and (e) conception of the choice process."

Career choice and development is an essential process in implementing one's self-concept (Super 1980). The concept of self is a very complex interaction of several factors, including physical and mental development, personal experience, and environmental characteristics. In its development, a person's career stage can be divided into five stages. Other opinions about the stages of career maturity come from Cobb and Yvette (2008), who stated that a person's career development would go through seven phases, namely: Exploration, Personal Assessment, Analysis, Decision Making, Planning, Implementation, and Management of the world of work.

Another career development theory was coined by Gottfredson (2002), which states that choosing a career is a process that requires a high level of cognitive ability. Gottfredson's theory combines innate characteristics with the surrounding environment. A person's career inspiration is more influenced by the surrounding environment (e.g., gender, social status) than the personal aspects of self-concept (e.g., skills and interests). There are four stages in the process of one's career development, including: "(1) Orientation to size and power, (2) orientation to sex-roles, (3) Orientation to social valuation, (4) Orientation to the internal."

Another theory was coined by Lent (2013), who described the relationship between people and the environment. The theory is better known as the Social Cognitive Career Theory (SCCT). This theory explains three things, namely: (a) academic and vocational development; (b) how individuals choose Education and careers; (c) Career education and performance. Furthermore, SCCT explained that the development of career goals and choices as a function of the interaction between self-efficacy expected outcomes and interests. Choosing a career is a process in which the environment and individuals influence one another. This involves career choices or goals, actions to achieve those goals, and individual experiences that match the objectives.

## **2.2. Socioeconomic Status**

Based on the Social Cognitive Career Theory (SSCT), socioeconomic status is an aspect that affects the development of one's self-efficacy. The family's socioeconomic status is associated with a person's achievement/strata in community life. Individuals who have a high level of socioeconomic status will have the opportunity to gain higher education, support parents, and have more role models in selecting jobs (Hsieh and Huang 2014). Some research has proved that parent support variables and family structures as indicators of family socioeconomic status have an essential role in the development of adult careers. The research conducted by Metheny and McWhirter (2013) proved that family socioeconomic status and family support influenced career development. The study involved 270 male and female students. The variable predictor used is a family socioeconomic status, family support, the intensity of career-related family interactions.

Contrary to the research conducted by Hsieh and Huang (2014) and also Metheny and McWhirter (2013), several studies have different results. Research conducted (Patel et al., 2008) reveals that gender, parental support, family social support, and socioeconomic status



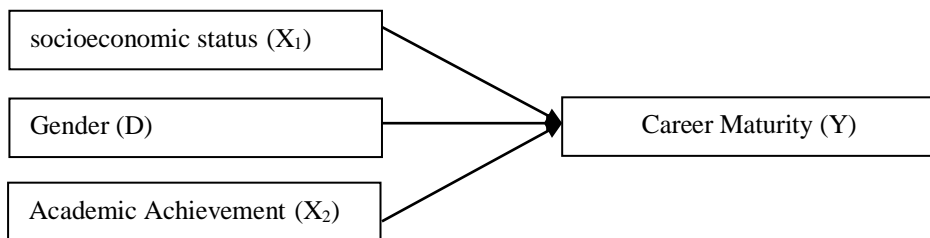
do not contribute to the self-efficacy of career decision making. The study took a sampling of teenagers in Vietnam, of 85 people. Another study by Shin and Lee (2018) also gave similar results. The study tested gender variables, socioeconomic status, classism, and locus of control as contributing factors to student career selection. The study involved 139 students. The results of the survey stated that (a) gender and socioeconomic status did not contribute significantly to the self-efficacy of student career selection, (b) classism and modern sexism contributed to student career selection. It indicated that classism and modern sexism are more critical than the socioeconomic status in predicting the self-efficacy of student career selection. Indicators of Socioeconomic Status can be measured through three variables: parents' income, parental education level, and parental work (Sirin 2005). Parents' income is an SES indicator that describes the resources available to students in education.

### 2.3. Academic Achievement

Academic achievement is one of the measures of learning outcomes at formal institutions. Academic achievement is also associated with lower stress, higher self-concept, higher self-efficacy, and health. Academic achievement is essential to achieving learning objectives at school. Also, academic achievement can be interpreted as a person's achievement in the dimension of knowledge, skills, and behavior. It is reflected in the mastery of knowledge and skills on a particular subject. Rugutt and Chemosit (2005) stated that several factors are affecting academic achievement, namely: early student skills, motivation, age, teaching instruction quality, learning climate, etc.

## 3. METHODOLOGY

This is a correlational study, whereas when viewed from the angle of the approach or method used, it was quantitative. The model of this research is explained in figure 1. The independent variable in this study is socioeconomic status ( $X_1$ ), gender (D), and academic achievement ( $X_2$ ). The dependent variable is career maturity (Y). Gender is a variable with a nominal scale, so in the analysis, it uses regression dummy variable analysis. Chen, et.all (2018) state that socioeconomic status is measured from three dimensions, namely: family income, parental education level, and parental occupation, while the academic cumulation index regulates academic achievement in the last semester of students. While the data analysis technique used is multiple linear regression analysis techniques with dummy variables.



**Fig. 1** Research Model

The population of this study was all active students of the Faculty of Economics, Universitas Negeri Surabaya. Total students who meet the criteria as a population amounts to 947 students. Data were taken from 175 students in 4 different programs—determination of respondents who became the study sample using the Stratified Random Sampling method.

The data collection method in this study uses a closed questionnaire. The questionnaire contains age-related information, gender, parental income, and parental education. Also, the poll comes with a question to measure the maturity level of the student career socioeconomic status. The variable item of student career maturity was developed by the researchers based on the Career Maturity Inventory of Savickas and Porfeli (2011). The student's socioeconomic status was measured by several indicators, namely: Father's education, father's income, father's job, mother's education, mother's job, and mother's income. The level of parental education was divided into four levels: Junior high School, High School, Undergraduate, and Postgraduate. The academic achievement variables of this study were measured based on the Academic Achievement Index in the last semester of the student. The academic achievement data is taken directly from the data owned by the campus administration.

#### 4. RESULT AND DISCUSSION

The level of student career maturity is still mostly in the medium category. In table 1. it can be seen that only 8% of students categorized as having good career maturity. The remaining 92% still need attention because they have not prepared their careers well. Most of them, if they graduate later, will possibly face a pretty hard time in tackling the competition.

**Table 1** Frequency distribution for student career maturity

Interval	Midpt	Frequency	Rel.	Cum.
< 32.250	27.000	1	0.57%	0.57%
32.250 - 42.750	37.500	10	5.71%	6.29%
42.750 - 53.250	48.000	65	37.14%	43.43%
53.250 - 63.750	58.500	85	48.57%	92.00%
>= 63.750	69.000	14	8.00%	100.00%

From table 2 that illustrates the distribution of the cumulative value index of students, it is known that this range of values is divided into five interval ranges. There was only one person with an index <2.45, students with grades between 3.24-3.64 are 141 people, and students with grades > 3.6 are 27 people. Overall, the average student score was 3.49. The value of this student, when compared to the size of the index value in Indonesia, is outstanding. Regardless of how students obtain these grades, this value index is often a requirement in applying for jobs.

**Table 2** Frequency distribution for academic achievements

Interval	Midpt	Frequency	Rel.	Cum.
< 2,4575	2,2600	1	0,57%	0,57%
2,4575 - 2,8525	2,6550	0	0,00%	0,57%
2,8525 - 3,2475	3,0500	6	3,43%	4,00%
3,2475 - 3,6425	3,4450	141	80,57%	84,57%
>= 3,6425	3,8400	27	15,43%	100,00%

Female students dominated the students who became the sample of this study. 82.86% of the sample were female, and 17.14% were male. This information is a picture of the general condition in universities, where most of their study programs are scientific fields in education in Indonesia.

The socioeconomic status of the respondents is depicted in table 3. Most respondents come from families with socioeconomic status down to the middle. As many as 78.86% of them are in the lower and middle socioeconomic status indicating that they are in a reasonably stable socioeconomic environment.

**Table 3** Frequency distribution for socioeconomic status

	Frequency	Rel.	Cum.
1	81	46.29%	46.29%
2	57	32.57%	78.86%
3	36	20.57%	99.43%
4	1	0.57%	100.00%

From the regression results in table 4, it is concluded that only the gender variable is proven to influence career maturity. In contrast, the two other variables, namely academic achievement, and unconfirmed social status, have a significant effect on career maturity. The gender variable has a p-value of 0.0516, with a coefficient of -2.6905. The p-value indicates that gender influences career maturity.

**Table 4** Regression result, dependent variable: career maturity

Variable	Coefficient	Std. Error	t-ratio	p-value
const	42.0787	10.5078	4.005	<0.0001
Academic Achievement	4.26869	3.00796	1.419	0.1577
Dummy Gender	-2.69048	1.37277	-1.960	0.0516
Dummy socio-economic_1	-1.47341	1.44043	-1.023	0.3078
Dummy socio-economic_2	-0.224781	1.17283	-0.1917	0.8482

The difference in career maturity between female and male students is confirmed in this study. These results also confirm research conducted by Luzzo (1995) that “there are differences in career maturity between male and female students.” In the context of the career maturity of economics students, it turns out that the level of career maturity of a student can be seen from their gender.

The coefficient value of the variable career maturity is negative in this study because the quantification of the male gender is number 1. At the same time, the female is number 0, indicating that the career maturity of female students is better than male students. Conclusions of research such as those by Lee (2001) Patton and Creed (2003), which state that the career maturity of women is better than men are confirmed in this study. Conclusions from the study of Yon et al. (2013) can be valuable information about why this can happen, where female students have a higher interest in finding information about jobs and skills that must be possessed for their future.

The level of career maturity of female students who are better than men still does not guarantee that their careers in the future can develop better; there are still many obstacles that must be faced by women in developing their careers. Although women have a high

desire to improve their career, they have to deal with obstacles that almost all women will face, namely: less personal time burdens, enormous responsibilities for caring for families, and lack of extra work time opportunities (Ismail and Ibrahim 2008; Matot et al. 2020).

Views of the society about gender in certain occupations have not changed, especially in the Asian region (Ronald, Susan, and Debra 2006). Many of them still hold the traditional view that some jobs are not optimal when done by women. "Career barriers identified by women in academic operations are very complex and include cultural factors from within and outside the profession, as well as other practical factors" (Tlaiss and Kauser 2010). Identifying and dismantling barriers, especially those that harm perceptions of ownership, is crucial for creating a culture of sustainable excellence (Cochran, Neumayer, and Elder 2019). However, women today are part of a precious resource for the survival of the world economy.

Efforts to support women's career development must not only be made in the learning process but still need to be done after a period of work, or work environment should be able to support women's career development (Eyigör et al. 2020; Kitada and Harada 2019). All parties must have an active role in supporting women's career development. Both in an academic environment, where they are still preparing for their future and in a work environment, where they must have a significant contribution.

The correlation between career maturity and academic achievement can be seen from the p-value of Academic Achievement. The results of the regression analysis stated that the Academic Achievement p-value was 0.1577, and the regression coefficient value was 4.26869. From the p-value, it can be seen that academic achievement does not significantly influence career maturity. The results of this study support research conducted by Roth and Clarke (1998), which states that the level of academic achievement does not reflect one's work performance. This matter might be due to the measurement of academic achievement that uses Academic Achievement which does not yet reflect one's abilities. Lei, Bassiri, and Schultz (2001) state that in determining Academic Achievement, there are differences in assessment criteria between one teacher and another. So, there is a possibility that grades can increase without being accompanied by an increase in students' abilities.

Another reason that is closer to career maturity is that many students think that Academic Achievement is not essential to them. They tend to pay attention to how they play a role in career achievement. The perceived role in learning related to a planned career was a more substantial effect than the value of the course (Peteranetz et al. 2018). Although many have found that adolescents with a secure future orientation, who have invested in career planning activities tend to perform better in school and vice versa, high academic achievement further reinforces the positive outlook of teens about their vocational future. However, it turns out that in the longitudinal perspective, the relationship between career maturity and academic achievement proves the opposite, there are no significant links. These longitudinal relationship patterns apply to male and female students (Negru-Subtirica and Pop, 2016).

In the long run, academic achievement is also not very important in one's career development. "A high-performance orientation protects potential negative influences from low levels of academic competence and value on career satisfaction" (van Dierendonck and van der Gaast 2013).

The social status in this study was also not confirmed to have a significant effect on a person's career maturity. This matter can be seen from the p-value of 0.3078, where the value is higher than the alpha value, so  $H_0$  is not rejected and  $H_a$  must be rejected. Social status has a

regression coefficient of -1.44734, which means that social status harms career maturity, although it is not significant. This conclusion is consistent with the analysis of research conducted by previous researchers, the career maturity of students from various levels of social status is relatively the same, or there is no real difference. However, students from higher socioeconomic status have lower career maturity levels (Rinanda and Ghofur, 2019).

Although the research of Yon, Choi, and Goh (2013) proves that gender and socioeconomic status variables correlate with one's career maturity, conclusions in some other studies show that there is indeed often a difference. In Sweden, the original social position is a less significant predictor of the level of education a person attains and the socioeconomic or occupational position (Sorjonen et al. 2012)

Although this study did not find a strong relationship between socioeconomic status and career maturity, it must remain a concern because there is a possibility that those from the lower classes have limited access to the network. Behtoui and Neergaard's (2012) research proves that socioeconomic background and gender have an impact on their access to a network of valuable resources. What should be of concern to the university is how to equip students with the ability to adapt well in the work environment. This ability to adapt is essential in the success of work (Monteiro, Taveira, and Almeida 2019).

For students from high economic backgrounds, the current career maturity tends to be lower than for students with lower socioeconomic status, because they have not found the right view on the future of their current job. They pay more attention to salary levels, future financial prospects, and job security because they are used to having a high standard of living (Ayodele 2019).

## 5. CONCLUSION

The results of the data analysis showed that the socioeconomic status variable and academic achievement did not influence the career maturity of the students of the Faculty of Economics, Universitas Negeri Surabaya. This matter is because academic achievement, as measured by the latest Academic Achievement Index, does not yet reflect the true abilities of students. The gender variable influences the career maturity of students of the Faculty of Economics, Universitas Negeri Surabaya, although the effect is not too significant. For further research, it is expected that the variables that affect the career maturity of students who have not been considered in this study, for example, variables of self-efficacy, age, parental support, and attitude will be considered.

There are some limitations to this study. Firstly, research samples are limited to only four courses that exist in the Faculty of Economics and dominated by female students. Further research expected to develop research with a balanced proportion between female and male participants. Secondly, an academic prestige indicator uses the Academic Achievement Index. The provision of value feared there are significant elements of the subjectivity of each lecturer. So, it is feared that the Academic Achievement Index has not been able to represent real academic achievements. Therefore, subsequent research should use other variables to measure student academic achievements. Thirdly, this study only examines variables that are socioeconomic status, gender difference, and academic achievement. Advice for further research would be to examine other variables that have not been studied in this research. Recommended variables include: the parent's foster pattern variable, the number of times parents use to discuss student future careers, locus of control, age, and peer support.

**Acknowledgement:** *The paper is a part of the research done within the project 569/UN38/HK/PM/2019. The authors would like to thank the Head of Universitas Negeri Surabaya and Dean of the Faculty of Economics and Business, Universitas Negeri Surabaya, because they have funded and provided facilities of this research.*

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## **ANALIZA UTICAJA SOCIOEKONOMSKOG STATUSA, POLA I AKADEMSKIH POSTIGNUĆA NA NIVO KARIJERNE ZRELOSTI STUDENATA**

*Karijerna zrelost se definiše kao sposobnost osobe da identifikuje i pripremi se za izbor karijere. Karijerna zrelost je neophodna studentima jer, što je nivo karijerne zrelosti veći, povećaće se i njihova postignuća u radu. Ova studija ima za cilj da odredi faktore koji utiču na karijernu zrelost studenata. Vrsta istraživanja koja je korišćena je korelaciono istraživanje sa kvantitativnim metodama. Podaci su sakupljeni korišćenjem metoda upitnika i tehnike analize podataka korišćenjem višestruke linearne regresije. Rezultati regresione analize pokazali su da vajabla pola utiče na karijernu zrelost, dok akademsko postignuće i socioekonomski status nemaju značajnog uticaja na karijernu zrelost studenata.*

*Ključne reči: Karijerna zrelost, akademska postignuća, socioekonomski status*



## **APPLICATION OF UNCONVENTIONAL MONETARY POLICY INSTRUMENTS IN MITIGATION OF THE ECONOMIC CONSEQUENCES OF THE COVID 19 VIRUS PANDEMIC**

*UDC 338.23:336.74  
616.98*

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**Abstract.** *Unconventional monetary policy instruments are used in conditions when monetary policy has exhausted all the usual measures and instruments that are otherwise applied by the central bank in the regular process of conducting monetary policy. The most commonly used instruments are, of course, quantitative easing or quantitative alleviation.*

*The aim of this paper is to point out the application of unconventional monetary policy instruments during the economic crisis caused by the COVID 19 virus pandemic in the most important banks in the world. After a theoretical overview of the concept of quantitative easing, the paper presents the empirical experiences of the Bank of Japan, the Fed, the ECB, and other central banks. Based on the analysis of applied measures and data on the use of quantitative facilities in selected central banks, it can be concluded that they resorted to the use of this instrument in times of crisis to a greater or lesser intensity. Also, the increased liquidity caused by their implementation had a significant impact on aggregate demand, inflation and GDP. This analysis can be useful to the monetary authorities in Serbia if they are to review the application of QE in the leading monetary institutions and help them to draw the conclusions that would lead to the most painless application of this instrument in the Republic of Serbia.*

**Key words:** *monetary policy, central bank, quantitative easing (QE), „helicopter money”*

**JEL Classification:** E42, E51, E52, E58

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Received May 26, 2020 / Accepted June 22, 2020

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## 1. INTRODUCTION

Unconventional monetary policy instruments, due to their frequency of use in conditions of economic crises caused by various causes, are becoming increasingly applicable in conducting the monetary policy of a large number of the most important central banks. Their application is caused by certain unexpected circumstances. However, the central banks reacted very quickly to the very beginning of the crisis, making decisions on the use of quantitative easing as one of the most commonly used unconventional instruments.

Quantitative easing (QE) is used due to the ineffectiveness of other measures available to central banks. The rapid application of quantitative easing at the beginning of the pandemic crisis is the result of the inability of central banks to use conventional instruments and measures. Namely, the most influential central banks, for years now, have kept their reference interest rates at an extremely low level. In conditions of low-interest rates, which tend to zero, central banks are forced to resort to unconventional instruments in conducting monetary policy, such as quantitative easing and “helicopter money”.

The first part of the paper provides a theoretical overview of this problem. More precisely, at the beginning of the paper, an attempt is made to explain the concept of quantitative incentives, their comparison with the concept of “helicopter money” and to show QE transmission channels.

The second part shows the use of QE in the period before the crisis caused by the pandemic. The application of this instrument in the Bank of Japan, the Fed and the ECB is presented, followed by an example of the application of QE in the Bank of England.

Finally, the use of quantitative easing was pointed out in order to mitigate the economic consequences during the crisis caused by the COVID 19 virus pandemic. The state of the economy during the crisis, the fall in GDP and the fall in stock exchange indices are shown. The paper finishes with the analysis of the quantitative easing measures applied by Japan, the USA and the EU.

## 2. REVIEW OF RELEVANT LITERATURE

### 2.1. Theoretical aspect of quantitative easing

In the conditions of economic crises, which can be caused by various causes, the turnover on the financial market decreases so much that it causes a decline in the real economy and a simultaneous decline in interest rates. At that moment, the standard measures of central banks can not have the desired effect, so the banks reach out to more extreme measures intended to stimulate the economy. The most commonly used instrument, in such circumstances, is quantitative easing.

Quantitative Easing (QE) is an unconventional type of monetary policy instrument of a central bank and represents the purchase of government and highly ranked corporate securities, using newly created money in the condition of very low-interest rates. More precisely, when interest rates reach such a low level that central banks can no longer manipulate them, the banks use some other instruments that will provide the economy and households with additional liquidity. Quantitative incentives are applied due to the ineffectiveness of other measures available to the central bank. In that sense, it is important to emphasize that the amount of money in circulation is increasing, which is of special

importance during the crisis, when a large number of companies and households reduce their investments and consumption; that is the way to avoid an excessive recession.

Furthermore, “quantitative easing is a tool that central banks can use to inject money directly into the economy. Money can be in the form of physical money, like banknotes, or digital, money in a bank account” (Bank of England, 2020). Also, this term is known as “QE” or “property purchase”. The goal of QE is simple: by creating “new” money, it strives to increase consumption and investment in the economy (Bank of England, 2020).

Moreover, the goal of applying quantitative easing is to boost spending in order to reach the inflation target. The purchase of securities by central banks is of such proportions that it raises their price and reduces their yield. In this way, economic entities from which the central bank bought securities are encouraged to use the new liquidity for the growth of investments and consumption. In addition, the increase in investment and consumption stimulates the level of economic activity and affects the increase in price levels, which enables the establishment of the desired level of inflation.

Regarding the concept of quantitative easing, there are different interpretations of it. Some researchers argue that the relief is “quantitative” because it refers to the creation of a certain “amount” of money, while others believe that it is a mistranslation of a Japanese term that means expansive monetary policy (Bernanke, 2017, p. 7). However, as the amount of money is created by conventional instruments, it can be assumed that later interpretation of the term is more logical. On the other hand, there is still no agreement on measures that include quantitative easing (Blinder, 2010). Some economists use the term *fiscal monetization*, which presents a combination of the fiscal backstop and helicopter monetization. Although, Masciandro (2020) argues that “the mixing of a fiscal backstop and helicopter monetization is a case of policy blurring that can affect the relationship between politicians and central bankers. Conflicts between politicians and central bankers will be more likely and these, in turn, may trigger political pressures on the central bank” (Masciandro, 2020).

Otherwise, it is necessary to distinguish between the concept of quantitative easing and “helicopter money”. “Helicopter money” is a theoretical and neo-orthodox monetary policy tool used by central banks to stimulate the economy. Economist Milton Friedman introduced the term “helicopter money” in 1969 (Friedman, 1969), but it was popularized in 2002 by former FED President Ben Bernanke. This measure should be used in conditions of low-interest rates when economic growth is still weak. “Helicopter money” means that “the central bank or government supplies the economy and the population with large amounts of money as if money were being distributed or squandered from a helicopter” (Friedman, 1969).

“Contrary to the concept of using “helicopter money”, central banks use quantitative easing to increase the money supply and lower interest rates by buying government or other financial securities from the market to provoke economic growth” (Nickolas, 2017). Unlike “helicopter money,” which involves distributing printed money to the public, central banks use quantitative easing to create money and then buy back assets using printed money. “QE has no direct impact on the public, while “helicopter money” is made directly available to consumers in order to increase consumption” (Nickolas, 2017).

One of the main advantages of “helicopter money” is that it generates demand, which is conditioned by the possibility of increasing spending without worrying about how the money will be financed or used. Although households could deposit money into their savings accounts rather than spend it, consumer spending will apparently rise as the measures remain in place over a longer period of time. “The impact of “helicopter money” is permanent and irreversible, because money is given to consumers, and central banks cannot withdraw money

if consumers decide to put it in a savings account” (Masciandro, 2020). One of the main risks associated with “helicopter money” is that it can lead to a significant devaluation of the currency in international foreign exchange markets. However, the “helicopter money” is not a free lunch (Borio, Disyatat & Zabai, 2016). In other words, it may create monetary externalities (Masciandro, 2020).

In contrast, QEs provide capital to financial institutions, which theoretically promotes increased liquidity and the ability to borrow, as borrowing costs decrease since more money is available. The use of newly printed money to buy securities increases the amount of credit potential. QE aims to encourage banks to give more credit to consumers at a lower rate, which should stimulate the economy and increase consumption. Unlike “helicopter money”, the effects of QE could be reduced by selling securities (Nickolas, 2017).

In the United States, they use the term *QE for people* instead of „helicopter money”. It can take many forms. Basically, it implies the process of creating money as in QE, but money is not placed on the financial market by buying securities, yet it can be distributed to the population or invested in certain strategically important areas. If QE for people is implemented in the form of distribution of money to the population, it is the so-called “helicopter drop” or “helicopter money” concept. This concept has become significant after the crisis of 2008 and numerous waves of quantitative easing. The main danger in the application of this concept lies in the excessive and uncontrolled use of this form of monetary policy. According to O’Neill (2020), there is a need for some kind of smart People’s QE now. Anyway, “the government can raise taxation or issue debt, where the latter can be purchased by either citizens or the central bank. The government finances its policy by making a simultaneous decision regarding taxes and the issuance of new debt, knowing at the same time the central bank’s choices” (Masciandro, 2020).

## 2.2. Transmission of quantitative easing to real economic variables

Given that quantitative reliefs are implemented in practice for a relatively short time, there is no single position on the effects of their transmission on the real and financial sector. In order to see the transmission channels of unconventional monetary policy instruments, it is necessary to isolate their impact from other monetary and fiscal measures that are being implemented at the same time (Dahlhaus et al., 2018). One of the transmission channels of quantitative easing is the *signal channel* which refers to the expectations of the public that, even after the economic recovery, the interest rate will remain at a low level. However, the signal channel has a greater impact on interest rates in the medium term as the commitment to low-interest rates will last until the economy recovers sufficiently.

One of the most important channels is the *liquidity channel*, which refers to the increase of investors’ liquidity and the reduction of the liquidity premium on most securities. Through this channel, there is an increase in yields on government securities, given that quantitative easing reduces the liquidity premium. The implementation of quantitative easing should have a positive impact on the balance sheets of financial institutions and the possibility of financing economic agents.

The portfolio *substitution channel* is the third channel for transmitting the effects of quantitative easing. This channel refers to the change in the structure and value of the central bank’s asset portfolio, which further influences the decisions of economic agents. When the central bank buys a certain type of property, its availability to economic agents decreases and the increased amount of money affects the fall in interest rates, increasing the availability of

loans for households and companies which, consequently, raises consumption and investment. Chebbi and Derbali (2019) also find “a significant response of volatility to an expected component of a target rate change. They highlight homogeneity in the responsiveness of European stock markets to US news announcements. It is important to note that the persistence of volatility is clear across all regressions”.

One of the channels with the fastest direction of action is the *inflation channel*. It refers to investors' expectations regarding the impact of the quantitative easing policy on the level of inflation in the future. On the other hand, the impact of quantitative easing policies can be seen as an effective way to combat deflation, which is why the Bank of Japan has used this instrument for many years. Blattner and Joyce (2020) approximate that, based on “a small macrofinance Bayesian Vector Autoregression (VAR) model, euro area 10-year bond yields have been reduced by around 30 bps in 2015; this was caused by the first round of asset purchases under the European Central Bank's (ECB) public sector purchase program. This resulted in the output gap and inflation being about 0.2 and 0.3 ppt, in 2016” (Blattner and Joyce, 2020).

Finally, the *stimulus channel* refers to the effects of quantitative easing on GDP and interest rates. So far, many studies have shown that there is a significant link between changes in the “amount” of quantitative easing and changes in GDP and interest rates. Based on the research, it can be noticed that the increased amount of money in the economy, which is placed in the form of quantitative easing, will have a positive effect on GDP growth, and, vice versa, it will have a proportional effect on interest rates. Low-interest rates will stimulate investment and GDP growth in the long and medium-term.

Masciandaro (2020) argues that fiscal monetization leads to monetary stability risk, heterogeneity in income, increase in public debt and central banks' independence.

### 3. QUANTITATIVE EASING – EMPIRICAL EXPERIENCES

The use of quantitative easing dates back to the time after the Great Depression. It is well known that overnight interest rates were at a very low bound immediately after the U.S. Great Depression (1934-1939). At the same time, American monetary authorities decided to apply policies that could be understood as today's debates on quantitative easing. Firstly, there were attempts to stabilize yields on Treasury bonds, which was done by open market operations. Furthermore, rapid growth in high-powered money was generated. Finally, the authorities did not prevent high-powered money to be impacted by transitory factors. All of this resulted in “a portfolio effect of short-duration asset supply on term premiums” (Hanes, 2018). After this period, central banks very rarely opted for the use of quantitative easing. They resorted to the use of this instrument only in conditions of sudden, unexpected shocks and crises.

The Central Bank of Japan (BOJ) was forced, at the beginning of the 21st century, to introduce some unconventional measures after a long period of stagnation, chronic deflation and a failed zero interest rate policy. Japan was the first in the world, in recent history, to start applying quantitative easing in 2001, in order to achieve the desired level of inflation and revive its own economy. The goal of monetary expansion was no longer to reduce short-term interbank interest rates (which were at zero), but to increase banks' liquidity surpluses by buying Japanese treasury bills, government bonds and other financial assets from banks.

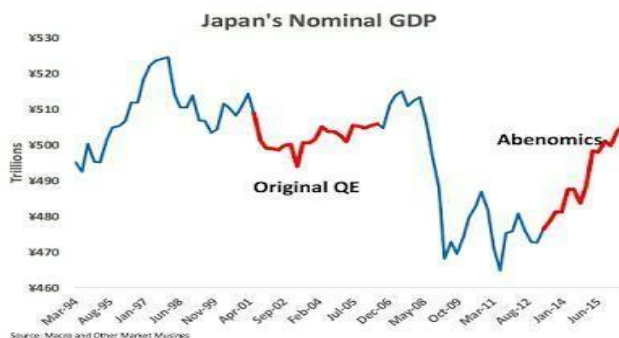
The experience of Japan between 1999 and 2006 is a true example of the use of quantitative easing. Taking into account deflationary pressures, the Central Bank of Japan

introduced a zero interest rate policy in early 1999, committing to keep the interest rate at zero as long as there is a fear of deflation. After a brief economic recovery that manifested itself in an increase in the general price level above zero (lasting only a month), the Central Bank of Japan stopped applying this policy in August 2000. In March 2001, the bank introduced a policy of quantitative easing, committing at the same time to keep the interest rate at zero until the price level stabilizes. At the beginning of the implementation, the amount of 5 billion yen was determined, which was inserted into the financial system as a surplus of reserves. In addition, the Central Bank announced that it would increase the purchase of long-term government bonds. Until the end of the application of quantitative easing, the amount was increased to 30 billion yen. The assistance was intended for both the financial and corporate sectors to improve their credit activities.

In March 2011, Japan was hit by a devastating earthquake that left great consequences on Japan's economy. There was a large drop in industrial production and a decrease in household consumption. During 2013, public debt exceeded the level of 240% of GDP. Faced with major economic problems, Japan will begin a recovery program in early 2013. The recovery program known as Abenomics is based on a combination of fiscal stimulus and strong monetary expansion. The main goal of the program was to stop 15-year deflation by increasing the inflation rate to 2%, all while pursuing an expansionary monetary policy.

During Japan's long-running struggle against deflation, it became increasingly clear that stronger monetary easing was needed (Ueda, 2012). In April 2013, the Central Bank of Japan introduced a new policy of quantitative easing. Quantitative easing is designed to overcome the limitations of other monetary policy instruments. "Quantitative relief consists of two main elements:

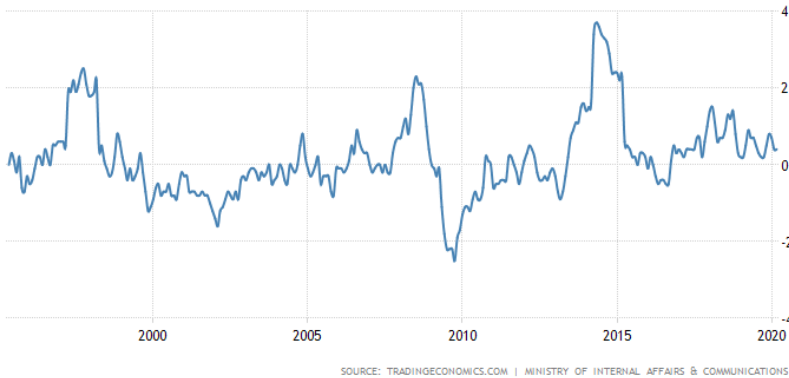
- First, quantitative easing strives to increase inflationary expectations and, therefore, drastically change deflation and the way of public thinking that has emerged through the bank's strong commitment to achieving the 2% price stability target at the earliest possible time.
- Second, the pressure of the mass purchases of government bonds by the Central Bank is strong not only on short-term nominal interest rates, but on the overall yield curve" (<https://www.boj.or.jp>).
- By combining these two elements, quantitative easing allows the bank to significantly reduce not only short-term but also long-term real interest rates.



**Fig. 1** Application of quantitative easing in Japan, 1994-2015

Source: [www.tradingeconomics.com](http://www.tradingeconomics.com)

In respect of the purchase of government bonds, the bank bought bonds with a maturity of up to 40 years. When QEs were introduced, the bank's operating policy was to buy government bonds. During 2013, the bank bought government bonds worth 50 million yen. The following year, the rate of redemption was increased to 80 million yen. In this way, quantitative easing, which differs drastically from other measures, begins to affect price growth and mild inflation by increasing the amount of money in circulation.

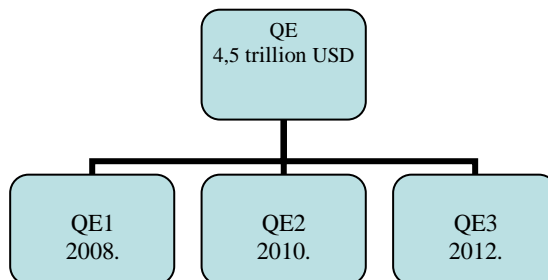


**Fig. 2** The impact of QE on inflation in Japan, 2000-2020

Source: <https://tradingeconomics.com/japan/inflation-cpi> (23.4.2020.)

The recovery program quickly began to yield results, with the annual GDP growth rate in the first quarter of 2013 increasing by 3.5%, compared to the previous quarter while exports and personal consumption also grew. At the same time, the main goal of the monetary policy of the Central Bank of Japan - inflation of 2% - “fell into the water” as inflation began to slow down and reached only 0.5% in early 2015.

The Federal Reserve (FED) started implementing quantitative easing during the global economic crisis in November 2008 and applied it in three parts - QE1, QE2 and QE3. During these three waves in the implementation of quantitative easing, the value in which securities were redeemed varied, and at the end of the third round, at the end of October 2014, the accumulation of securities was at the level of 4.5 trillion dollars.



**Fig. 3** FED's Quantitative Easing, 2008-2014

Source: Authors, based on the <https://www.federalreserve.gov/econres/feds/files/2018071pap.pdf>

Given that the crisis that started from the real estate market had great consequences for the US economy, it was necessary, in conditions of low-interest rates, to apply a new monetary policy instrument, because conventional instruments and measures did not yield results in “revival” of the economy and start-up consumption.

By the end of 2008, the targeted Federal Reserve rate had reached a zero lower limit and QEs had become one of the most important instruments for conducting monetary policy. In November 2008, the Federal Committee for Open Market Operations announced that the FED was moving to implement QE1: The Federal Reserve had purchased US \$ 3 trillion. During 2010 and 2011, the Federal Reserve implemented two additional programs solely by purchasing treasury bills. The first, in August 2010, the Federal Committee announced the beginning of the second round of quantitative easing (QE2) which eventually led to a total purchase of US \$ 778 billion in long-term government securities. However, given disappointing economic activity and still relatively high unemployment, the third round of quantitative easing (QE3) was launched in September 2012. After the improvement of economic trends, the program was formally completed in October 2014. Luck and Zimmermann (2018), in their research, come to the conclusion that the effect of QE1 on economic activity and employment in the USA is not strong enough and that it was necessary to apply the other two rounds of quantitative relief in order to obtain certain results. They point out that the impact of unconventional monetary policy instruments and measures on GDP and employment is not of high significance.



**Fig. 4** The impact of QE on employment in USA, 2008-2014

*Source:* <https://tradingeconomics.com/united-states/unemployment-rate> (1.5.2020.)

Based on Figure 4, it can be seen that, during the QE approval period by the FED, the unemployment rate was high and began to decline only after the third round of quantitative easing.

As for the European Central Bank (ECB), it has also approached the application of quantitative easing in order to mitigate the consequences of the great world economic crisis. Due to the fact that the EU implements a unique monetary policy in the countries that use the euro, but different fiscal policy, the ECB has long avoided the implementation of quantitative easing. Until the end of 2014, the ECB used the various monetary policy instruments at its disposal to drive economic growth and achieve an inflation target of 2%. The ECB started applying quantitative easing in early 2015, because it did not reach inflation target by applying conventional instruments and measures; this led to problems due to the possible conflict of these measures with the provisions of the EU Statute. Moreover, the Federal



Constitutional Court of Germany has sought an opinion from the European Court of Justice on the view that the implementation of QE is contrary to the provision of prohibiting the ECB from directly financing governments by purchasing their securities.

In the period when inflation in the Eurozone, after more than two years of QE implementation, reached a level slightly below 2%, this growth was expected to be influenced by QE. However, although at first glance it seemed that the increase in inflation was a consequence of quantitative easing, certain circumstances that also had an impact on the achieved level of inflation, such as the jump in oil prices, were ignored, and it was concluded that QE did not have such a strong impact on inflation as expected. After that short-term increase in inflation, there was a new decline in the following period, until March 2018, when growth is observed, which all supports the suspicion that the effects of QE are not so strong.



**Fig. 5** Inflation trends in the Euro area, 2010-2020

*Source:* <https://tradingeconomics.com/euro-area/inflation-cpi> (28.3.2020.)

In addition to the analyzed banks, which were pioneers in the application of quantitative easing, the Bank of England should also be mentioned; this bank also used QE during the crisis and after the so-called Brexit. While the government was implementing austerity measures, the Bank of England, on the other hand, created 445 billion pounds of new money, which was placed on the financial market by buying securities. Although QE, combined with an interest rate of almost 0%, helped keep the UK economy from deteriorating further, there were still side effects in terms of deepening inequality among the population, due to rising stock and real estate prices. This, of course, affected the wealthy strata of the population. The Bank of England confirmed that the richest 10% of people made a profit of around 350 thousand pounds, which they would not have made without quantitative easing. In August 2016, the Bank of England was forced to resort again to buying securities in order to respond to the uncertainty in the market caused by the consequences of Brexit.

According to the International Monetary Fund, the quantitative easing provided by large central banks after 2008 appears to have helped improve market confidence and boost economic growth. However, some authors argue that the effects of quantitative easing are controversial.

#### 4. APPLICATION OF QE IN OVERCOME THE NEGATIVE EFFECTS ON THE ECONOMY DURING THE COVID 19 PANDEMIC

The second wave of quantitative easing in the world is related to the period after the pandemic caused by the coronavirus. Economic policymakers in all countries around the world are facing the effects on the economy of the devastating virus COVID-19.

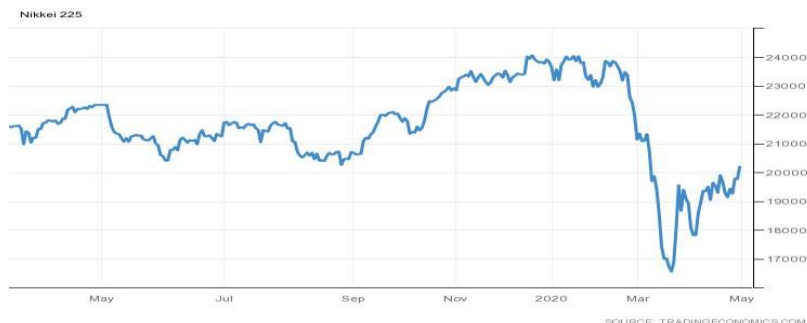
Public health experts are taking the lead in treating the population, while fiscal policy makers are helping to finance public health while providing critical assistance to people whose lives and livelihoods have been destroyed by the virus and its effects. At that time, the collapse of the economic system caused by the “stay at home” necessity led to the collapse of the financial system through the freezing of lending and consumption, so the goal of monetary policy was to restart both segments. In the short term, public health goals require people to stay at home except in the case of necessary food purchases and doing chores, especially if they are ill or at-risk category of the population. Thus, production and consumption inevitably decreased.

The actions of the central banks were very similar to those taken during the crisis in 2008 caused by disturbances in the mortgage market. The first steps of the central banks were to lower the reference interest rates as much as possible, given that in some central banks they were already at a very low level. Also, many central banks have eased the conditions for obtaining loans to households and the economy. If a company that has financial difficulties lays off or refuses to hire workers, it will lose the experienced employees it needs to continue its normal business. “On the other hand, a family temporarily without income can lose a mortgage, losing a home. To avoid permanent damage from virus-induced deterioration, it is important to ensure that credit is available to otherwise healthy borrowers facing a temporary period of low income or no income” (Financial Times, 2020). Finally, a large number of central banks have resorted to the application of unconventional instruments and measures such as quantitative easing and “helicopter money”.

However, monetary policy authorities face an even greater challenge. They must ensure that the economic damage from a pandemic is not long-lasting. Ideally, “when the effects of the virus pass, people will return to work, school, shops, and the economy will return to normal. In that scenario, the recession may be deep, but it is necessary to influence all measures to keep it short” (Financial Times, 2020). However, this is not the only possible scenario; if critical economic relations are disrupted by weak activity that has lasted for months, the economy will need a very long time to recover.

In **Japan**, as in all countries of the world, the strong consequences of the crisis were felt, which could be seen on the basis of stock market movements. The Nikkei index started to fall at the end of February, and in March its value reached its lowest level. A month and a half later, it starts to grow and at the end of April, it increases by 2.14%.

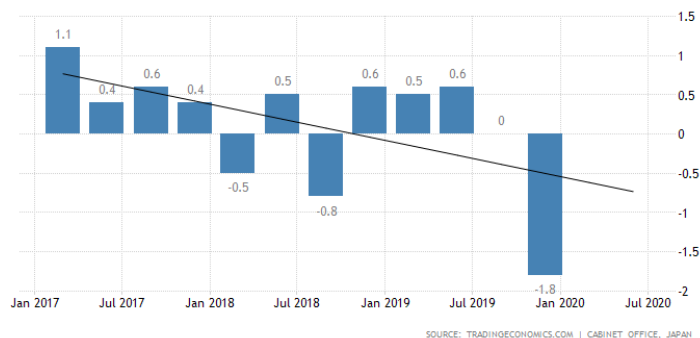
According to the data, the Japanese retail fell by 4.6% in March compared to the year before, and the consumer confidence index in Japan fell to 21.6 in April 2020 from 30.9 in the previous month, reaching its lowest level.



**Fig. 6** Trend of *Nikkei* index on the stock market, march 2019 – may 2020.god.

Source: <https://tradingeconomics.com/japan/stock-market> (25.4.2020.)

The overall events had a strong effect on Japan's GDP, reaching 0.8% in 2019 and 1.8% in early 2020. The GDP growth rate decreased by 1.8% in the quarter during the three months to December 2019, which is in line with the preliminary reduction of 1.6%. This was the fastest decline in GDP since the second quarter of 2014, as consumption fell by 2.8% after a sales tax increase in October. In addition, investment spending fell by 4.6%, while government spending rose 0.2% and public investment growth fell to a 0.7% low (<https://tradingeconomics.com/japan/gdp-growth>).



**Fig. 7** Japan`s BDP, 2017-2020

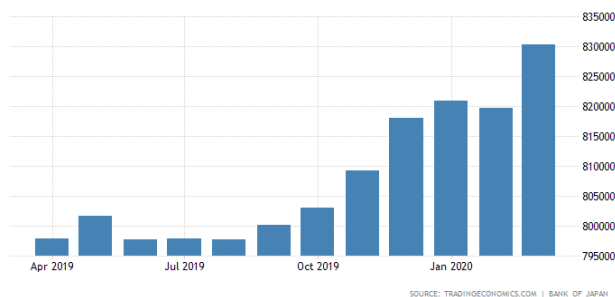
Source: <https://tradingeconomics.com/japan/gdp-growth> (25.4.2020.)

“At the Monetary Policy Meeting, the Policy Board of the Bank of Japan decided upon the following:

- The Bank will apply a negative interest rate of minus 0.1 percent to the Policy-Rate Balances in current accounts held by financial institutions at the Bank.
- The Bank will purchase Japanese government bonds (JGBs) so that 10-year JGB yields will remain at around zero percent. While doing so, the yields may move upward and downward to some extent mainly depending on developments in economic activity and prices.
- With regard to asset purchases other than JGB purchases, the Bank decided, by a unanimous vote, to set the following guidelines.

- The Bank will purchase exchange-traded funds (ETFs) and Japan real estate investment trusts (J-REITs) so that their amounts outstanding will increase at annual paces of about 6 trillion yen and about 90 billion yen, respectively.
- The Bank will continue with ‘Quantitative and Qualitative Monetary Easing (QQE) with Yield Curve Control’, aiming to achieve the price stability target of 2%, as long as it is necessary for maintaining that target in a stable manner” (Bank of Japan, 2020).

The Central Bank of Japan will monitor “the risks deemed most relevant to the conduct of monetary policy and adjust the policy as necessary, taking into account developments in economic activity and prices as well as financial conditions. In particular, in a situation where the risks are high, the Bank will not hesitate to take additional mitigation measures” (Bank of Japan, 2020).



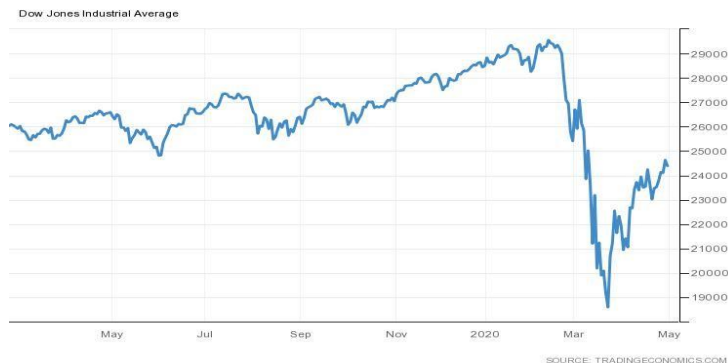
**Fig. 6** Annual variations of monetary aggregate M1 in Japan, April 2019 - April 2020

Source: <https://tradingeconomics.com/japan/money-supply-m1> (26.4.2020.)

Based on the movement of the monetary aggregate M1, it can be noticed that the Central Bank of Japan conducted a very expansive monetary policy during the crisis caused by the coronavirus pandemic.

The US Federal Reserve, as one of the world's leading banks, has had to take careful steps to mitigate the effects of the economic crisis caused by the COVID-19 pandemic, given that its decisions are a reference for many of the central banks.

The crisis caused by the pandemic was reflected in the financial market, which can be seen based on the movement of the Dow Jones index, shown in Chart 9.

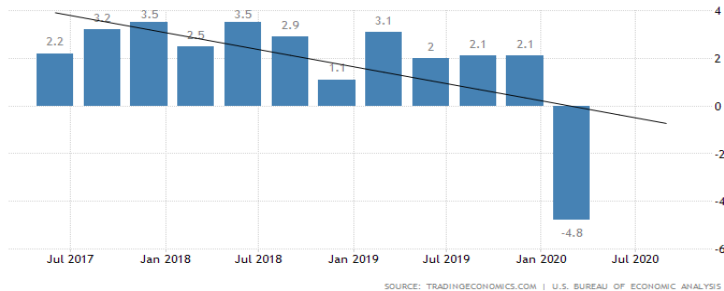


**Fig. 9** Trend of Dow Jones index na finansijskom tržištu stock market, 2019-2020

Source: <https://tradingeconomics.com/united-states/stock-market> (30.4.2020)

Based on the analysis of the movement of the Dow Jones index shown in the graph, a strong decline in this index can be observed during the pandemic, i.e. in the first quarter of 2020. After that period, it has started growing slightly.

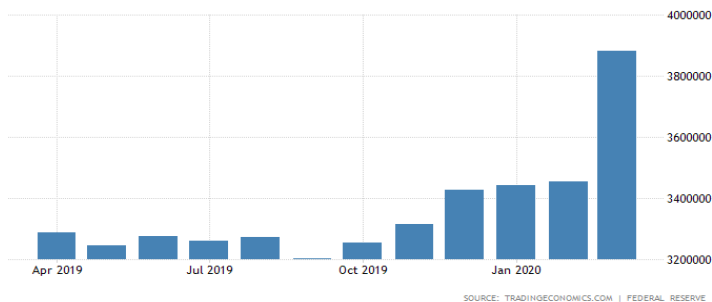
The downward trend of the American economy can also be followed on the basis of GDP trends. The US economy experienced a 4.8% decline in the first quarter of 2020, ending the longest period of economic growth. Personal consumption has had the largest decline since 1980, and investment has declined fourfold in the period under review. In addition, exports and imports fell sharply, while government spending rose.



**Fig. 10** United States` GDP falling, first quarter of 2020

Source: <https://tradingeconomics.com/united-states/gdp-growth> (30.4.2020)

Given the current state of the real and financial spheres of the US economy, the Federal Reserve announced in January that it would cut the reference interest rate again to boost the economy during the coronavirus epidemic. The plan to alleviate the economic downturn caused by the virus includes cutting interest rates to near zero and implementing a \$ 700 billion quantitative easing program. This conditioned the growth of the monetary aggregate  $M_0$  from 3.454 billion USD in February to 3.883 billion USD in March 2020.



**Fig. 11** Trend of monetary aggregate  $M_0$  in USA, april 2019 – april 2020

Source: <https://tradingeconomics.com/united-states/money-supply-m0>

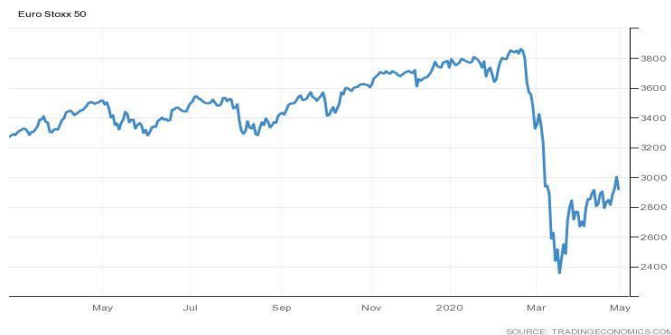
The Fed announced the placement of a large amount of money in the form of “helicopter money”, because the Secretary of the Treasury proposed that a check of \$ 1,000 be delivered to every American, saying: “Americans need cash now, and the president wants to give them cash now in the next two weeks” (Bloomberg, 2020, para 4). Numerous measures have been taken on the side of fiscal policy in the form of delaying the payment of obligations for 90

days. Thus, the fiscal authorities will have to borrow to cover the deficit caused by the direct giving of money to citizens (helicopter money), and the monetary authorities will buy bonds from them and pump liquidity into the system.

If printing and giving money to the public causes citizens to go out and spend, “helicopter money” could stimulate inflation, which would not be good for the “wounded” economy. On the other hand, if citizens decide to keep checks for precautionary measures, it would cause a problem due to a large amount of liquidity, but, at the same time, insufficient spending.

The **European Union** has also been hit by the economic crisis caused by the COVID-19 pandemic crisis. Given this, it is necessary to, firstly, look at the state of the EU economy based on financial market trends and GDP trends.

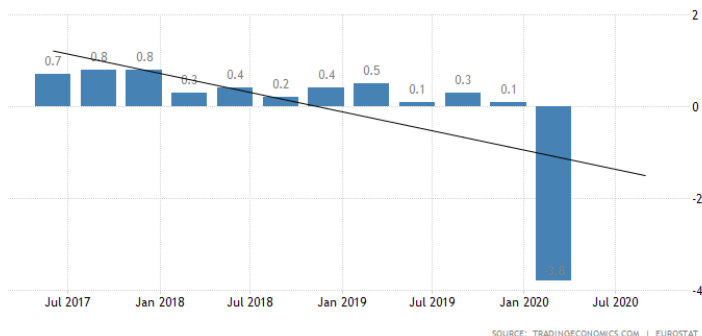
In terms of financial market trends, it can be observed that the Euro Stoxx 50 has had a decline of 875 points or 23% since the beginning of 2020. The movement of this reference index from the Eurozone is shown in the graph below.



**Fig. 12** Trend of Euro Stoxx 50 index, may 2019 - may 2020

Source: <https://tradingeconomics.com/euro-area/stock-market> (1.5.2020.)

The eurozone economy experienced a 3.8% decline in the first quarter of 2020, compared to market expectations of -3.5%. This was the biggest reduction in GDP since 1995, because, due to the coronavirus pandemic from the middle of March, a huge number of companies were forced to stop working, and consumers had to stay at home. The economies of France, Spain and Italy had the biggest decline (<https://tradingeconomics.com/euro-area/gdp-growth>).



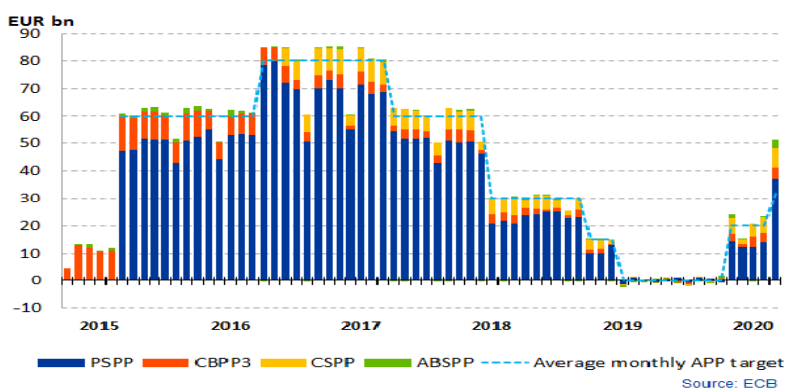
**Fig. 13** GDP falling in European Union, first quarter of 2020

Source: <https://tradingeconomics.com/euro-area/gdp-growth> (1.5.2020.)

Given this, the European Central Bank was forced to, in addition to standard instruments and measures and extremely low repo rates, approach non-standard monetary policy measures. “The ECB’s Asset Purchase Programme (APP) is part of a package of non-standard monetary policy measures that also includes targeted longer-term refinancing operations, and which was initiated in mid-2014 to support the monetary policy transmission mechanism and provide the amount of policy accommodation needed to ensure price stability.

It consists of the:

- corporate sector purchase programme (CSPP)
- public sector purchase programme (PSPP)
- asset-backed securities purchase programme (ABSPP)
- third covered bond purchase programme (CBPP3)” (<https://www.ecb.europa.eu/mopo/implement/omt/html/index.en.html#abspp>).



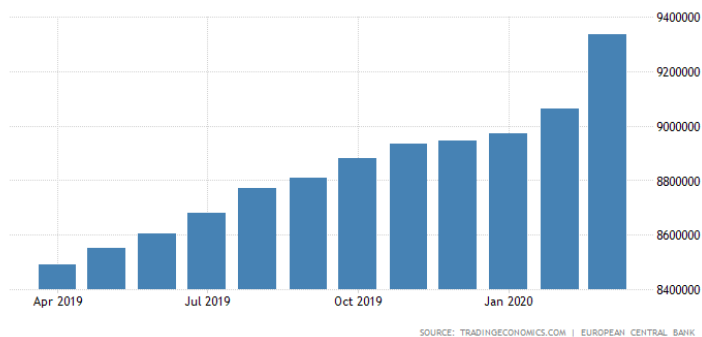
**Fig. 14** Overview of the use of quantitative ECB easing, 2014-2020

Source: <https://www.ecb.europa.eu/mopo/implement/omt/html/index.en.html#abspp> (1.5.2020.)

In Europe, some use the term “corona bonds” to denote bonds which central banks purchase for increasing the liquidity of the economy and population (Waltenberger, 2020).

Based on the graphs, it can be noticed that the ECB used quantitative facilities in the form of programs for the purchase of assets in the period from 2014 to 2018, and after that in 2019 it stopped using them. However, due to the new circumstances related to the coronavirus, they again resorted to the use of these measures. In this regard, the ECB launched the *Pandemic Emergency Purchase Program (PEPP)* in March 2020 to address serious risks in the monetary policy transmission mechanism. PEPP is a temporary program for the purchase of private and public sector securities with a total amount of 750 billion euros. All eligible asset categories under the existing asset purchase program (APP) are also eligible under the new program. The ECB will cancel the net purchase of assets under the PEPP after assessing that the crisis phase of COVID-19 is over, but in any case not before the end of 2020 ([https://www.ecb.europa.eu/press/pr/date/2020/html/ecb.pr200318\\_1~3949d6f266.en.html](https://www.ecb.europa.eu/press/pr/date/2020/html/ecb.pr200318_1~3949d6f266.en.html)).

Given the low reference interest rate and the use of unconventional instruments and monetary policy measures, the movement of the monetary aggregate M1 shows a growing trend in the first quarter of 2020.



**Fig. 15** Trend of the monetary aggregate M1 in Euro area, april 2019 - april 2020

Source: <https://tradingeconomics.com/euro-area/money-supply-m1> (1.5.2020.)

The growth of the money supply is the result of the application of instruments and measures of the ECB, but also the activities of the European Investment Bank, which provided 200 billion euros for the European economy. It set up a “protective shield” for European companies by forming a guarantee fund in response to COVID-19, first approving an amount of 25 billion euros. This money is intended for small and medium enterprises and corporations in the real economy and is part of the already mentioned support package.

In addition to the analyzed countries, it is necessary to mention the Bank of England, whose Monetary Policy Committee voted at a special meeting on March 19<sup>th</sup> to reduce the reference rate to 0.1% and increase the share of British government bonds by 200 billion pounds.

After these central banks, a large number of central banks in the world have approached the use of unconventional instruments and monetary policy measures, such as QE and “helicopter money”.

## 5. CONCLUSION

In conditions when interest rates have reached such a low level that central banks can no longer manipulate them, they resort to the use of unconventional instruments that will provide the economy and the population with additional liquidity. Quantitative Easing (QE) is the most commonly used instrument from the group of unconventional instruments and is a form of expansionary monetary policy of a central bank. They represent the purchase, primarily of government securities with a long maturity, the use of newly created money, and in conditions of very low interest rates.

In addition to quantitative easing, which is aimed primarily at the economy and the financial sector, central banks resort to the use of “helicopter money” aimed at the population.

Quantitative incentives have been intensively applied during the global economic crisis since 2008. They were used by most of the world's leading banks and had a certain impact on inflation, GDP and employment.

The second wave of quantitative easing in the world is related to the period after the pandemic caused by the coronavirus. Economic policy makers in all countries around the globe are facing the effects on the economy of the devastating virus COVID-19.



Public health experts are taking the lead in treating the population, while fiscal policy makers are helping to finance public health while providing critical assistance to people whose lives and livelihoods have been destroyed by the virus and its effects. At that time, the collapse of the economic system caused by the “stay at home” necessity led to the collapse of the financial system through the freezing of lending and consumption, so the goal of monetary policy was to restart both segments.

Based on the analysis presented in the paper, it can be noticed that all leading central banks, among which the actions of the Bank of Japan, the Fed and the ECB were specifically considered, applied special programs of measures related to increasing liquidity of the economy and households. They “injected” a large amount of money through the so-called quantitative easing and “helicopter money” to start consumption, production, employment and economic growth.

**Acknowledgement:** *This paper is the result of research realized based on the Implementation and Financing of Scientific Research in 2020 (451-03-68/2020-14/200100 and the Agreement on the implementation and financing of Scientific Research Organizations (451-03-68/2020-14/ 200371).*

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## **PRIMENA NEKONVENCIONALNIH INSTRUMENATA MONETARNE POLITIKE U UBLAŽAVANJU EKONOMSKIH POSLEDICA PANDEMIJE IZAZVANE VIRUSOM COVID 19**

*Nekonvencionalni instrumenti monetarne politike koriste se u uslovima kada je monetarna politika iscrpela sve uobičajne mere i instrumente koje inače primenjuje centralna banka u redovnom procesu vođenja monetarne politike. Najčešći primenjivan instrument su, svakako, kvantitativne olakšice ili kvantitativna popuštanja.*

*Cilj rada je da ukaže na primenu tih nekonvencionalnih instrumenata monetarne politike za vreme ekonomske krize izazvane pandemijom virusa Covid 19 u najznačajnijim bankama sveta. Nakon teorijskog pregleda pojma kvantitativne olakšice, u radu su prikazana empirijska iskustva Banke Japana, FED-a, ECB i drugih centralnih banaka. Na osnovu analize primenjenih mera i podataka o upotrebi kvantitativnih olakšica u izabranim centralnim bankama, može se zaključiti da su one pribegavale upotrebi ovog instrumenata u periodima kriza. Poseban akcenat u radu je dat na upotrebu QE u krizi izazvanoj pandemijom Covid 19. Ova analiza može biti od koristi nosiocima monetarne vlasti u Srbiji radi analize primenjenih instrumenata u vodećim centralnim bankama sveta i njihovoj primeni u centralnoj banci Republike Srbije.*

*Ključne reči: monetarna politika, centralna banka, kvantitativne olakšice (QE), novac iz helikoptera*

## **ADOPTION OF VOLUNTARY GLOBAL GOVERNANCE INITIATIVES: EQUATOR PRINCIPLES AND BANKS IN NIGERIA**

*UDC 336.71 (669)*

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**Abstract.** *Due to the growing level of dissatisfaction with the traditional models of governance established by the state, international governance initiatives have attracted more attention. This exploratory study is aimed at finding out the level of awareness and adoption of one such initiative, the Equator Principles (EPs), by banks in Nigeria. These principles were said to represent a good standard where environmental and social risks inherent in development projects can be identified, assessed and managed. The study was anchored on two theories: The club theory and the theory of institutional isomorphism. The survey data were gathered from 124 managers of the leading 10 deposit money banks in Nigeria. Data were analyzed using descriptive statistics presented in frequency tables and percentages. The findings show a high level of awareness of the EPs among the banks in Nigeria, but a low level of adoption. Although the study is limited by a small sample, it offers evidence that difficulties in measurability of benefits of adopting Equator Principles and lack of enforcements of sanctions for noncompliance seriously limit the number of financial institutions adopting the regime in Nigeria.*

**Key words:** *Globalization, governance, equator principles, club theory, institutional isomorphism*

**JEL Classification:** M21, M14

### INTRODUCTION

The great importance attached to issues of governance in organizations is shown in the high number of studies conducted in the area (Al-ahdala, Alsamhi, Tabash & Farhand,

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Received April 16, 2020 / Revised June 27, 2020 / Accepted July 06, 2020

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2020; Ibitamuno, Onuchuku & Nteegah, 2018; Akintoye & Iyaniwura, 2017; Aboutorabifard, 2016; Michelberger, 2016; Claessens & Yurtoglu, 2013). In fact, disparate findings have emerged on the true effects of corporate governance on organizations. For instance, a review by Michelberger (2016) shows that firms that adopt principles of corporate governance enjoy better performance. As reported by Akintoye and Iyaniwura (2017), the Nigerian Security and Exchange Commission's (SEC) first code of corporate governance was launched in 2003 in the belief that companies practicing good governance have the potentials of attracting foreign investments. It is also shown that organizations adopting good governance experience higher firm valuations and support of all stakeholders (Claessens & Yurtoglu, 2013), as they are able to fulfill their responsibilities to clients and society (Ene & Alem, 2016).

In contrast, the findings in Ibitamuno, Onuchuku and Nteegah (2018) show that none of the corporate governance variables significantly affect banks' performance. Similarly, Sayari and Marcum (2018) find a negative relationship between ethic policy and performance. Also, negative relationships were found in Falah (2017), where returns on assets and returns on equity were dependent variables, and in Afolabi, Awoyemi, Atsuwa and Kehinde (2017) where after tax profit and board composition were variables of study.

Ethical issues and corporate practices in banks have generated much interest among various stakeholders because of their role of financial intermediation (Ibitamuno, Onuchuku & Nteegah, 2018). This role differentiates banks from other commercial firms (Fidanoski, Mateska & Simeonovski, 2013). The global financial crisis of 2007-2008 is a clear reminder of the critical role played by the banking system in promoting good corporate practices in other sectors with which it interacts (Nakpodia, 2018). The removal in 2009 of some top executives of banks in Nigeria by the regulatory authority was linked to the issue of corporate practices in the banking industry (Okoro, 2015). In the agency theory, there is said to be a link between corporate governance and organizational performance (Meckling, 1976).

Many argue that satisfactory corporate governance involves some forces external to the organization (Williams, 2016). Traditionally, it is the duty of the state to regulate corporate ethical conduct. However, events of the recent past that plunged the whole world into financial crisis reveal that state regulations alone are not enough (Weber & Feltnate, 2016). The failure of some big firms around the world has triggered the calls for new ways of entrenching good governance in organizations, prominent of which is Sarbanes-Oxley Act 2002. It was reported that members of the US Congress, in a bid to provide solutions to such governance challenges, put together that law hurriedly (Veasey, (2003).

Aside from the state regulations on business in a country, there are codes of conduct that are industry-based to self-regulate, as well as international regulations designed to deal with matters of global nature (Abbott & Snidal, 2009). There is also the need to assure the investors of transparency in transactions and the safety of their investments (Garuba & Donwa, 2011). In addition, some environmentalists have put the blame for destructive environmental impacts of infrastructure projects at the doorstep of some multilateral development banks (MDBs) that provided finance for such projects. To mitigate this negative image, some big financial institutions have come up with many voluntary programs that will address environmental issues (Principles for Responsible Investment, 2012). One such program is the Equator Principles (EPs) put together to standardize issues of environmental sustainability in the case of large-scale infrastructure projects (Meyerstein, 2016).

These principles are to serve as a reassurance to the public that adverse environmental and social impacts resulting from developmental projects would be addressed (Wright,

2008). Emergence of EPs has triggered more actions on how the issues of environmental and social risks can be mitigated (Abbott, & Snidal, 2009). However, as laudable as it is, EPs program has only 97 members from 37 nations, including two from Nigeria. This current study is aimed at determining the level of awareness of EPs among commercial banks in Nigeria. Another objective is to examine the theoretical and empirical evidence as to why most banks are yet to adopt the regime in Nigeria. This paper is structured as follows: After this introduction, we have Section 1 which is the Theories and Concepts; Section 2 Methodology of Research; Section 3 Results and Discussion; and Section 4 Conclusions.

## 1. THEORIES AND CONCEPTS

### 1.1. Club Theory

One of the theories that underlie a motive of an entity to adopt a group's behavior is the club theory, which provides economic reasons for an organization's involvement in voluntary programs (Prakash & Potoski, 2007). A club refers to a group whose membership is voluntary and whose members agree to participate in a program, share the costs involved and consequently enjoy the benefits derivable from participating as members (Sandler & Tschirhart, 1997). Club theory explains that individuals will be involved in the activities of a group based on the benefits they anticipate. According to Prokopovych (2010), ISO 14000 certification, a standard for handling environmental issues, is an illustration that voluntary programs are examples of club goods. The anticipation of enjoying voluntary program benefits, especially those involving good reputation, may motivate an organization to participate in the activity that will be of benefit to the public, such as environmental sustainability (Prakash & Potoski, 2012). Club theory does not set the rules of engagement in managing environmental risks; however, it specifies what an organization can do and what it can gain by belonging to a voluntary program. Prakash and Potoski (2006) explain that organizations, while enjoying a good reputation from belonging to a club, would also make some sacrifices by way of compliance that enabled them to produce public goods.

Club theory, thus, provides an insight into what motivations are there for organizations to join any voluntary program (Prokopovych, 2010), in that top executives must be able to assess what their firms stand to gain from involving in such programs (Rivera, 2002). It is argued however, that the strictness of principles and serious enforcements of rules will determine the efficacy of a voluntary club initiative. Generally, it is more difficult to produce both tangible and attractive incentives in many voluntary programs. In contrast with the state laws where there is capability of state agencies to coerce firms to obey, execution of a voluntary initiative's principles is not readily observable. It is this inability of the public to verify what the voluntary initiatives claim to be doing that makes some raise doubts on the integrity and accountability of non-governmental private initiatives (Prakash & Potoski, 2012). The EPs regime, as it currently is, seems to lack the power to coerce members to implement the principles and the authority to follow up compliance (Aboutorabifard, 2016), hence its low attractiveness to many institutions.

### 1.2. Theory of Institutional Isomorphism

The theory of isomorphism explains why an organization will join a non-compulsory program where benefits obtainable from such a move are not readily available (DiMaggio

& Powell, 1983). The theory proposes that since organizations in the same environment face similar issues, one can handle its problems by adopting systems used by others in that environment (Johnston, 2013). In coercive isomorphism, a firm responds to pressure from other firms to conform to certain rules of conduct in an environment. This is especially true if it relies on those other firms in some ways in carrying out its activities (Roszkowska-Menkes & Aluchna, 2017). Also, it may respond to that pressure if it anticipates benefits by way of good public image and legal recognition. Coercive isomorphism holds when an organization embraces an institutionalized regime under the power of coercion by the larger community or when persuaded by other organizations (Cormier & Magnan, 2017). Isomorphism of coercive type can be used to explain the motive for joining such voluntary initiatives as the EPs by banks (Morimoto, 2012) in order to mitigate the reputational risk without incurring needless expenses.

In mimetic isomorphism, an organization tries to imitate other organizations in the same environment, especially when it is relatively young and inexperienced and would need to learn from others recognized as market leaders (Seyfried, Ansmann & Pohlenz, 2019). By extension, organizations in the less developed nations try to mimic what other organizations in the developed world do. For instance, a bank in a developing country may try to adopt EPs in imitation of bigger banks in advanced countries to gain international recognition. Normative isomorphism, the third dimension, results from the pressure exercised by a professional body on members to act in a manner expected of professionals in a particular field. It is assumed that individuals belonging to a certain profession, through participation in the professional activities, will develop certain pattern of conduct characteristic of that profession. Such individuals may influence their organization's overall behavioral patterns towards what is considered acceptable in a particular profession (Dimaggio & Powell, 1983). For instance, a bank may decide to join a voluntary program like EPs, as is expected of professional bankers, so as to improve its ratings on environmental sustainability (Deegan & Blomquist, 2006).

### **1.3. Corporate Governance**

There have been calls by stakeholders for strict implementation of good management principles and imposition of punishment for the erring managers (Onuoha, Ogbuji, Ameh & Oregwu, 2013). One tenet of corporate governance is to spell out the ways various interested parties in an organization should relate to one another (OECD, 2015). Corporate governance specifies what privileges are given to various parties, what duties they have, what processes to follow in making decisions, and outlines the manners in which organizational strategies are set and the means of reaching key organizational goals. Many organizations benefit immensely by fashioning their codes of governance after some precepts embedded in the OECD documents. (Jesover & Kirkpatrick, 2005). The term "gubernare", from Latin, translated "governance", carries the idea of providing guidance to an organization (Hamanyanga, 2002). This implies that corporate governance primarily relates to the act of directing, in conformity with the specified rules of conduct by those entrusted to do so (Hamanyanga, 2002). Thus, managers in a corporation would need to understand how their act of managing is influenced by various sources of regulations (Michelberger, 2016).

The crises faced by the Nigerian banking sector over a decade ago were linked to the issue of governance (Paseda, 2012). The perceived failure of previous codes led to the formulation in 2018 of a comprehensive code of governance to take effect from 2019. The object of this code is to entrench tenets of good practices that will promote trust,

accountability and transparency in corporations (Financial Reporting Council of Nigeria, 2019). One of the seven parts of the code is sustainability, which is concerned with safety and environmental issues. Research findings in governance have largely been inconsistent. For example, Lu and Li (2019) found out that corporate governance does not improve investors' shareholdings, and Tshipa, Brummer, Wolmarans and Toit (2018) found out that any effects of corporate governance will depend on the particular economic periods. Many findings suggest that simply adopting the OECD guidelines on governance may not yield the desired outcomes (Chen, Li & Shapiro, 2011). There have been cases where negative effects of corporate governance were recorded, necessitating the use of caution in adopting certain strategies of governance (Dedu & Chitan, 2013). For instance, corporate governance mechanisms have been found to influence bank risk negatively (Felício, Rodrigues, Grove & Greiner, 2018).

#### **1.4. Globalization of Governance**

Malets (2017) conceptualizes globalization, first, as a set of economic transformations, and second, as a set of governance projects. Some developing countries try to integrate their domestic financial system into global financial market so as to benefit from liberalization (Prasad, Rogoff, Wei & Kose, 2003). They see globalization of financial system as a means of improving governance in domestic market. Interest in the true effects of globalization is reflected in the number of studies (Ortega, Otero-Iglesias & Steinberg, 2018; Onwuka, & Eguavoen, 2018). Some view globalization as a method which mixes world economies, know-how and governance (Obadan, 2006), and as a combination of many features of the current trends (Snyder, 2002). It appears there is no universal definition of globalization as each professional views it from his own field. For example, Mousten (2008) traces the term to the 50s and 60s in the context of trade and commerce.

The growing interest in global governance is a reflection of disappointment with the state's regulations and some local private sector initiatives (Higgott, 2004). One such global governance program is the EPs packaged in 2003 as a set of benchmarks for banks in handling environmental problems while giving project loans (Weber, Acheta & Adeniyi, 2016). This program emerged as a response to agitation from some concerned environmental activists (Aboutorabifard, 2016) and transformed into an association consisting of 97 members as at the time of writing. Banks voluntarily join the program in order to give a proof of a paradigm shift in their approach towards environmental and social risks (Calderon, 2015). In adopting this program, the Equator Principles Financial Institutions (EPFIs) would request borrowers of funds to commission environmental impact assessments (EIAs), conduct consultations with project-affected communities, and develop an environmental action plan that identifies mitigation measures before giving facilities for projects (Wright, 2008).

Banks adopting EPs are likely to enjoy some measure of acceptability because they give consideration to such burning issues as ecologies and transparency (Wright, 2008). Based on Risse and Sikkink (1999) 'spiral model', the adoption of the EPs seems to be a tactical admittance of responsibility for negative outcomes of loan facilities by many banks, and as a way of adhering to the World Bank's guidelines on project financing. Signatories to the EPs agree to conform to the requirements specified in the principles when granting loan facilities for projects as specified in the preceding paragraph (Johnson, 2014). The EPs, as shown in Table 1, are ten in number, and indicate the necessary requirements EPFI's clients

must meet before project facilities are given, which include environmental assessment, stakeholder engagement and governance mechanism.

**Table 1** Equator Principles

S/No	Principles
Principle 1	<i>Review and Categorization</i> Categorization of project that requires finance facilities based on the risk classifications (A, B and C)
Principle 2	<i>Environmental and Social Assessment</i> The requirement that clients applying for finance facilities must conduct environmental and social assessment when projects fall under categories A and B before facilities can be granted by banks that are signatories to EPs.
Principle 3	<i>Applicable Environmental and Social Standards</i> Environmental assessment must take cognizance of the relevant laws and regulations of a particular country where a project is being financed with due regard to international conventions such as those of IFC and WHO
Principle 4	<i>Environmental and Social Management System and Equator Principle Action Plan</i> A client applying for project finance must also submit, in respect of Category A and B Projects, an Environmental and Social Management Plan to take care of any issues that may arise
Principle 5	<i>Stakeholder Engagement</i> Clients requiring finance must also show that they have in place a system where all stakeholders that might be affected are engaged continuously, in respect of projects in Category A and B so as to alleviate any negative effects the said projects might cause.
Principle 6	<i>Grievance Mechanism</i> Applicants for project finance must put in place a system where complaints and grievances on environmental and social issues from the affected stakeholders can be lodged and addressed
Principle 7	<i>Independent Review</i> There must be a system of review by an independent assessor to assess the level of compliance with issues relating to environmental standards
Principle 8	<i>Covenants</i> The applicant for project finance must pledge to abide by the process of assessment in the financing agreement and also submit regular reports as required
Principle 9	<i>Independent Monitoring and Reporting</i> For Categories A and B projects, an Independent Monitoring and Reporting professional must be kept by the one applying for project financing
Principle 10	<i>Reporting and Transparency</i> Banks providing project finance will provide annual report to the public on such transactions and their actual observations on their client performance

Source: Adapted from Johnson (2014)

In spite of the beauties of globalization, some research findings show that weaknesses in a country's finance sector might make adoption of global governance initiatives relatively difficult (Knight, 1998). Ortega et al. (2018) submit that the race for attaining a global status is gradually losing its luster in many countries due to its failure to achieve the goals of sustainability and improved quality of life, because while some countries benefit in terms of progress, others do not (Keat & Young, 2006). It then appears that no global initiative can subsist unless it takes cognizance of all the diverse features of the local environment. Because of this, Guillén (1999) has called on countries to put in place



codes of governance that will take into consideration their peculiar economic structure in relation to the world market.

Darnall (2008) specifies three important conditions for successful implementation of voluntary programs, namely, specific performance-based standards, regular reviews of members in such programs by independent examiners, and a system of rewarding those that actually complied after performance is authenticated. Borck (2008) argues that EPs, unlike conventional programs, suffer from non-availability and non-measurability of data, making it difficult to measure the benefits flowing from participation. Meyerstein (2011) concludes that in the absence of some form of coercion, members in voluntary programs will fail to attain a substantial level of implementation.

## 2. METHODOLOGY OF RESEARCH

The research design adopted is survey which has the advantage of providing insights into the characteristics of the study population. Data were obtained via a questionnaire, a preferred instrument so as to minimize bias (Kothari, 2004). Draft copies of the questionnaire were given to some experts in the field of governance and project financing to ascertain the level of reliability of the instrument. Their inputs were incorporated into the final instrument that was administered to the respondents. The letter accompanying the questionnaire explained that participation in the exercise was completely voluntary and free of monetary benefits. The study population consists of the 18,320 employees at senior level of all the commercial banks in Nigeria as at December 2018 (National Bureau of Statistics, 2019). These would be in a better position to know their organization's policies on governance and environmental sustainability. The largest ten commercial banks based on assets were selected from the 24 operating in the country (Banker, 2019). Each bank was administered the number of questionnaire copies proportionate to its assets. Using Yamane (1967) formula, the original sample size was 392 derived as follows:

$$n = \left( \frac{N}{(1 + N(e^2))} \right)$$

Where:  $n$  = sample size

$N$  = population

$e$  = error limit (0.05 on the basis of 95% confidence level)

Therefore,  $n = 18,320 / [1 + 18,320 (0.05)^2]$

$n = 18,320 / 1 + 18,320 (0.0025)$

$n = 392$ .

## 3. RESULTS AND DISCUSSION

Of the total number of questionnaire copies sent, 147 were retrieved out of which only 124 were found usable, and then processed for the study. Table 2. shows the respondents' characteristics. Most of the survey participants fell within the age brackets of 31-50 (66.13%) indicating their maturity to give meaningful answers to the research questions. Also, over 87% of them had a minimum qualification of not less than bachelor's degree,

suggesting they were capable of giving enlightened opinions on the issue of governance. In addition, more than half (54.03%) had spent not less than 5 years in their organizations, indicating that they would be familiar with their organization's policies on environmental and social risks.

**Table 2** Descriptive Statistics

Variable		Frequency	Percent
Gender (Sex)	Male	68	54.84%
	Female	56	45.16%
	Total	124	100.00%
Age (Years)	20 – 30 years	34	27.42%
	31 – 40 years	45	36.29%
	41 – 50 years	37	29.84%
	Over 50 years	8	6.45%
	Total	124	100.00%
Marital Status	Single	65	52.42%
	Married	59	47.58%
	Total	124	100.00%
Educational Status	G.C.E./S.S.C.	Nil	0.00%
	NCE/OND	7	5.65%
	HND	9	7.26%
	Bachelor's Degree	76	61.29%
	Master's Degree	32	25.80%
	Others	Nil	0.00%
	Total	124	100.00%
Years of Service	Less than 5 years	57	45.97%
	5-10 years	54	43.55%
	Over 10 years	13	10.48%
	Total	124	100.00%

*Source:* Field Survey, 2019

The first research question is intended to find out the level of awareness of Equator Principles (EPs) among financial institutions in Nigeria. From Table 3, eighty-nine (71%) of the 124 respondents agree that they have some knowledge of EPs, while 17 (13%) admitted that they have gone on some training where EPs were discussed. This shows that while there is a relatively high level of awareness of EPs among the financial institutions in Nigeria, most of their staff have not been given formal training in the area. The second research question is aimed at finding out the level of adoption of the principles. Only three (2.41%) affirm that their organizations have adopted the EPs. The third research question relates to the challenges militating against the adoption of EPs by financial institutions in Nigeria. Seventy-two respondents (58%) choose lack of adequate knowledge of the principles; 69 (56%) point to the difficulties in implementation; 87 (70%) indicate a lack of enforcement of the principles; and 76 (61%) mention lack of tangible benefits derivable from the EPs adoption.

**Table 3** Analysis of Research Questions

S/N	Research Questions	Results
1	level of awareness of Equator Principles among the financial institutions in Nigeria	71% agreed that they have some knowledge of EPs 13% admitted that they have had training on EPs
2	Level of adoption of the Equator principles	2.41% agreed their companies have adopted the EPs
3	Challenges militating against the adoption of EPs	58%: lack of adequate knowledge of EPs 56%: difficulties in implementation of EPs 70%: lack of enforcement 61%: lack of tangible benefits

*Source:* Field Survey, 2019

These results are in consonance with some recent findings, especially those of Schleifer, Fiorini and Auld (2019), where the general hypothesis that involvement in voluntary programs will lead to increased accountability and openness was not statistically supported. Instead, the results show that voluntary governance initiatives that have direct participation by the agencies of the state record higher level of success, because public actors' participation in a program's decision making may have some elements of enforcement of rules.

### CONCLUSIONS

Our analysis shows a high level of awareness of the EPs among commercial banks in Nigeria. The low level of adoption shown in the results is consistent with the information on the homepage of EPs listing only two (2) financial institutions from Nigeria as members. A lack of quantifiable outcomes of EPs implementation militates against their adoption by most banks in Nigeria, as is the case in many other countries. This is in consonance with the findings in Wright (2008) that financial institutions that apply such practices and wish to enforce them on their customers could go out of business where potential borrowers do not see the commercial value in abiding by the principles, and where there are alternative sources of funding with no such conditions attached. Zhao (2016) thus proposes that developing countries need to fashion out their own codes of governance rather than adopt wholesale principles developed by institutions elsewhere, because governance transformations occur in response to structural economic transformations (Malets, 2017). Interestingly, Onwuka and Eguavoen (2018) observe that due to its cultural and economic peculiarities, Nigeria is yet to substantially gain financially from adopting international programs.

These conclusions, however, must be understood in the light of the observed limitations of the study. First, is the limited sample size which may affect the overall results in line with the law of large numbers. Second, is the use of self-reported data which may have some bearings on the general validity of the results of the findings (Myrtveit, Ariansen, Wilhelmsen, Krokstad, & Mykletu, 2013). Third, the data have not been subjected to rigorous tests of hypothesis, the results of which may slightly vary from that of the current study. However, this study contribution can be seen in that it has provided support and theoretical basis for a lack of adoption of equator principles in particular and voluntary initiatives in general by many financial institutions in Nigeria.

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## **PRIHVATANJE DOBROVOLJNIH GLOBALNIH UPRAVLJAČKIH INICIJATIVA: EKVATOR PRINCIPI I BANKE U NIGERIJU**

*Zbog rastućeg nivoa nezadovoljstva tradicionalnim modelima upravljanja koje određuje država, međunarodne upravljačke inicijative privlače sve više pažnje. Ovo istraživanje ima za cilj da otkrije nivo poznavanja i prihvatanja jedne takve inicijative, Ekvator principa (EP) od strane banaka u Nigeriji. Ovaj princip predstavlja dobar standard u okviru koga se ekološki i socijalni rizici inherentni u razvojnim projektima mogu identifikovati, proceniti i njima upravljati. Studija se zasniva na dve teorije: teoriji kluba i teoriji institucionalnog izomorfizma. Istraživački podaci su sakupljeni od 124 menadžera 10 vodećih depozitnih banaka u Nigeriji. Podaci su analizirani korišćenjem deskriptivne statistike prezentovane u tabelama frkventnosti i procentima. Rezultati pokazuju visok nivo poznavanja EP od strane banaka u Nigeriji, ali nizak nivo prihvatanja. Iako je studija ograničena malim uzorkom, nudi dokaze da teškoće u merljivosti benefita u prihvatanju Ekvator principa i nedostatak sprovođenja sankcija za neispunjavanje značajno ograničavaju broj finansijskih institucija koje prihvataju ovaj režim u Nigeriji.*

Ključne reči: *Globalizacija, uprava, Ekvator principa, teorija kluba, institucionalni izomorfizam*

## **POPULATION ATTITUDES TOWARDS COMMITTING FRAUD IN SERBIAN COMPANIES**

*UDC 334.7:343.72(497.11)*

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**Abstract.** *Fraud in companies, regardless of its scope and shape, creates some loss not only for the company, but very often for the wider community. Moreover, no company in the world is immune to fraud, be it small or large, in one country or another, at any level of economic and social development. Practical experience has shown that fraud, as well as damage it causes, is inevitable. For these reasons, preventing and detecting all forms of fraud in companies' operations is very important. To prevent fraud, companies need to understand what motivates people to manipulate and make financial loss. Theorists cite a number of factors that motivate fraud perpetrators to commit manipulation, but all agree that, to commit fraud, three things need to be matched: motivation, opportunity and rationalization. For this reason, the research subject in this paper is a detailed analysis of all the factors that motivate and create opportunities for people of Serbia to commit fraud in companies, as well as the most common excuses they use to justify their manipulations. We surveyed 306 respondents to analyze their motives for possible fraud, as well as their attitude on the number and forms of fraud in the business operations of Serbian companies.*

**Key words:** *motive, fraud, rationalization, opportunity, Republic of Serbia*

**JEL Classification:** M41, M49

## INTRODUCTION

Creating business conditions that prevent any form of fraud is a practice in the realm of utopia. Simply, no company is immune to fraud. It is possible to create an environment with satisfactory working conditions for employees and thus reduce the possibility of fraud, but fraud occurs even in such companies. The question is why fraud happens even in companies offering excellent working conditions, excellent salaries, and opportunities for promotion. The answer lies in the psychology of fraud perpetrators, so in order to prevent fraud successfully, one must look behind individuals' or groups' motives to manipulate. Research has shown that the desire to commit fraud always hides the motive to meet one's personal goal, the desire for extra money, or simply the need to prove oneself. That is why the objective of this paper is to investigate what motivates citizens of Serbia to commit fraud in companies.

### 1. FRAUDS IN COMPANIES

Fraud in companies and daily lives of people alike is nothing new. Ever since man realized that fraud can be a useful tool for achieving personal goals, fraud has become a reality. To understand fraud, one first needs a definition of fraud. Broadly speaking, fraud can be any crime using primarily deception for gain (Wells, 2004, p. 4). There is no precise legal definition of fraud. This term is used to describe acts such as deception, bribery, forgery, extortion, corruption, theft, plotting, embezzlement, misappropriation, giving false information, concealing material facts. Fraud is a deliberate deception done for the purpose of accomplishing a specific goal, or in order to harm other people (Stančić, Dimitrijević and Stančić, 2013, p. 1884). Fraud always hides a motive of an individual or several people. If the company is perpetrating fraud, then it is expected that the company itself will achieve some gain (rise in stock price, more favorable loans, attracting investors, etc.), as well as persons who enabled the company to achieve it (rise in remuneration, bonuses, shares, benefits, etc.) (Slović, 2016, p. 93). In order to understand the purpose and significance of fraud, it is first necessary to distinguish between fraud and error. Although the consequences are the same, i.e. disclosure of incorrect financial information, there is a significant difference between errors and fraud. Fraud, as opposed to error, is characterized by a conscious intention to accomplish some specific purpose and to manipulate. Fraud is typically characterized by several essential elements: misrepresentation of facts relevant to business decisions; individual's awareness that the information presented is false; person receiving information as reliable and relevant for business decision-making and the occurrence of damage as a consequence of all of the foregoing (Škarić-Jovanović, 2009, p. 25).

There are different criteria for classification of fraud, such as those related to perpetrators and victims (criminal acts of employees, criminal acts of management, investment fraud, seller fraud, customer fraud and other fraud), criteria under the criminal law, criteria related to accounting cycles (sales and billing cycles, purchase and payment cycle, payroll and staffing cycles, inventory and storage cycles, and capital acquisition cycles) and those arising from the manner of committing fraud (Petković, 2010, pp. 16-24). Nevertheless, fraud is most commonly classified into three groups: *corruption, asset misappropriation and financial statements fraud*. The results of a study by the Association of Certified Fraud Examiners (ACFE), conducted every two years for companies doing business in the US, indicate that the most common fraud type is asset misappropriation, and that the median loss in the case



of this type of fraud is the lowest. On the other hand, financial statements frauds are the rarest type of fraud, but are the most dominant in terms of the average value of individual damage. The above facts are presented in Table 1 and cover the previous three surveys during the period 2014-2018.

**Table 1** Classification, percent of cases and median loss

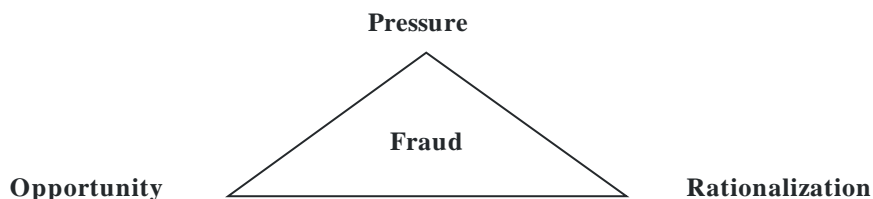
Type of fraud	Percent of cases			Median loss		
	2014.	2016.	2018.	2014.	2016.	2018.
Asset misappropriation	85.4%	83.5%	89%	130.000\$	125.000\$	114.000\$
Corruption	36,8%	35,4%	38%	200.000\$	200.000\$	250.000\$
Financial statements fraud	9,0%	9,6%	10%	1 mil.\$	975.000\$	800.000\$

Source: <https://www.acfe.com/report-to-the-nations/2018/default.aspx>

Financial statements fraud includes false balance sheets, income statements and cash-flow statements of companies (Dimitrijević, 2015, p. 137). They have existed since the emergence of financial reporting, because they bring certain short-term gain to managers or owners. ACFE defines false financial reporting as “the intentional, deliberate, misstatement or omission of material facts, or accounting data which is misleading and, when considered with all the information made available, would cause the reader to change or alter his or her judgment or decision” (Zabihollah, 2002, p. 2). The most common types of damage that financial statement fraud involves include: “manipulating, falsifying, or altering accounting records or supporting documents used in the preparation of financial statements; inaccurate (fraudulent) misrepresentation or intentional omission of significant items or transactions from financial statements and intentional misapplication of accounting rules” (Stefanović, 2000, p. 4). *Corruption* can be defined as an act of offering, promising, giving, directly or indirectly extorting, soliciting, accepting and receiving gifts and other benefits related to the performance of duties by persons employed in the private or public sector, when such action constitutes a violation of their obligations arising from their position for the purpose of obtaining illicit property gain for themselves or others (Petković, 2010, p. 124). *Asset misappropriation* is generally carried out to alienate company's resources for the personal needs of the perpetrators.

## 2. MOTIVES TO COMMIT FRAUD

The question is what motivates someone to choose the dishonest way to meet their goals. The motives for fraud depend on perpetrators' goals. An individual's motive for fraud is usually based on personal goals (bonuses, job retention, promotion, etc.) or company goals (concealing losses, avoiding bankruptcy, obtaining credit, and the like). Donald Cressey, a sociologist, in his 1950s study gives the best answer to the question of what motivates fraudsters. He surveys some 200 people convicted of fraud. One of the basic conclusions he draws is that each fraud is characterized by three common factors: *pressure* (sometimes defined as motivation), *rationalization* (personal ethics), and *opportunity* to commit fraud (Singleton, T. et al., 2010, p. 18). The result of this study is most commonly shown by the well-known “fraud triangle” in Figure 1.



**Fig. 1** Fraud triangle

Source: Coenen, T. (2008), *Essentials of Corporate Fraud*, John Wiley & Sons, New York, p.10.

**Pressure (motivation)** usually arises as a consequence of individuals' lifestyles. Fraudsters' life events create the need for extra money or make them prove themselves, which leads to fraud. Every fraud perpetrator faces some kind of pressure. Pressure can be divided into four groups:

1. **Financial pressure** – practice shows that for most frauds, the pressure on the perpetrator is of financial nature. These forms of pressure usually occur suddenly in the lives of fraud perpetrators and most often as a consequence of their lifestyle. The list of possible types of financial pressure is not short and many factors are correlated (individual greed, desire for a better living standard, personal debts, poor creditworthiness, etc.);
2. **Vices** – this form of pressure is the worst kind of pressure because it is a consequence of the fraud perpetrators' addiction to substance abuse, gambling, alcohol etc. This form of pressure is often associated with financial pressure. In other words, financial pressure is usually a consequence of this addiction. This form of pressure causes individuals to behave very irrationally and recklessly, so that fraud caused by vices is much easier to spot and detect (Dimitrijević, 2018, p. 8);
3. **Job pressure** – with this type of pressure, fraudsters face a situation where they feel they have been unfairly treated at work (others have got undeserved promotion, a person is underpaid for their work, and the like). In such situations, perpetrators cause financial loss to the company. Such forms of fraud are often difficult to detect, as they are very thoroughly designed and implemented;
4. **Other forms of pressure** – In some circumstances, fraud can also be triggered by other forms of pressure, such as the challenge or desire to defeat internal control systems or to show one's hacking skills in mastering computer technologies by breaking through legal entities', government agencies' and banks' security systems (Petković, 2010, pp. 26-27).

The company management is most responsible for creating fraud **opportunities**. In other words, an environment without an adequate control system, where workers and their work and commitment are not sufficiently appreciated, creates exceptional opportunities for manipulation. Perpetrators of long-planned frauds are always waiting for the right moment to realize this opportunity, so it is difficult to detect and prove such fraud. The most important factor that creates opportunities is the lack of or poor implementation of *internal controls*. Practice has shown that having an effective internal control system is one of the most important steps a business can take in preventing and detecting fraud. From an audit standpoint, internal control consists of "policies and procedures that management establishes to ensure that specific client objectives are fulfilled" (Andrić et al., 2004, p. 226). The mere existence of an internal control system is not a guarantee that fraud will not occur. If this

system is not properly implemented, there is always a certain risk that fraud will occur, especially if management does not attach sufficient importance to internal control.

Every fraud perpetrator has *rationalization* for his or her actions. These justifications can be very different, depending on what motives lay behind the perpetrator's fraud and manipulation. A number of studies indicate that as many as 85% of perpetrators have not previously committed a crime, so most of them have different justifications. Some of them justify themselves with a bad financial situation, some with pressure at work, but most do not see any bad intentions in committing fraud because they did not hurt anyone or wanted to return money. Others, however, believe they deserve a raise or a better job, so they simply take matters into their own hands to achieve more equitable relationship. Perpetrators cite several common justifications (Coenen, 2008, p. 10):

- “The company owes me money;
- I’m just borrowing money – I’ll pay it back;
- No one will be hurt;
- I deserve more;
- It was done in good faith;
- We will arrange the papers as soon as we get out of financial difficulties, and
- Something must be sacrificed – either my honesty or my reputation.”

Significantly changed circumstances in financial operations, internal control system reporting and changes in behavior and character of people in new circumstances brought the need for changes or modifications to the “fraud triangle” model, as well as for new models. The base model modifications range within three elements (a triangle), with changes initiated by different approaches and placing emphasis primarily on the act of fraud itself. This modification is based on the view that it is not sufficient to show conditions and circumstances in which fraud takes place, but that the model must also show actions that the perpetrator must take to commit fraud. This is the basis of the Fraud Element Triangle model. Theoretical research has shown that moving in a triangle is no longer sufficient to explain fraud, nor to act to prevent fraud. New standpoints result in the conception and proposals of new models. The diamond model introduces a fourth element, the ability to commit fraud. Conditions to commit fraud (fraud triangle) are not enough, as there is also the perpetrator's ability to commit fraud. This element is in some ways considered a crucial element because without the ability to commit fraud, despite the existence of three elements of the base model, the fraud may not be likely to be committed. This model also has certain modifications in theoretical proposals. Further enhancement of “geometric” models leads to a pentagon fraud model, which highlights the fifth element. In addition to the three elements of the base model, this model contains two more elements. With this model, the conditions under which fraud is committed are complemented by the characteristics of the fraud perpetrators. These are competence or the power of knowledge to commit fraud by an employee and arrogance or lack of conscience. A step further with respect to the base model and the diamond model highlights an individual's character. However, this model has also been modified so that external regulatory influence emerges as the fifth element. This element makes a transition from purely personal characteristics to external influence that has nothing to do with an individual's characteristics (e.g. audit). In addition to “geometric” models, the theory also emphasizes models created by overcoming the base model (fraud triangle), which underline other fraud elements that are not necessarily the conditions under which fraud can be not committed, nor bear the personal stamp of the perpetrator's character. These are “the Fraud Scale Model, M.I.C.E. model and Disposition Based Fraud Model” (Vukadinović, 2018, pp. 7-8).

### 3. RESEARCH RESULTS

A survey on what motivates citizens of the Republic of Serbia to commit fraud includes 306 respondents. The targeted population was men and women aged 25 to 55 from the territory of the Republic of Serbia. The survey response rate was 51% (306 of 600). The time period of data collection was December 2019. The electronically-distributed survey includes 15 questions, of which the first 4 are questions defining respondents' gender, age, and employment. The next 7 questions deal with the "fraud triangle" elements – motives (pressure), opportunities and rationalization, i.e. the respondents' opinion on the most common forms of the above elements. The last 4 questions consider the respondents' opinion on the most common forms of fraud in the Republic of Serbia and the activities where they occur.

If one looks at the respondents' gender structure, it can be noticed that women (77.8%) are more dominant than men, who make up 22.2% of the total number of respondents. Also, considering the respondents' age, respondents aged 25-35 (67.8%) and respondents aged 35-45 (28.9%) dominate the sample. The results of these questions are shown in Table 2. On the other hand, regarding the respondents' employment status, the results show that the majority of respondents are employed (74.5%). Regarding the activities in which the respondents are employed, the structure is very heterogeneous – 30% work in manufacturing companies, 24.2% in public administration, 23.3% in the financial sector and 22.5% in trade. The results of these questions can be seen in Table 3.

**Table 2** Respondents' gender and age

Respondents' gender	Respondents' age
Women – 77.8%	25-35 – 67.8%
Men – 22.2 %	35-45 – 28.9%
	45-55 – 2.6%
	55 and more – 0.7%

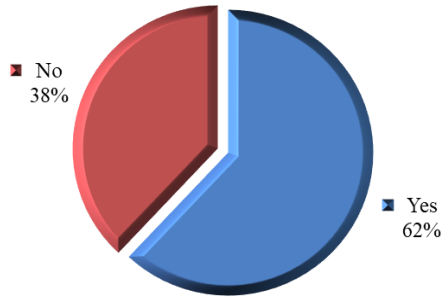
*Source:* author's calculation

**Table 3** Respondents' employment

Respondents' employment	Respondents' activities
Employed – 74.5%	Manufacturing companies - 30%
Student – 16.7%	Public administration – 24.2%
Unemployed – 8.8%	Financial sector – 23.3%
	Trade – 22.5%

*Source:* author's calculation

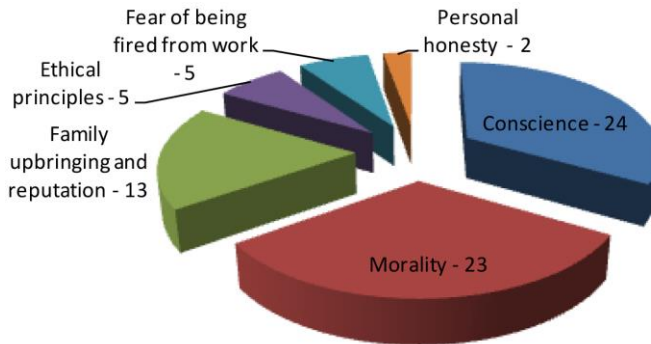
The results show that 62% of the respondents have never witnessed any form of fraud (corruption, money laundering, business fraud, tax evasion...). However, 38% of respondents include a very large number of people who have witnessed fraud and wanted to confirm it. It is also true that many people in Serbia do not want to say that they have witnessed crime in fear for their safety.



**Chart 1** Have you ever witnessed fraud?

*Source: author's calculation*

On the other hand, when asked if they would commit fraud if in a position to do so, 75.7% of respondents said no, while 24.3% said yes. When looking at the factors that would prevent respondents from committing possible fraud, the majority of respondents (of those who answered this question) state their conscience (24 respondents) and morality (23 respondents). Also, 13 respondents cite their family upbringing and reputation as the reason why they would not commit fraud; other reasons include ethical principles (5 respondents), fear of being fired from work (5 respondents) and personal honesty (2 respondents). The answers to this question are shown in Chart 2.

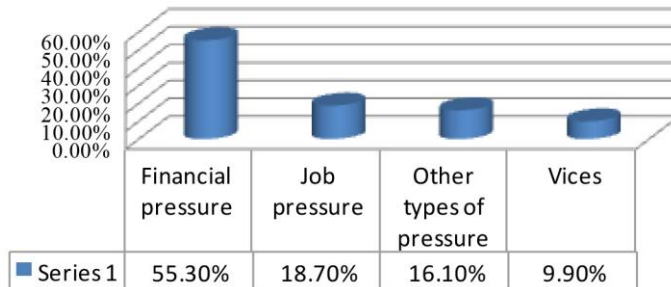


**Chart 2** Reasons not to commit fraud

*Source: author's calculation*

The following four questions concern the elements of the Donald Cressey's "fraud triangle" (pressure – motivation, opportunity and rationalization). When asked, "In your opinion, what would be the biggest pressure that would cause someone to commit fraud?", the majority of respondents point to financial pressure (51.8%). 29.4% of respondents opt for vice as a type of pressure, 8.6% for job pressure, and 10.2% for other types of pressure (desire to prove themselves, beat the control system). It is interesting that, regarding the next question (see Chart 3), "Which of the above forms of pressure would force you to commit fraud?" most respondents also cite financial pressure as the most common type of pressure that would make them commit fraud (55.3%), while with regard to other factors, job pressure is now in the second place (18.7%), while vices are

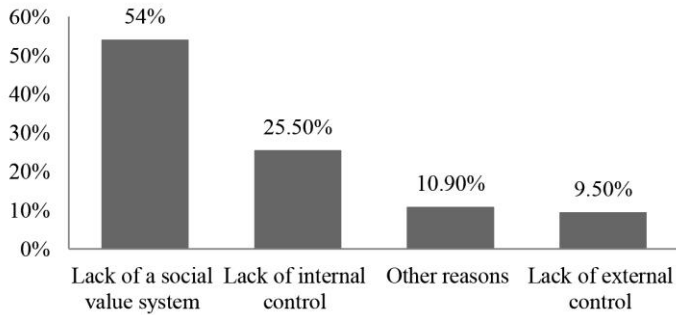
now in last place (9.9%). This is interesting because with the previous question regarding the biggest pressure that would cause someone to commit fraud vices are in the second place with almost 30%, and when they talk about themselves vices are in the last place.



**Chart 3** Pressure that would force you to commit fraud

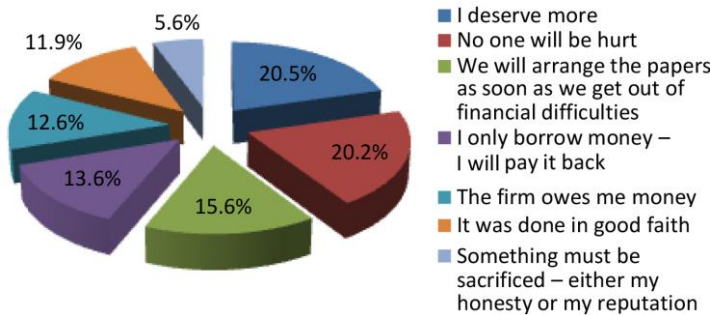
*Source:* author's calculation

The tenth question is about opportunities for business fraud. Survey results indicate that over 50 percent of respondents (54%) point to the lack of a social value system as the main reason for fraud. The lack of internal control is in the second place with 25.5% of the respondents' answers, other reasons in the third with 10.9%, and lack of external control in the last fourth place (9.6%). This is interesting because employees, students and the unemployed agree on the most important factor (lack of value system), while employees do not think that internal and external controls create opportunities for fraud. It is true that 25% of employees think that lack of internal control is a factor that enables business fraud, but only 11% see lack of external control as a cause of possible fraud. This may be interpreted differently. It can be concluded that employees believe that the current form of external control is sufficient, or that that it should not even exist in its current form. Much more important is the issue of internal control, since in the Republic of Serbia only public companies and financial institutions are required by law to have this type of control. Worldwide practice has shown that the presence of internal controls largely prevents and detects business fraud. Companies in the Republic of Serbia do not have this type of control, and those that have to enforce it by law do not attach much importance to it in the fraud prevention process. Internal control in companies operating in the Republic of Serbia is mostly used to analyze the implementation of internal acts and regulations, rather than to establish a system that will prevent possible manipulation and allow employees to report possible fraud. This is precisely the factor that companies need to work on in the future if they want to prevent and detect fraud on time. It should also be noted that it is not enough to just establish an internal control system in the company, but it is extremely important to successfully implement it in all parts of the company. The results of this question are shown in Chart 4.



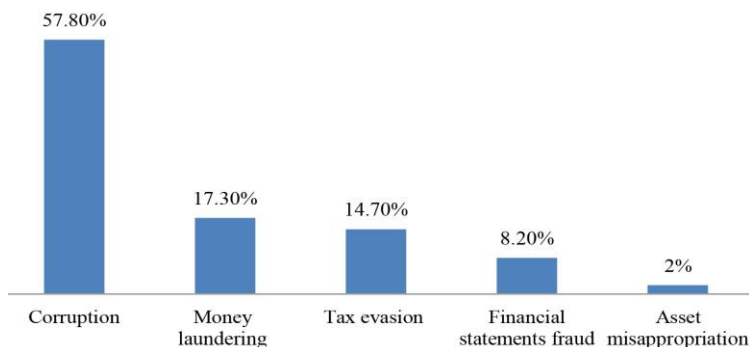
**Chart 4 Opportunities for fraud**  
 Source: author's calculation

In the previous questions, the respondents had quite similar answers and some answers had the majority when viewed in aggregate and when viewed individually by different criteria (men, women, employees, students, unemployed and the like). However, with the eleventh question that refers to the justification for fraud, the respondents' answers are very heterogeneous. When asked “Which of the following factors would fraud perpetrators most use to rationalize (justify) fraud?”, almost equal number of respondents said: “I deserve more” (20.5%) and “No one will be hurt” (20.2%). 15.6% of the respondents most often said “We will arrange the papers as soon as we get out of financial difficulties”, 13.6% said “I only borrow money – I will pay it back” as the most optimal justification for the perpetrator, while for other justifications the results are as follows: “The firm owes me money” (12.6%), “It was done in good faith” (11.9%) and “Something must be sacrificed – either my honesty or my reputation” (5.6%). These results can be interpreted as dividing respondents between the justifications that result from fulfilling the personal fraudsters goals (“I deserve more” and “The firm owes me money”), which together have over 30% of responses and justifications indicating that the perpetrators do not see any evil in what they did and believe they did not damage the company (over 60% of those surveyed gave these answers). The practice has shown similar results, i.e. most of those who have committed business fraud in companies around the world feel that they have not harmed anyone in their actions and that what they have done is the result of a need to fulfill their personal goals. The results of this question are given in Chart 5.



**Chart 5 Justifications for fraud**  
 Source: author's calculation

After considering the elements of the “fraud triangle”, the research has placed emphasis on the respondents’ opinion of the most common form of fraud in the Republic of Serbia and the activity in which fraud is most common. The twelfth question in the survey looks at the most common form of business fraud, and the results indicate that citizens label corruption as the most dominant form of manipulation in the Republic of Serbia (57.8%), followed by money laundering with 17.3%, tax evasion with 14.7%, while financial statements fraud, with 8.2%, and asset misappropriation (2%) are forms of fraud that citizens believe do not occur so often in companies. These results are a bit different from the research results conducted by the Association of Certified Fraud Examiners (ACFE) over the past ten years around the world, where asset misappropriation is the most common form of fraud, prior to corruption and false financial reporting. The results of this poll indicate that citizens of the Republic of Serbia believe that corruption is deeply rooted in the systemic values of society and that a wide range of public and private institutions must fight together in order to reduce this form of fraud to a great extent, if not eradicate it. Also, the survey results indicate that citizens do not consider financial statements fraud to be dominant, but it should be borne in mind that in practice this form of manipulation not only creates the greatest financial losses but is also the most difficult to detect and prevent. Because many citizens are unaware of the dangers of this type of fraud, it is necessary to educate citizens more about the harms of financial statements fraud to the wider community directly or indirectly. On the other hand, in answering the next question, the persons interviewed indicated the activity which, in their opinion, has the most frequent business frauds. The respondents believe that public administration is characterized by common manipulation with 69.8%, followed by the financial sector with 13.8%, trade enterprises with 10.5% and last but not least manufacturing companies with 5.9%. Since, in the opinion of the respondents, the most prevalent frauds occur in public administration, the next question addressed the public administration sector subject to fraud. The citizens believe that public companies are most sensitive to manipulation (45.9%). This is followed by healthcare with 25.9%, police with 18%, public administration with 6.6%, education with 3% and the military with 0.7%. This question did not emphasize the form of fraud, but since the respondents indicated in the previous question that they considered corruption to be the most dominant form of fraud, it is assumed that they also believed corruption to be present in these sectors of public administration. Chart 6 indicates the opinion on the structure of fraud dominance, while Table 4 indicates the activities and sectors of public administration in which fraud occurs.



**Chart 6** Most dominant forms of fraud

*Source:* author's calculation

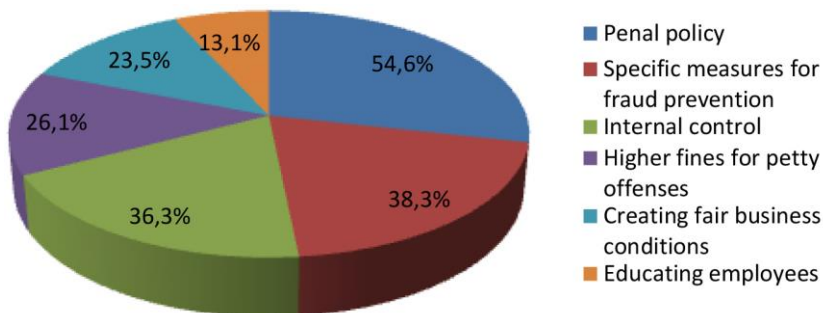


**Table 4** Activities and sectors of public administration where fraud is present

Activities	Sectors of public administration
<i>Public administration</i> – 69.8%	<i>Public companies</i> – 45.9%
Financial sector – 13.8%	Healthcare – 25.9%
Trade – 10.5%	Police – 18%
Manufacturing companies – 2%	Public administration – 6.6%
	Education – 3%
	Military – 0.7%

Source: author's calculation

The last question in the survey deals with techniques for preventing business fraud. Survey results indicate that respondents believe that penal policy (54.6%) is the most effective tool in this fight. On the other hand, specific measures for fraud prevention (video surveillance, constant surveillance, sudden controls, more detailed employee checking in employment, etc.) with 38.3% and internal control with 36.3% share the second and third place in importance for fraud prevention. A very similar number of respondents opted for measures of “higher fines for petty offenses” (26.1%) and “creating fair business conditions” (23.5%), while educating employees about the harmfulness of fraud and ethical principles of behavior is in the last place with only 13.1%. Such answers indicate the respondents’ opinion that introducing a stricter penal policy is the best way to prevent fraud and this can be linked to previous results, especially with the questions that considered the forms of fraud where citizens pointed to corruption as the most prevalent form of fraud. This all points to the general attitude that only criminal policy can stop this kind of corruption, or as respondents said, “hitting the wallet”. Therefore, it is considered that if you punish someone adequately, it also shows to other persons who are considering the possible fraud that they will not go well. What is a little worrying is that only 13.1% of citizens think that education on fraud and ethical behavior is a good tool for combating fraud. This is dangerous, because practice has shown that it is precisely through these trainings of company employees and familiarization with possible penalties that many frauds can be prevented. Chart 7 shows the structure of fraud prevention measures.

**Chart 7** Fraud prevention measures

Source: author's calculation

## CONCLUSION

Business fraud causes losses not only to companies where they arise, but directly or indirectly, such losses are transferred at some point to the wider community. Whether fraud is “petty” or creates millions of financial losses, it always has a detrimental effect on the economy. For these reasons, it is necessary to detect and prevent business fraud in a timely manner. For this process to be successful, one of the essential elements is to understand the motives that encourage fraud perpetrators. Understanding the motives for committing fraud requires knowledge of the psychology of individuals' behavior. For these reasons, Donald Cressey, a sociologist, conducted a survey in the 1950s by interviewing some 200 people who were convicted of fraud. One of the basic conclusions he draws is that each fraud is characterized by three common factors: *pressure* (sometimes defined as motivation), *rationalization* (personal ethics), and *opportunity* for fraud. Therefore, the main research objective in this paper was to understand the motives of the citizens of the Republic of Serbia that would encourage them to commit possible fraud in business. The survey was conducted by interviewing 306 respondents through surveys distributed electronically.

Survey results indicate that the majority of citizens have never witnessed business fraud (61.8% of those surveyed) or participated in any type of fraud (75.7%). On the other hand, more than 50% of those surveyed believe that financial pressure is the most common pressure factor that would encourage them to commit fraud (55.3%). The absence of a value system in society is the most important factor that creates opportunities for fraud (54%), while 25.5% of respondents consider lack of internal control as an important factor that creates opportunities for manipulation. The previous two results speak to the respondents' opinion about the two elements of the “fraud triangle” (pressure and opportunity), while regarding the third element (rationalization) the citizens believe that two justifications (“I deserve more” and “No one will be hurt”) are most used to mitigate the negative elements of fraud. When it comes to the forms of fraud most prevalent in the Republic of Serbia, citizens believe that corruption is by far the most prevalent (57.8% of those polled), and its highest level occurs in public administration (69.8% of respondents). Considering the activities of public administration, the respondents identified public enterprises (45.9%) and healthcare (25.9%) as the areas where corruption is most prevalent. Lastly, the results of the survey indicate that the establishment of an adequate penal policy is the best means of preventing fraud, in the opinion of as many as 54.6% of respondents.

All these results indicate that although the majority of respondents has never taken part directly in any type of fraud, they are still aware that fraud exists (primarily corruption). Respondents believe that public administration, mostly public companies, are most sensitive to manipulation and that close cooperation between state and private control institutions is needed in order to systematically solve the problem of fraud in Serbian companies. This is especially evident in answers on opportunities for fraud where the absence of a value system in society is potentiated as one of the biggest problems that allows manipulation.

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## STAVOVI STANOVNIŠTVA O OSTVARIVANJU PREVARA U KOMPANIJAMA U REPUBLICI SRBIJI

*Prevare u poslovanju kompanija, bez obzira na njihovu veličini i oblik, stvaraju neki oblik gubitka ne samo za kompaniju već vrlo često i u široj društvenoj zajednici. Takođe, na prevare nisu imune ni najmanje ni najveće kompanije na svetu, u bilo kojoj zemlji, na svim nivoima privrednog i društvenog razvoja kompanije. Iskustva iz prakse su pokazale da prevare, kao i šteta koju izazivaju, su neminovnost. Iz tih razloga veoma je bitan proces sprečavanja i otkrivanja svih oblika prevara u poslovanju kompanija. Kako bi kompanije mogle sprečiti prevare, potrebno je da se razume šta to motiviše ljude da ostvare manipulaciju i načine finansijski gubitak. Mnogi teoretičari navode veliki broj faktora koji mogu da motivišu počinioce prevara na ostvarenje manipulacije, ali se svi slažu da za ostvarenje prevare potrebno je da se poklope tri stvari: motivacija, mogućnosti i opravdanje. Iz tih razloga predmet istraživanja u ovom radu je detaljna analiza svih faktora koji motivišu i stvaraju mogućnosti građanima Republike Srbije da ostvare prevare u poslovanju kompanija, kao i najčešće izgovori koje bi građani koristili kako bi opravdali svoje manipulacije. Anketirano je 306 građana sa ciljem da se analiziraju njihovi motivi za moguće ostvarivanje prevara, kao i njihov stav o brojnosti i oblicima prevara u poslovanju kompanija u Republici Srbiji.*

Ključne reči: *motiv, prevara, opravdanje, mogućnost, Republika Srbija*



## **SOCIAL AND ECONOMIC INCLUSION OF DISABLED INDIVIDUALS. A LITERATURE REVIEW**

*UDC 364-056.26*

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**Abstract.** *Considering the vulnerable groups' economic, social and political life, the main aim of this research is to review the connection between the disabled individuals' social and economic inclusion and the economic development. Different from other papers, I have pointed out the background dissimilarities of disabled people among EU member states. The methodological research consists in employing a review of existing literature into this field, in order to draw up an integrative and substantiated approach of the disabled people. The main results of the paper bring a comprehensive contribution for the continuous struggle to improve the life standards of disabled individuals. Thus, this paper represents the foremost foundation for further research, for deepening the macro-econometric endeavor, in order to support the disabled individuals' social and economic inclusion, by reshaping the existing strategies and policies.*

**Key words:** *social and economic inclusion, disabled people, sustainable economic development, literature review.*

**JEL Classification:** A14, E71, P46

### 1. INTRODUCTION

Social inclusion is commonly deployed interchangeably with notions concerning social integration, cohesion and participation, as opposite to social exclusion. The social exclusion represents a contested notion, which encloses a great variety of phenomena and actions regarding poverty and deprivation, but it refers to marginalized and impoverished places and individuals. Economic inclusion implies the creation of sources of employment or favorable conditions for them, the provision of basic health and nutrition conditions, decent and

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Received January 18, 2020 / Revised March 16, 2020 / Accepted March 30, 2020

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safe housing, education and physical and legal security, among many other indicators that help the society as a whole to develop without social inequalities. The present article underlines the concepts of social and economic inclusion of disabled people, which interferes with their attempts to exercise their societal rights, based on the main results obtained by the researchers in the literature in these directions.

According to the European Union (EU) Strategy on disabled individuals for 2010-2020, around 80 million people in the EU, i.e. a share of sixth of its total residents suffer from some form of disability. These people are often prevented and discouraged to participate actively in social and economic life through barriers posed by their environment. The percentage of people suffering from disabilities is growing since the EU population is aging (Cristea and Mitrica, 2016). Although the developed and the evolving EU countries are primarily responsible for implementing measures beneficial to disabled people, the EU complements their efforts and creates the appropriate framework for continued progress in this area. The EU launched actions to benefit disabled people through which they analyzed applicable aspects of Member States (MS) policies. This attempt eases to clarify the needs of disabled people and EU legislation and policy enrichment. Therefore, the EU intends to guarantee that all disabled individuals can use all the rights that they have.

Research conducted in this area has also been the subject of Nobel Prize for Economics in 2019. The prize was jointly awarded to Abhijit Banerjee, Esther Duflo and Michael Kremer for their experimental approach to combating global poverty, according to the announcement by the Swedish Academy (Wearden, 2019). The purpose of the research was to make sure that the fight against poverty is based on scientific evidence. Their work has shown how to tackle poverty, questioning specific situations in areas such as education and health care, which makes problems easier to solve.

Amid such importance assigned to disabled individuals, the aim of this research paper is to review the relation between economic and social inclusion of the disabled and the manner in which it is reflected on the EU MS. The essential idea is that living with some form of disability requires social protection. As the degree of disability persists in society, there is a more acute need to understand its consequences for many aspects of social and economic inclusion. Throughout this paper the author is providing a thorough analysis of the transition to an acceptance of these human categories and consequences related to different features of social and economic inclusion.

As a scientific method of research for accomplishment of this material, the author has used the observation, by investigating the theories, concepts, models, and opinions, previously stated in the literature in the field.

After the introduction part, the present paper is structured in three parts: a literature review section, discussions and conclusions. The essence of the paper is concentrated in the second part, which includes debates on the concept of disability, the limits/barriers of social and economic inclusion of disabled individuals, the relation between disabled people and labor market, and the impact of disabled individuals' social inclusion on sustainable economic development.

## 2. LITERATURE REVIEW

### 2.1. The concept of disability

Thomas (1999) defines disability as a set of measures that limit disabled people and their accomplishments. It concerns both the prevention of the good performance of disabled people's daily activities, and their ranking as inferior from the standpoint of their intellectual abilities, but also of their ability to express their feelings and to respond to them. Thomas's definition emphasises the effects of the negative experience of disabled people on socio-human wellbeing. Most disabled people face difficulties in everyday life, being hired and private life fulfilment. This approach does not resemble the social model interpretation which claims that disabilities alone do not represent an obstacle in the performance of everyday activities, which do not prevent individuals from living and working comfortably and with dignity. Crow (1996) reinforces the ideas of this model, claiming that it is essential in strengthening the self-confidence of people with disabilities and that disability is just an issue of perception, all people being, thus, able to do remarkable things. In Shakespeare and Watson's (2002) vision, depreciations have a negative impact on activities and constitute barriers to services we consider to be normal.

Reeve (2004) claims that the psychological aspects of disabled people's personal experience strengthen the barriers which prevent them from participating actively in communities. They can have neither an independent life, nor control over the decisions they make regarding the way they live. It leads to discrimination of the person concerned by the society, and implicitly, to the reduction of their freedom of expression and action. Johnston (1997) notices that the social model helps in finding solutions for improving the lives of disadvantaged people, by encouraging them to take control and exert their actions, tasks, and participation in life situations. He considers that rehabilitation therapists give the individual the opportunity to become emotionally stable, avoid prolonged isolation, overcome the stages of traumatic experience negation and become a socially and relationally active person. Therapies themselves boost the level of confidence and assurance that there is a chance of having a normal life concurrent with a form of disability, helping them amplify their motivations and rhythm of change.

The perspective based on rights provides a model which focuses on disabled people's integration in a society which would perpetuate equal human rights, without judging or condemning those who are not even given the chance to have a decent life. Miles (1999) believes that social inclusion and support of disabled people represents the basis for equal rights for everyone. Observing and defending human fundamental rights, it is mandatory to involve people with disabilities in the activities of regular people and to encourage them to develop similarly to those who are capable. It implies more than a mere encouragement.

### 2.2. Limits/barriers of the economic and social inclusion of disabled individuals

The social and economic inclusion of disabled people represents a real preoccupation regarding disability worldwide (Barnes, 1998). The World Bank (2003) considers that institutional unification and granting of benefits in order to facilitate various people's access to a normal life, full of opportunities and equal rights to participate to all aspects of life, is the right definition of social inclusion. This definition promotes equality and removes discrimination based on disability, eliminating the differential treatment vulnerable people receive from institutions that do not offer them the same opportunities as those of

other people. Hence, there results the inequality between the vulnerable and especially the disabled and the people with the labor power results (Barnes, 1991). Disabled people wish, in their turn, for things the rest of the world benefits from normally, they want to participate to the process of normalisation. Social inclusion targets disabled people's accessibility to the public environment. Accessibility is actually the first condition in reaching a real inclusion of these people, in order to stimulate an independent life. It brings great benefit to the community for people with disabilities to be exposed as much as possible to the public and have access to development within the society, even if to a small extent, but each step is a plus towards social integration and people must be aware of the existence of such people.

Life tries us all and with difficult times. Yet, in the case of disabled people, these barriers affect them the most. There are still multiple obstacles that can make disabled people's performance extremely difficult and even impossible: prejudice, attitude, communication, transportation, education, discrimination and so on (Oliver, 1996). Sometimes, several of them happen simultaneously. Elimination of these barriers is very important in the reduction of extensive and complex problems. One should neither avoid or run from disabled people, nor reject them. They live in the society as being different, abnormal, inferior, marginalised, not by choice, but by the others' perception and attitude which needs to change.

Society, culture and circumstances draw certain risk factors of social vulnerability, which provoke, especially in the case of poverty, an obvious situation of social exclusion by a person and even by their entire community. Researches targeting the situation of people with disabilities in the context of poverty are influenced by these circumstances. Even financial institutions impose them. Handicap International (2006) highlighted the fact that mechanisms of exclusion in financial institutions are reflected in the percentage of disabled clients that is lower than 0,5%, considering that most countries have a percentage of 10% of disabled people. Bank service suppliers consider that disabled people cannot align to the measures of protection against the risk of default they impose and do not grant them the quality of good credit. Moreover, these policies are inclined to exclude the most needy members of society and disabled people own a significant share, these categories of vulnerable people being considered to be problematic. Disabled people's inclusion in the process of education is limited (Jonsson and Wiman, 2001). For disabled people, the barriers of the approach to teaching and participation allow us to satisfy the necessities of students who are vulnerable to the exclusion processes from the educational system. Barriers in the cultures of learning and participation affect disabled children's life and even that of the entire society.

### **2.3. Associating disabled individuals with the labor market**

Disabled people face exclusion from work and from a productive life, which represents a factor of discrimination, but it also represents a significant cost to the countries. Among the barriers of entry into the labour market, there are: educational gap between disabled people and the able-bodied population, psychological barriers which are reflected in the negative attitudes towards this group and difficulties disabled people have in accessing the available data effectively and in participating in a selection process. In order to overcome these barriers, it is mandatory to provide disabled individuals' access to professional training programmes, which help them to integrate economically. (Coleridge, 2006). Depending on the job opportunities and economic branches developed



in the area they live in, vulnerable people must participate in proper mechanisms in order to satisfy the local need of labour force. They can, thus, participate in professional training courses which develop their technical, economic and digital competences, by acquiring basic information on reasonable accommodation in the area of employment. The percentage of disabled workers varies greatly from one job to another, being under-represented in certain jobs and over-represented in others. Considering their inferior level of training and qualification, disabled people are disposed disproportionately as regards their access to labour market via jobs where the best paid competences are not evaluated, such as those related to abilities of informing, knowledge and communication, besides the fact that there are jobs which do not usually require previous experience. In its turn, the frequency of underemployment, to which disabled people are forced, leads them to small wages and lower security and stability.

In order to enter labour market, it is mandatory to have self-respect, self-esteem and competences “and the skill discrepancy in connection with the modifying complexity of the skills required by employers and effects of 2008 economic crisis” (Cristea and Noja, 2018, p. 720, referred to in “The New Skills Agenda for Europe Strategy”). Many disabled people do not get a job because of their lack of confidence, as they may believe that their situation would not allow them to make progress in different fields of their lives. Then, if they themselves hardly appreciate their abilities, they will never search for a job, losing, thus, the capacity to make the others see their abilities.

Most disabled people do not get a job, as companies must have a support programme or social responsibility. There must be changes in order to instruct the staff who recruits employees, the manager, the executive, so that we promote awareness of disabilities. Here arise the perceptions, attitudes and assessment by colleagues in their work group, which can negatively influence disabled people’s expectations, perceived ability and performance, all these causing, in their turn, real effects on their self-perception and judgement about themselves, negatively affecting the level of self-efficacy, emotional adjustment and their performance. They must understand that disabled people can work in the best possible way even if they have a different physical aspect or face difficulties in using transportation means. In the event in which disabled individuals are hired by a company, they may face a working environment which is not adapted to their needs or employees end up believing that such people are not productive enough for their companies and not take in consideration the latter’s promotion or hierarchic growth (Arthur and Zarb, 1995). Most entrepreneurs, who are not familiar with the conditions or have no knowledge of how to cope with them, reject disabled people. Many countries worldwide have now set as their main aim to offer disabled people opportunities to enter labour market. Political regulatory and strategic frames with a positive impact include measures of active integration in the formal sector.

There is still the case in which society members deal with the situation when they are confronted with extremely profound and complex deficiencies and, thus, cannot cope with the interactions and requests imposed by the economic activity, thus, never being able to get hired. From Abberley’s (1999) viewpoint, development policies and strategies that support the employment of people with disabilities, may still risk to marginalise those who might never be hired. It goes without saying that disabled people are often unsuitable or unemployed, as compared to able-bodied people, and employment rates in most countries continue to be disproportionate from the general population (Barnes, 1999). He also underlined the fact that positive attitude and lack of constraints on

disabled people must not depend on their success in the economic activity, the personal plan remaining distinct from the professional one. These problems must be discussed by specialists who provide support and assistance, hence the necessity of the idea according to which disability can influence the ability to be integrated into social life and that it should not have severe repercussions, which require a significant degree of support and assistance.

There are people who have a form of disability from birth and people who acquire it at a certain point in their life. Even though people display a disability in both cases, they face situations differently, because there are different stages of life which affect the rest of their lives. Although it has enough consequences for life, a disability which is acquired at a certain point in life, at an older age, gives that person the possibility to accumulate aptitudes, seniority and experience in the professional life up to that age (Powers, 2008). It is completely normal for an individual, after having suffered an accident or a disease, which put them in a wheelchair, to feel incapable of living on their own and consider that they should constantly depend on another person on a daily basis, and, thus, it is essential to analyse this experience individually, not homogeneously. Local factors may support these situations in order to modify the conditions of development and socialisation totally.

Enfield and Harris (2003) consider that the difficulties which prevent one from professional development are of three types. Those with the greatest impacts are related to the physical environment, followed by those imposed by institutions and those related to attitudes and each person's degree of improvement. These barriers must lead people to different types of rehabilitation in order to become less dependent on their family members, such as their spouses, children or parents. These barriers are normal and expected, however, they are neither clear, nor in any specific order. People differ in the way in which they overcome these inconveniences. Some do better than others, some may skip a stage or overcome them in a different order. As regards the physical environment, barriers are structural obstacles in natural or man-made environments, which obstruct mobility or access (Braithwaite et al, 2008). Proper transportation, elements of technology and means of providing information are essential to disabled people's social and economic integration. Helaakoski and Merilainen (2001) distinguish the obstacles between the entrance in man-made environments and accessibility to this environment without another person's help. They argue that the manner of construction in developing countries did not take into account the two aspects, and, thus, there are stairs and turns which impede access to buildings or sidewalks of people with disabilities. Arthur and Zarb (1995) also focus on the improvement of life quality by a simultaneous accomplishment of types of accessibility in order to facilitate employment.

With a view to facilitating unhindered access to a job, the Code of practice on handling disability at work (ILO, 2001) suggests the presence of the following: accessible means of providing information, adapted toilets, adapted laundries, individualised intervention measures, audio and video life-saving signals and first aid, signal lamps and buttons.

In the future, the insurance of *people's* physical accessibility to the socio-economic *infrastructure* must be covered since the initial stage of project. Berman-Bieler (2010) considers that adapting infrastructure to disabled people's needs is pricier than their suitable design in the initial stage.

Communication barriers are also barriers created by the environment, which affect employment and must be supported by a series of services in this respect. They affect all human senses, and information must be transposed in various communication means in order to satisfy all forms of disabilities (Miles, 1999).

Albert et al. (2004) underline the fact that proper technological support in the shape of equipments and services can be used in order to favour the functional capacities of disabled people in their independent life. They claim that there are relevant and important technological resources especially designed to allow disabled people's accessibility. Metts (2000) believes that disabled people can access technologies of communication and information, such as computers or tablets. These means do not have as their main aim to provide disabled people's accessibility, but they have gradually incorporated several elements, applications and innovations which favour inclusion, which is more accessible than the design of specialised technologies.

Institutional barriers are developed by administrative tools and capacities and work procedures of specialised institutions in the society (Enfield and Harris, 2003). Institutions do not exercise their social responsibility appropriately towards the *disabled people's needs, they are often not taken into consideration and face discrimination from authorities* (Barnes, 1991). Institutions which are especially relevant for economic empowerment include education institutions, professional training, and financial institutions, such as banks.

Arthur and Zarb (1995) describe the discriminatory processes at work, which can affect security at work, chances of promotion, but also prevention of entrance into the labour market. Macfadyen and Ncube (2006) also comment upon these discriminatory processes, noticing that, although a young disabled person succeeds in finding a job, they may be given lower wages or benefits.

### 3. DISCUSSIONS

Strategies of economic empowerment for development, as Coleridge (2006) notices, should take into account and be influenced by the local cultural and economic conditions.

A rapidly ageing global population and chronic health conditions favour a future rise of the number of disabled people. Thomas (2005) points out that the older people get, the more accentuated are the reasons of disability growth. Moreover, progress in the field of medicine can generate better survivor rates for disabled children, leading to a rise of the number of people who need daily assistance from others (World Health Organisation, 2001).

While the progress in the promotion and protection of disabled people's rights is of paramount importance for social inclusion, but also for the economic development, we must not overlook the fact that increasing number of disabled employees can benefit the economy of the entire society.

Powers (2008) highlights that the increase in the stage of disabled people's integration into the labour market raises both the quantitative level of supplied services and goods, and the services and goods demanded, contributing, thus, to the general welfare, in which there is an increase in the demand and supply in economy. This idea is considered to be an incertitude and it is supported by the statistics made by the World Bank in 2000, which claim that the global GDP to which other important economic variables are compared is diminished annually because of the disability, with values between 1,37 trillion USD and 1,94 trillion USD (Metts, 2000). Studies on this topic were conducted also by Buckup (2009). All EU states have switched to the recalculation of the historical values of the main macroeconomic indicators. Buckup presented a new methodology of calculating the main macroeconomic variables by using data on prevalence disability rates and the

employment rate in ten low- and middle-income countries. Buckup (2009) showed, thus, that the economic loss resulting from the exclusion of people who have a form of disability from work is between 3% and 7% from GDP. These studies emphasise the high costs of the lack of disabled people's participation in economy. It all happens because of the disabled people's attitude and the attitude towards disabled people, because they deal with several difficulties during the employment process. The focus must be on the group's general integration in the society as much as possible.

Disabilities are highly diverse. While some health problems related to disabilities result in poor health and major needs of healthcare, it does not happen to others. Some disabled people have a greater need of care, affecting also the life of close persons, family, obliging them to withdraw from their job in order to offer them the necessary support. (Braithwaite et al., 2008). Most vulnerable people cannot have an independent life, have no control over their everyday life. But there are also people who do not need any help or need others only for complex problems, such as money management, not for everyday life activities.

As such, the author considers that disabled people's economic integration and access to a job market are based on the fundamental human right which promotes reforms which guarantee an appropriate due process and ensure the right to equality and non-discrimination. Disabled people's rights provide a framework in order to meet the needs of survivors and provide full compliance with their human rights and observance of their dignity. Respecting them represents a tool in creating sustainable economic growth.

#### 4. CONCLUSIONS

The author can observe from literature the fact that disability is a complex phenomenon, reflecting an interaction between the properties of the human body and those of the society it lives in. Disability has been regarded in very different ways over the years. The society we live in now has made great steps towards the understanding of disability and its relation with the environment. Overcoming the old prejudices related to disability facilitates social interventions, broadens concepts about people with the greatest limitations and modifies the vision of the human being, harnessing difference and diversity. Moreover, it strengthens the idea that nobody lives in exclusion, as we are looking for equal opportunities regardless of age, gender, ideology, ability and interests. It is true that the society is increasingly informed about disability, but we must not forget that it is still a language which lacks respect and discriminates.

Results prove that disabled people have a much lower level of economic and social inclusion and imply the fact that socio-economic policies should focus on disabled people's heterogeneity, depending on the respective transitions in disability and their duration.

Local employers should participate in the development of competence development programmes, as required in the "matching" model of the winner of the Nobel Prize in Economics, Pissarides (2010, p. 397), respectively "a process whereby both workers and firms search for each other and jointly either accept or reject the match seemed to be closer to reality".

The author pointed out the importance of different approaches in the development of abilities and tied up that it is mandatory to pay attention to which abilities disabled people should have in order to increase their opportunity of being hired.

It is a loss for the society that millions of people in developing countries are not provided the means to fulfill their wishes or fully contribute to the societies they belong to. The potential of local communities, including disabled people's families, should not be underestimated. Research, via viable and sustainable solutions, will contribute visibly to the continuous fight to improve life conditions for all disabled people. Thus, the present research constitutes a valuable theoretical framework for further research regarding the empirical analysis of the relation between disabled people and economic and social welfare, distinctly analysed for developing and developed countries.

**Acknowledgement:** *This work was supported by the grant POCU380/6/13/123990, co-financed by the European Social Fund within the Sectorial Operational Program Human Capital 2014 – 2020.*

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## **SOCIJALNA I EKONOMSKA INKLUZIJA OSOBA SA INVALIDITETOM. PREGLED LITERATURE**

*Imajući u vidu ekonomski, društveni i politički život ranjivih grupa, glavni cilj ovog istraživanja je da se osvrne na vezu između socijalne i ekonomske inkluzije osoba sa invaliditetom i ekonomskog razvoja. Za razliku od drugih radova, autor je istakao različitosti osoba sa invaliditetom među različitim državama-članicama EU. Metodologija istraživanja se sastoji u prikazu postojeće literature iz ove oblasti, ne bi li se sastavio integrativni i potkrepljeni pristup problem osoba sa invaliditetom. Glavni rezultati rada donose sadržajni doprinos trajnoj borbi za poboljšanje životnog standarda osoba sa invaliditetom. Stoga, rad predstavlja pre svega osnovu za buduća istraživanja, za produbljivanje makro-ekonometrijskih napora, da bi se podržala socijalna i ekonomska inkluzija osoba sa invaliditetom, ponovnim promišljanjem postojećih strategija i politika.*

*Ključne reči: socijalna i ekonomska inkluzija, osobe sa invaliditetom, održivi ekonomski razvoj, pregled literature*

## **THE IMPORTANCE OF LEAN MANUFACTURING AND SIX SIGMA CONCEPT FOR QUALITY MANAGEMENT OF SUPPLY CHAIN BUSINESS PROCESSES**

*UDC 658.5.012.2*

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**Abstract.** *The aim of this paper is to evaluate the importance of lean and six sigma concepts and techniques on the basis of systematic knowledge gathered from relevant scientific sources, both for discovering supply chain processes where potential waste can occur and for improving the quality of those processes. The paper will first outline the key features and effects of applying lean and six sigma concepts in manufacturing and supply chains. The focus is on the frameworks and potentials of implementing the lean concept in the Republic of Serbia. Then, the possibilities of integrating these concepts into the lean six sigma concept are presented and its role in eliminating defects in business processes. The penultimate part of the paper outlines the key features of lean supply chain while the final part contains the mathematical frameworks for designing six sigma supply chains.*

**Key words:** *lean manufacturing, six sigma, lean supply chain, business process, delivery precision*

**JEL Classification:** L15, M11, M16

### INTRODUCTION

Fast and unpredictable changes in the business environment require companies to constantly struggle to gain and maintain a competitive edge. In order to gain and maintain their competitive advantage in such an environment, companies (suppliers, manufacturers, carriers and traders) tend to minimize inventory, shorten the order process, manufacturing and delivery time to end customers and reduce overall costs.

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Received December 18, 2019 / Revised April 11, 2020 / Accepted April 29, 2020

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Companies are increasingly seeking to improve business process performance by implementing lean and six sigma concepts. Their integration creates the lean six sigma concept (LSS), which is much more than a methodology for efficient project realization. By implementing the LSS concept, companies reduce or eliminate the weaknesses of both concepts – lean cannot bring a particular business process under statistical control while six sigma cannot significantly increase the speed of a business process or reduce capital investment.

The following parts of the paper first point out that, by implementing lean concept, companies can minimize or eliminate various types of waste such as unnecessary flows of materials and people, unnecessary waste of time and excess inventory. We pay special attention to the effects of applying lean principles and techniques in manufacturing. What follows is a brief outline of the lean concept business frameworks in the Republic of Serbia and then the role of the six sigma concept in identifying and eliminating errors in supply chain business processes. The fourth part of this paper deals with the specifics of integrating these concepts and using them to improve the quality of companies' production and transactional processes. The fifth part of the paper briefly discusses the characteristics of lean supply chains, while the final part of the paper is reserved for designing six sigma supply chains based on linear programming.

## 1. LEAN BUSINESS CONCEPT AND LEAN MANUFACTURING

Lean business concept is a management philosophy aimed at eliminating all kinds of business process defects in the company. With the help of various instruments and techniques applied, this concept can help ensure continuity of production, eliminate waste, increase the level of quality, but also optimize human resources, tools and productivity. However, for the lean concept to have the expected effects, all company employees must understand the essence of the concept and focus on its proper implementation. Employees should first be trained to recognize waste (defects, errors, waiting, excess inventory, etc.) that reduce the value of output, and then use adequate lean tools to eliminate waste.

The implementation of the lean concept is not only an issue for individuals but for the whole company. However, it is up to the company management to evaluate whether and under what conditions it will be implemented.

Looking at the development of the lean business concept, it can be noticed that in the initial stages of development this business model was related exclusively to the production process. The lean production philosophy comes from the Toyota Production System (TPS) described in the book "The Machine That Changed the World". At the operational level, with the help of certain lean techniques and tools, the aim was to eliminate waste, deliver the required value to customers, and achieve pre-set performance. The goal was to improve efficiency and reduce costs in the production process. With the evolution of the lean business concept, towards the end of the previous century, the management center was shifted from operational to strategic level. At this level, the goal was to understand the value that needed to be provided to customers in terms of quality, price, functionality and shorter delivery time (Novičević Čečević & Antić, 2016, p. 274).

Although initially the lean concept was applied only in production, later it began to be applied in health, state and local government, as well as in education. Many countries and cities around the world are implementing the lean concept today. Since 2012, China has



been implementing lean methods and techniques in healthcare, while Canada has long had a minister for lean. Despite the fact that almost all foreign companies operating in the Republic of Serbia work under “lean” management, it is still an enigma in the Republic of Serbia.

After developing production with lean elements, lean principles and techniques give full effect if all company employees are committed to their application. That is how a lean company comes into being, which is much more than lean production. Becoming aware of business performance improvement, company managers then strive to apply lean principles and techniques outside the company, thus creating a lean supply chain.

Lean manufacturing is a comprehensive business system that strives to accelerate all processes. Lean manufacturing involves applying the following key lean concept principles:

- Recognize waste – recognize all non-value-added processes,
- Standardize processes – define precise and detailed procedures that reduce variability,
- Create a “value stream” – eliminate non-value-added activities, reduce defects, interruptions, eliminate waste, etc.,
- Perform only the necessary processes and only when necessary,
- Detect errors in their initial phase, and
- Strive for perfection by constantly eliminating waste (Moeller, 2009, p. 313).

Lean manufacturing includes the concept of “nine zeros”, which implies the complete elimination of: 1) partner dissatisfaction, 2) mismatch, 3) bureaucracy, 4) dissatisfied stakeholders, 5) delayed information, 6) waste, 7) non-value-added work, 8) errors, and 9) missed chances (Charron et al., 2015, pp. 107-108). Lean production tends to low-level work-in-progress flow, without stopping the production process and without storage (Cooper & Slagmulder, 1999, pp. 23-33). Lean production has the character of a revolutionary process. It strives for continuous improvement of the process and work area to ensure that work is done effectively.

## 2. THE LEAN CONCEPT IN THE REPUBLIC OF SERBIA WITH AN OVERVIEW OF THE HEALTHCARE SECTOR

The awareness of Serbian managers of the importance of lean concept, both in companies and in state administration and local self-governments, is growing, but it has not yet reached the level of developed countries. People leading companies, institutions and self-governments still do not understand the business mission of the lean concept. One of the reasons for this situation in the Republic of Serbia is that managers are not familiar enough with assumptions and principles underlying the concept. In addition, the volume of work and fear of the unknown prevent managers from embarking on promoting lean principles and trying to reduce waste and improve business process performance without major investment. Managers are de facto not aware enough that implementing lean techniques and tools leads to the shortest possible lead time in service delivery while eliminating waste. A key consequence of this is the lack of economic benefits (increasing productivity, eliminating duplicate operations, increasing profits) generated by lean techniques and tools.

Fortunately, those responsible for a growing number of companies, health care, public administration and local governments in the Republic of Serbia realize that to implement the lean concept in practice on a broader scale, it is necessary to initiate lean transformation

and create lean culture, based on the principle of “do more with less”. Although with unequal speed and success, the scope of this concept is expanding.

The lean concept is based on a continuous drive to meet customer needs while reducing unnecessary spending and wastage. In the spirit of continuous improvement of the process, this concept is oriented towards finding errors and their causes, which creates a positive effect on performance, in the form of higher quality, lower costs, as well as shorter production (delivery) time of the product. The lean concept not only contributes to greater process efficiency through optimization of internal processes, but also creates a positive effect on business efficiency by advocating the implementation of the necessary activities only, when needed, in a specific amount, with reduced resource consumption (Todorović, 2013, p. 10). Improving effectiveness (doing the right thing) and efficiency (doing it the right way) increases customer satisfaction and improves employee self-esteem.

Through lean transformation, business processes in companies, government, local governments and healthcare become simpler and more efficient. With this transformation, the logic of “we have always done it that way” gives way to the logic of “we can do more with less”.

With a higher level of employee training on lean logic and strategy, companies as well as institutions and governments can significantly improve the performance of their business processes.

Successful examples of lean transformation in the world, especially in entrepreneurship, the public sector and health, are not a panacea, but models of process improvement that can be of benefit to managers in the Republic of Serbia. The lean concept is not only reserved for production, but for every job and process. Whether the Republic of Serbia will become a world-class community – a place where people want to live and work and companies to invest and locate their resources, without defects and at a reasonable price – depends largely on whether lean business transformation will become possible, an environmentally sustainable and long-term profitable endeavour.

The increasing importance of the service sector over the last few decades has brought the lean concept to the service sector as well. Managers of various institutions, organizations and companies are becoming increasingly aware that the lean concept is strategically oriented to achieve the shortest lead time of service delivery while eliminating different types of waste.

Healthcare institutions around the world have recognized the importance of applying the lean concept in the process of providing healthcare services and have begun to apply some of its tools and techniques. The lean concept is also being applied in healthcare institutions in the Republic of Serbia. According to the research results (Stoiljković, 2013), most foreign companies operating in the Republic of Serbia apply some of the six sigma tools and techniques, i.e. the lean concept. However, despite the seminars held on this topic, the interest of managers of domestic companies has almost never been at the level of interest of managers of foreign companies operating in the Republic of Serbia.

The Clinical Center in Niš has implemented two lean projects. The first project used lean tools, such as 5S and standardization of work, to reduce wastage in business processes (errors, redundant work, waiting, underutilized human potential, transportation, supplies, unnecessary movement and unnecessary processing) identified by teams in charge of the process improvement. During the course of the project, team members went through various types of lean techniques training, including training on the JIT lean concept technique. In the implementation of the second lean project, the aim was to achieve goals such as shortening

the process time, increasing the quality of health services, reducing errors, freeing up space and reducing inventory level.

Results of implemented lean projects indicate that losses and overload in the business process were successfully recognized in the health system of the Clinical Center in Niš. With the help of some lean tools, it took months to reduce them. Since correcting and eliminating defects at the time when they have already occurred can be a costly, time-consuming and complicated process, attention should be paid to detecting errors in their initial stages of development, as an essential principle of the lean concept.

The project managers were able to adequately use the standardization of work, as one of the lean tools, which was not easy at all. The application of this tool in the case of provision of healthcare services could be a challenge for managers, given the heterogeneity of certain patient requirements. However, the staff of the Clinical Center in Niš were persistent, using this lean tool mainly for recurring activities.

We believe that the implementation of the mentioned projects depended significantly on the experience of the experts, but also on the positive attitude of the employees towards the changes, as well as on their willingness to accept such changes in order to increase the quality of healthcare services. Among the many factors on which the success of the lean concept depends, great importance is attached to the impact that employees have, as the carriers of the current or future process.

In addition, the developed information technology has made it possible to apply lean tools in different areas of healthcare at the Clinical Center. With digitalization, some processes have become more efficient, with the greater ability to track them. Such business conditions have enabled better data analysis as well as more accurate and secure diagnostics.

So, in order to improve business, organizations in the Republic of Serbia should consider modifying the business culture and finding ways to eliminate unnecessary spending and non-value-added activities. Unfortunately, managers and employees are still having a difficult and slow time changing their mindset. Therefore, any change requires educated managers and employees who understand that their new business culture will enable them to make more profit. Employees must have leaders who themselves understand the need for change and show an interest in the new business concept. But, mostly because of established work habits, employees can resist the very mention of change.

In order to improve overall business performance, domestic companies should apply the lean concept on a larger scale. Due to the growing economic internationalization of the Republic of Serbia and the inflow of foreign capital from parent foreign companies, one can expect positive changes in the field of applying the lean concept.

### 3. SIX SIGMA CONCEPT AND ITS RELEVANCE TO BUSINESS PROCESS PERFORMANCE

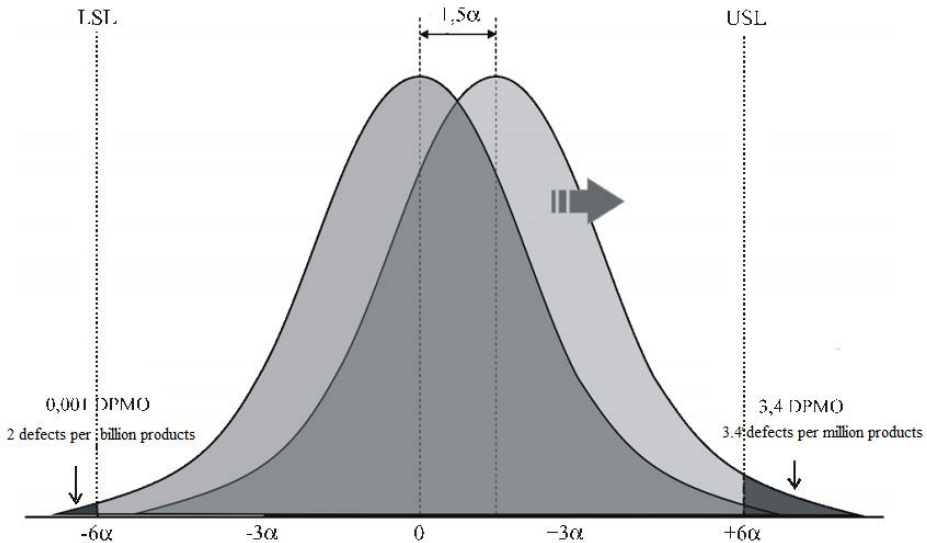
The six sigma revolution started in Motorola in the 1980s. As a concept of process-oriented quality management, six sigma has attracted the attention of scientists and practitioners, as it is based on a comprehensive analysis of a network of business processes aimed at creating and delivering value to consumers.

Six sigma is a business management strategy used by companies to help improve process quality by identifying and eliminating the causes of deficiencies, while striving to keep variations in the manufacturing process to a minimum (Wedgwood, 2006). According to Mustapha & Muda (2012, p. 693), by implementing the six sigma concept, an organization can

significantly improve the execution of its business process by monitoring day-to-day business activities so that losses and resources are reduced while increasing the level of customer satisfaction.

Theorists suggest that implementing this concept requires the use of statistics to determine average values of process performance, that is, average differences in performance and quality of results (O'Rourke, 2005, p. 14). Six sigma is based on the assumption that process performance data can be represented by a normal distribution curve. Based on the established deviations of the actual process indicators from the normal distribution curve, it is possible to evaluate the quality of the process.

Today,  $1.5\sigma$  is considered to be the "standard" for the worst case of shifting the mean of the process. The  $1.5\sigma$  is the result of the natural process instability. If the shift of the process mean around the expected value is  $1.5\sigma$ , the number of values that go beyond the limits increases to 3.4 per million possibilities (3.4 DPMO). The range between the Upper Specification Limit (USL) and the Lower Specification Limit (LSL) represents the specification range (Figure 1).



**Fig. 1** Process mean shift

Source: ŠEST SIGMA ([http://www.tfzr.uns.ac.rs/Content/files/0/KONCEPT\\_SIX\\_SIGMA.pdf](http://www.tfzr.uns.ac.rs/Content/files/0/KONCEPT_SIX_SIGMA.pdf))

Figure 1 shows that if the statistical set is subject to normal distribution, the area under the curve bounded by  $\pm 6\sigma$  comprises 99.999998% of that set. This means that two values per billion values go beyond the aforementioned limits.

Organizations should implement the six sigma concept according to DMAIC (Define, Measure, Analyze, Improve, Control) methodology and quantified financial goals. The implementation of the six sigma concept according to the DMAIC methodology takes place through five stages. The first stage is defining the problem to be solved. The aim of this phase is to bring the business process performance to a predefined level, i.e. within the allowed

deviation level. In the second phase, appropriate measuring tools are used, with the aim of determining the limits of the deviation. During this phase, a process map is created and relevant data collected. The process maps are first produced at a high level and then continually refined as quantitative data is constantly collected. At this stage, graphical analyses of deviations, such as time series graphs, Pareto diagrams, etc., are made, displaying data in chronological order and process change over time. The preceding procedure sets the stage for the third stage, i.e. development of analytical tools to identify the cause of deviations. In the fourth phase, deviations are eliminated with the help of key factors identified in the analysis. In the last phase, the results from the previous stages are controlled and monitored in order to improve and prevent the recurrence of the errors observed (O'Rourke, 2005, pp. 15-16). The DMAIC relies on a PDCA cycle, with the basic difference that it refers to the project life cycle (exclusive project orientation), whereas the PDCA, as a tool, is used specifically in the management phase.

The implementation of the six sigma concept contributes to improving the performance of the enterprise, focusing on process changes through constant work to reduce errors and defects. As an instrument that transforms the way business is done and places emphasis on control and quality, six sigma enables businesses to gain significant competitive advantage. "Some analyses indicate that the application of this concept allows for business results to be improved by up to 20%, quality improvement by 12-18% and cost reduction by 10-30%" (Todorović, 2013, p. 70).

Authors examining the relationship between the six sigma concept and its effects on performance generally agree that six sigma has positive effects on the organization's performance (Ertürk et al., 2016). The results of the empirical research of these authors show that companies using six sigma methodology achieve better operational, but also financial performance that exceeds funds invested in the new business concept. Thanks to the DMAIC methodology, companies have been able to achieve greater efficiency and productivity, reduce operating costs, which has ultimately led to greater customer satisfaction.

According to Hammer (2002), six sigma uses a methodology based on solving a specific problem identified in the company. In this context, it is necessary to engage employees and professionals with adequate knowledge and skills to apply the techniques and tools. One of the significances of this concept is precisely the orientation towards organizational and personnel structure, which clearly defines knowledge and skills that are necessary to overcome problems and improve the process (Todorović, 2013, p. 71).

Companies where the six sigma concept had a positive impact on business performance had a well-defined process as well as adequately applied information technology (Rajamanoharan & Collier, 2006). The analyzes of these authors also show that companies that had an adequate performance measurement system were able to eliminate defects, that is, to ensure the quality of the process.

On the other hand, there are companies that have failed to take advantage of the positive effects that six sigma provides. Some scientists believe that managers have not adequately understood the principles and risks of this concept, stating that this concept simply repackages the traditional quality management system (Dahlgard & Dahlgard-Park, 2006).

However, the emerging trend aimed at advancement is the integration of lean and six sigma concepts, which opens up new business improvement opportunities.

#### 4. INTEGRATION OF LEAN AND SIX SIGMA CONCEPTS – A PREREQUISITE FOR BUSINESS PROCESS IMPROVEMENT

Ways to improve business processes within the company have changed throughout history. Formerly, business process improvements were made solely with the help of machines that accelerated production, while today this process may involve the use of different statistical methods to analyze companies, business processes and individuals. In addition to reducing costs and increasing quality, successful business improvement also requires a change in company culture, which should motivate employees to constantly work to improve business processes and business policies. Such change requires the support of structural methods and continuous improvement programs (O'Rourke, 2005, p. 1).

LSS is primarily a company philosophy that focuses on constantly improving its performance through systematic waste elimination as well as reducing process variation. LSS combines lean manufacturing/lean company principles and six sigma to eliminate eight types of waste (Muda). The six sigma concept is more about the process quality, and the lean concept is about the speed of its implementation. The integration of these concepts into the LSS concept provides the basis for improving production and transaction processes in the company, without considering that they are based on different methodologies and principles for achieving improvement.

The implementation of the LSS concept involves the planned and phased implementation of effective tools and many other business concepts. The LSS concept provides a framework for changing the overall organizational culture (Knapp, 2015, pp. 855-863). However, there is no model for implementing the LSS concept to suit the needs and capabilities of each company.

By combining lean and six sigma concepts, a company can increase revenues, reduce costs, improve internal and external collaboration and, therefore, the process quality (Sunder, 2016, pp. 132-150). Many companies and organizations have embraced lean, six sigma, and LSS concepts as strategies for finding a balance between quality, cost and delivery time. The question of “which of these strategies to use first to improve the quality of the business process” is always present. The answer to this question depends on the nature of the problem and the goal pursued (Antony, 2014, pp. 257-264).

#### 5. LEAN SUPPLY CHAIN

In order to fully implement lean transformation and achieve a satisfactory competitive market position, managers should first apply lean principles and techniques in production and in all other company parts and then beyond. To achieve this, managers need to redefine company strategies and identify key processes performed. When lean principles and techniques are applied outside the company, a lean supply chain is formed, with suppliers, manufacturers, distributors, organizations that store goods and end customers. Lean supply chain strives to optimize the services provided while minimizing costs. It presupposes effective communication, transfer of information, synchronization of flows, elimination of waste and establishment of a long-term cooperation between its participants (Novićević Čečević, 2016, p. 74).

Key features of the lean supply chain are: “member integration; effective communication and exchange of information; effective demand management; focusing on the end customer; continuous improvements; low inventory and small number of suppliers; and continuous flow and long-term contracts between members” (Ugochukwu et al., 2012, p. 92). Significant

improvement in the management of such a supply chain is most evident in manufacturing. The production process can be improved to reduce waste, resources, and non-value-added activities, while maintaining operational performance at the same level. If managers do not implement adequate strategies to reduce these deficiencies, the opportunities for creating an efficient supply chain may drop (Milovanović et al., 2017, pp. 31-40).

Lean supply chain, especially the one that applies to multinational companies, requires lean logistics. Lean logistics is associated with certain challenges that multinational companies face. The greater the number of such companies in the supply chain, the greater the likelihood of disturbing flow synchronization. For example, international shipments require the inclusion of more different companies in the supply chain (e.g. suppliers, port organizations, freight forwarders, customs brokers, railways, air and ocean freight companies) than domestic shipments. Implementing lean logistics in such a large supply chain is not an easy task. This means that some of the companies involved work together and face each single delivery at the same time, resulting in waste and non-value-added activities.

## 6. IMPLEMENTATION OF THE SIX SIGMA CONCEPT IN THE SUPPLY CHAIN

The implementation of the six sigma concept in the supply chain takes four phases in order to test, analyze, improve and standardize improved business processes (Kilibarda, 2005). The first phase defines the entire supply chain from the supplier to the end customer, with particular reference to identifying the processes and activities that take place there. The next phase involves measuring and analyzing those processes. De facto, for each process, relative performance, defects, and opportunities for error are identified. The third phase is to identify activities that influence process improvement, using appropriate methodologies to identify and, if possible, eliminate those non-value-added activities. The final phase standardizes the realized quality improvements by individual processes (Maslarić & Cakić, 2006, p. 189). Motorola has won the Malcolm Baldrige National Quality Award based on the results of the six sigma concept implementation.

In modern business, just-in-time delivery of inventory within the supply chain is considered an important indicator of the quality of logistics services. A supply chain cannot be competitive on the market unless all its business processes are aligned. To achieve this, company managers should strive to minimize process variability within the supply chain (Garg et al., 2004).

Maslarić and Cakić outline one of the quality measurement concepts relating to respecting the delivery time of inventory to a particular participant in the supply chain. Given that the supply chain consists of multiple processes, the basic idea Maslarić and Cakić advocate is to find a way to supply inventory in a timely manner between participants at different stages of the supply chain (Maslarić & Cakić, 2006, p. 190).

In order to deliver inventory quickly and accurately to their customers in the supply chain, there is a need for a high degree of synchronization across business processes – from the supply of raw materials to the delivery of the finished product to the end customer. With the increase in the volume of resources and the number of operations and organizations in the supply chain, variability of supplies among its members increases. Managers need to improve the delivery of inventory within the supply chain and thus its competitiveness and profitability.

Garg et al. introduce a new concept of quality performance measurement – the “accuracy of logistics service delivery time”, called six sigma supply chains. Six sigma

describes and quantifies supply chains in terms of fast and accurate delivery and develops a new approach to design such networks. Their basic idea is to draw an analogy for the functioning of supply chains with complex assemblies (mechanical, electro-mechanical, etc.), where statistical tolerance has become widely used (Garg et al., 2004). De facto, these authors compare the functioning of the supply chain with complex assemblies, where statistical tolerance within mechanical tolerance has been widely used. The complex supply chain network resembles a complex electromechanical assembly. Each individual business process in a given supply chain is analogous to a single sub-assembly within a complete assembly. Minimizing obsolete inventory within the supply chain can be seen as minimizing defects in electromechanical assemblies (Garg et al., 2004).

Garg et al. have chosen to explore three current areas, namely: 1) reducing the variability of supply time between supply chain participants, 2) statistical tolerance, and 3) the six sigma concept (Garg et al., 2004).

To reduce the variability of supply chain business processes, it is first necessary to determine the  $C_p$  process capability indicators (precision index or process potential index),  $C_{pk}$  (capability index) and  $C_{pm}$  (machine potential capability) and define the relationships between them. On this basis, a new measure of delivery time performance is defined, which is called respect for delivery deadlines (precision), i.e. number of wrong deliveries (WD) in addition to the existing measure – probability of delivery accuracy (DA). Lastly, WD is included in the six sigma concept used in designing quality across supply chains. The six sigma supply chain is the supply chain in which the number of occurrences of wrong deliveries (WD) is not more than 3.4 per million possible cases (Maslarić & Cakić, 2006, p. 190).

Proper supply chain design is implemented to deliver supplies between each of its participants at a time interval that should largely coincide with the required delivery time of the inventory. Garg et al. respect the fact that the supply chain encompasses a large number of business processes between its individual participants. The number of business processes is denoted by  $n$ . Each of these processes takes place over a period of time – from the moment the participant orders a particular type of stock to the moment of delivery. With  $x_i$  they indicate the delivery time of inventory for a given process  $i$ , where each  $x_i$  represents a variable with mean  $\mu_i$  and standard deviation  $\sigma_i$  (Garg et al. 2004, p. 45). Given the above, the total delivery time of inventory between participants within the supply chain ( $Y$ ) can be represented by the following function:

$$Y = f(x_1, x_2, \dots, x_n) \quad (1)$$

Assuming that the cost of delivering inventory between participants in the supply chain is a function of the mean ( $\mu_i$ ) and standard deviation ( $\sigma_i$ ), the cost of delivering inventory between participants in the entire supply chain ( $Z$ ) can be represented by the following function:

$$Z = g(\mu_1, \sigma_1, \dots, \mu_n, \sigma_n) \quad (2)$$

Each participant in the supply chain, as the ordering party of a particular type of inventory at a particular stage of the process, defines the lower and upper limit of the time interval within which they are prepared to wait for the delivery of the required inventory.

With this in mind, supply chain design can be seen as a linear programming model that requires the minimum value of the following objective function to be determined:

$$\min Z = g(\mu_1, \sigma_1, \dots, \mu_n, \sigma_n) \quad (3)$$

subject to the following limitations:



**DP** for total delivery time  $\geq C^*pm$

**DA** for total delivery time  $\geq 6\sigma$

$$\mu_1 > 0$$

$$\sigma_1 > 0$$

$C^*pm$  requires a lower limit for a defined **DP** performance measure (Maslarić & Cakić, 2006, p. 191). The solution of the set linear programming model gives values for the parameters  $x_i$  of all business processes in the supply chain, which satisfy all the necessary limitations and conditions, i.e. ensure the quality of delivery time at the level of six sigma. This means that the goal of supply chain companies is to complete all processes so that all parameters of each process have the lowest precision index (potential)  $C_p = 2$ . In this case, less than 3.4 defects per million possible occur in the supply chain processes.

## CONCLUSION

With the help of an adequate logistical strategy, and in order to survive in the market, it is possible to fulfill all the increasingly specific consumer needs related to the delivery of the right product, at the right time and at the right price. When the company understands the demands of the market and has the access thereto, the logistics strategy created can be tailored to the needs of the supply chain as well as to the needs of end customers. Companies can improve the quality of their business processes by eliminating waste and non-value-added activities by adequately managing their supply chain, with a thorough analysis of each part of that chain.

Regardless of their independent evaluation, today lean and six sigma represent logistics disciplines and tools that can be used to identify waste, in terms of time, cost and supplies, as well as different types of process inefficiencies.

In the spirit of continuous improvement in order to minimize various forms of waste, the lean concept is focused on simplicity, speed, flexibility, transparency of business processes and their integration into a continuous flow. Since the supply chain includes a great number of business processes among its individual participants, the lean concept is one of the important factors for their integration and synchronization. Due to the relentless pursuit of continuous improvement, the lean is focused on identifying quality problems in the order fulfillment process through the supply chain, and the application thereof can indicate the place in the supply chain where quality defects occur.

Developed by expanding the lean concept with the use of advanced statistical tools, the six sigma concept has found its place not only within companies but also in their supply chains. The presented supply chain design model clearly shows that in order to achieve a satisfactory level of quality (compliance with deadlines) of delivery, it is necessary to bring the processes and activities of the supply chain as close as possible to the six sigma level. In today's business environment, achieving high quality can be realized through the use of new supply chain technology, thereby reducing variability, having greater business process synchronization, and therefore better performance within the supply chain.

With a sufficient level of interconnection and compatibility, by integrating the previous two concepts, the lean six sigma concept was created. By implementing this concept, companies and supply chains can improve business processes and maximize value for

consumers and owners. Given the exceptional application possibility, as well as through numerous synergy effects, lean and six sigma integration, it is possible to achieve satisfactory results when it comes to minimizing unnecessary wastage, and to achieve high quality in delivering value to participants within the supply chain.

With respect to the degree of depletion of the lean concept potential, the Republic of Serbia is still inferior to the developed countries. However, managers of a growing number of companies are successfully promoting lean principles and demonstrating how it is possible, without major investment, to apply lean techniques and tools to reduce waste and increase business process performance.

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## **ZNAČAJ LEAN PROIZVODNJE I SIX SIGMA KONCEPTA ZA UPRAVLJANJE KVALITETOM POSLOVNIH PROCESA LANCA SNABDEVANJA**

*Cilj rada je da se na bazi sistematizovanih saznanja, prikupljenih iz relevantnih naučnih izvora, oceni značaj lean i six sigma koncepta i tehnika, kako za otkrivanje procesa lanca snabdevanja u kojima se mogu javiti potencijalni gubici, tako i za unapređenje kvaliteta tih procesa. U radu će najpre biti predstavljene ključne karakteristike i efekti primene lean i six sigma konceptata u proizvodnji i lancima snabdevanja. Pažnja će biti posvećena okvirima i potencijalima implementiranja lean koncepta u Republici Srbiji. Zatim će biti prikazane mogućnosti integrisanja pomenutih konceptata u lean six sigma koncept i razmotrena njegova uloga u otklanjanju nedostataka u poslovnim procesima. U pretposlednjem delu rada biće prikazana ključna obeležja lean lanca snabdevanja, dok će poslednji deo sadržati matematičke okvire dizajniranja six sigma lanca snabdevanja.*

*Ključne reči: lean proizvodnja, six sigma, lean lanac snabdevanja, poslovni proces, preciznost isporuke*



CIP - Каталогизacija y publikaciji  
Narodna biblioteka Srbije, Beograd

33+007

**FACTA Universitatis.** Series, Economics and  
Organization / editor in chief Dejan Spasić. - Vol. 1,  
No 1 (1993)- . - Niš : University of Niš, 1993-  
(Niš : Unigraf-x-copy). - 24 cm

Tromesečno. - Tekst na engl. jeziku. - Drugo izdanje na  
drugom medijumu: Facta Universitatis. Series: Economics  
and Organization (Online) = ISSN 2406-050X  
ISSN 0354-4699 = Facta Universitatis. Series: Economics  
and Organization  
COBISS.SR-ID 87230727

# FACTA UNIVERSITATIS

Series  
**Economics and Organization**

Vol. 17, N° 3, 2020

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