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МЕЂУНАРОДНИ ЧАСОПИС
ЗА ЕКОНОМСКУ ТЕОРИЈУ И ПРАКСУ И ДРУШТВЕНА ПИТАЊА

ЕКОНОМИКА

Часопис излази четири пута годишње Година LXIX, VII-IX 2023, број 3

ИЗДАВАЧ: Друштво економиста "Економика" Ниш
СУИЗДАВАЧИ: Институт за економику пољопривреде - Београд, Економски факултет у Суботици, Друштво економиста Ниша, Факултет за примењени менаџмент економију и финансије МЕФ - Београд

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2. Часопис су покренули Друштво економиста Ниша и Друштво инжињера и техничара Ниша (остало као издавач до краја 1964. године). Удружење књиговођа постаје издавач почев од броја 6-7/1958. године. Економски факултет у Нишу на основу своје одлуке броја 04-2021 од 26.12.1991. године постао је суиздавач "Економике". Такође и Економски факултет у ПриШтини постао је суиздавач од 1992. године. Почев од 1992. године суиздавач "Економике" је и Друштво за маркетинг региона Ниш. Као суиздавач "Економике" фигурирали су у току 1990-1996. године и Фонд за научни рад општине Ниш, Завод за просторно и урбанистичко планирање Ниш и Корпорација Винер Брокер Ниш.

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Адреса:
"Економика" Друштво економиста
18000 Ниш, Максима Горког 5/36

Телефон Редакције: +381 (0)18 4245 763; 211 443
е-маил: zoki@medianis.net; ekonomika@sbb.rs WEB: http://www.ekonomika.org.rs
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Phone: +381 (0)18 4245 763; 211 443
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Živorad Gligorijević[1]
Faculty of Economics, University of Nis

Ivana Kostadinović[2]
Faculty of Economics, University of Nis

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INDUSTRY OF THE REPUBLIC OF SERBIA: STRUCTURAL ASPECT OF DEVELOPMENT PROCESSES
(Appendix for the economic history of the second half of the 20th century)

Abstract

Industry represents a very complex and heterogeneous area of material production, which consists of a large number of smaller, interconnected parts (complexes and branches) that make up its structure. The structure of the industry is extremely important, because the overall trends of growth and development, both of the industry itself and of the economy as a whole, depend on that structure. Bearing in mind that fact, the analysis of development processes and changes in the structure of the industry of the Republic of Serbia is a key research question on which this paper focuses. In this sense, in this work, based on relevant theoretical knowledge and reference statistical data, the development processes and structure of the industry of the Republic of Serbia are monitored and analyzed over a relatively long period of time (during the second half of the 20th century) in which large and specific changes took place. As a consequence of those changes, structural inconsistencies, which arose at the very beginning of accelerated development after the Second World War, were continuously present and represent the basic characteristic of development processes in the industry of the Republic of Serbia in the entire analyzed period.

Keywords: *Industry, industry structure, development processes, structural changes in industry, 20th century, Republic of Serbia*

JEL classification: ***L16, N00, O11.***

ИНДУСТРИЈА РЕПУБЛИКЕ СРБИЈЕ: СТРУКТУРНИ АСПЕКТ РАЗВОЈНИХ ПРОЦЕСА
(Прилог за привредну историју друге половине 20. века)

Апстракт

Индустрија представља веома сложену и хетерогену област материјалне производње која се састоји из великог броја мањих, међусобно повезаних, делова (комплекса и грана) који чине њену структуру. Структура индустрије има изузетно велики значај, јер од те структуре зависе свеукупни токови раста и раз-

[1] zivorad.gligorijevic@eknfak.ni.ac.rs, ORCID ID 0000-0003-0055-5228

[2] ivana.kostadinović @eknfak.ni.ac.rs, ORCID ID 0000-0002-7676-3472

воја, како саме индустрије, тако и привреде у целини. Имајући у виду ту чињеницу, анализа развојних процеса и промена у структури индустрије Републике Србије представља кључно истраживачко питање на које се овај рад фокусира. У том смислу, у раду се, на основу релевантних теоријских сазнања и референтних статистичких података прате и анализирају развојни процеси и структура индустрије Републике Србије у релативно дугом временском периоду (током друге половине 20. века) у коме су се у структури индустрије одиграле крупне и специфичне промене. Као последица тих промена структурне неусклађености, настале на самом почетку убрзаног развоја после Другог светског рата, континуирано су биле присутне и представљају основну карактеристику развојних процеса у индустрији Републике Србије у целокупном анализираном периоду.

Кључне речи: *Индустрија, структура индустрије, развојни процеси, структурне промене у индустрији, 20. век, Република Србија.*

1. Introductory remarks

The basic and most significant characteristic of the economic development of the Republic of Serbia during the second half of the 20th century is contained in the very dynamic development of industry. Thanks to such development in the structure of the industry, and under its influence also in the structure of the economy, major changes took place (Gligorijević et all, 2021, 28). Namely, the dynamic development of the industry, in the period from the end of the Second World War until 1990, led to rapid and profound changes in the structure of the economy, which were accompanied by high annual rates of economic growth. This made it possible for the average annual growth rate of the national product in the period from 1953 to 1990 to be 7.7% and for the Republic of Serbia, in a very short period of time, from an agrarian and poorly developed country to become a medium industrially developed country (Savić, 2009, 2). However, in the last decade of the mentioned period, unfavorable development tendencies appeared.

Unfavorable development tendencies, which are a consequence of extremely unstable macroeconomic conditions (high trade deficit and galloping inflation rate), especially marked the functioning of the industry and economy of the Republic of Serbia during the last decade of the 20th century (Aranđelović & Gligorijević, 2008, 232).

The negative effect of economic factors, at the same time, was reinforced by the action of non-economic factors (breakup of the common state, introduction of international sanctions that caused huge direct and indirect losses, first of all, through the reduction of the social product and further destabilization of economic flows).

The partial recovery that followed the mentioned events was stopped in 1999 by the bombing of the country by the member countries of the NATO pact. The destruction of industrial capacities and infrastructure, the interruption of production and human casualties further reduced the material basis of development and destabilized the functioning of the state and the economy (Gligorijević, 1999, 21-30).

Starting from the previous remarks, this paper aims to analyze the development processes in the industry of the Republic of Serbia during the second half of the 20th century - a time period in which, in the process of industrial development, major changes in the structure of the industry took place.

The work consists of four parts. After the introductory remarks, the second part of the paper presents a theoretical-methodological approach to the problem (an overview of the

relevant literature is given, as well as the methodological procedure used in the analysis). In the third part of the work, first of all, a brief analysis of the development processes and structural changes in the industry of the Republic of Serbia in the period that includes the time of the initial stage of development (from 1947 to 1965) when, after the period of reconstruction, the emphasis was placed on the development of branches heavy industry and energy, and then the analysis of the mentioned processes and changes in the twenty-five-year period (from 1965 to 1990), that is, in the period in which the process of wider branch diversification and territorial dispersion of the industry took place. In the fourth part of the paper, the development processes and structural changes in the industry of the Republic of Serbia in the last decade of the 20th century (from 1990 to 2000), i.e. in a period characterized by very unfavorable development conditions created under the influence of numerous, first of all, factors of a non-economic nature.

2. Theoretical-methodological approach to the problem

The process of development of modern industry, that is, industry in today's sense of the word, began in the second half of the 18th century. Namely, the development of industry as a special economic activity, in the material and technical sense, began with the first industrial revolution, and as the beginning of its development, i.e. as the turning point from which that development begins to be counted, is considered 1784 when James Watt, a Scottish engineer, discovered the steam engine. "In other words, the industry has left behind a period of development of almost two and a half centuries. That period is long, especially from the point of view of its contribution to economic development, and on that basis to overall development" (Gligorijević, 2021, 15).

The process of the development of the industry covered all parts of the world and played the biggest, i.e. decisive, role in the economic development of a large number of countries that, in doing so, used different methods of its development, depending on the level of development reached and the specific conditions they dealt with at the time of entry to the path of industrial development (Pack & Westphal, 1986, 87-128). "Many of these countries have, precisely thanks to industry, achieved a high rate of growth and raised the level of their economic and, on that basis, their overall development to an extremely high level." Those countries, in fact, became highly (industrially) developed countries" (Gligorijević & Bošković, 2021, 64). However, in contrast to them, countries whose industry has not undergone the necessary structural changes are lagging behind in development and very difficult to move away from production that is predominantly based on extractive industry branches, as well as from production that is realized in traditional industrial branches (Lin & Chang, 2009, 483-502). The high pace of economic growth, today, of highly developed countries, to a large extent, was achieved thanks to changes in the structure of industry that lead to a change in the relationship "...in the composition of production factors, production, employment, supply, demand, investment and trade" (Doyle, 1997, 59-71).

The development of industry, at the same time, is a key driver of structural changes and transformation of a country's economy, which is of particular importance for developing countries. This means that without the development of the industry there is no dynamic and efficient growth and development of the economy as a whole. However, such a role - the role of the bearer of growth and development "...industry can only be realized under the condition that maximum rationality is ensured in its development, that is, its optimal branch and territorial structure, which, over time, must be changed and adjusted" (Gligorijević, 2021, 211).

Between economic growth and changes in the structure of the economy, and on that basis also in the industry, there is a close and highly pronounced two-way, cause-

and-effect relationship: changes in the structure of the economy represent the most important consequence of its growth, but at the same time, in the long term, it is its most significant factor. Changes in the structure of the economy "...can slow down growth if they are slow or inefficient, but they can also contribute to growth if the allocation of resources is improved" (Kuznets, 1957, 1-111).

In numerous researches related to changes in the structure of the economy, during the fifties and sixties of the 20th century, economic growth was presented in a historical context and as a result of changes in the structure of the economic system. Thus, in a two-sector model, economic growth is explained by the transfer of labor from the agricultural sector to the industrial sector (Lewis, 1954, 139-191).

In the analysis of the economic growth of European countries, during the first half of the twentieth century, economic growth and structural changes are also analyzed using a historical approach. The results of the analysis show that long-term economic growth is associated with numerous structural changes, such as: mechanization, changes in the ratio of inputs and outputs, changes in distribution and consumption, changes in imports and exports and redistribution of labor between different sectors (Svennilson, 1954).

Changes in the structure of the economy and its growth in the Republic of Serbia, during the second half of the 20th century, were a subject of significant interest in economic research. At the same time, special attention was paid to: theoretical analysis of factors and models of economic growth (Čobeljić, 1972; Stojanović, 1977), structural changes that in the sixties of the 20th century caused serious mismatches between the production of raw materials and energy, on the one hand, and processing capacities, on the long side (Gligorijević, 1984, 32-34; Gligorijević & Ilić, 1995, 238-245; Rosić, 2002), the pace of economic growth and structural changes in the three-sector model (Aranđelović & Gligorijević, 2008, 197-206), branch and territorial structure of the industry (Gligorijević, 1993, 64-67; Gligorijević, 1994, 147-152) et cetera.

Viewed from the methodological aspect, in this work, a structural approach was applied, which emphasizes that economic growth is closely related to the process of transformation of the production structure (in order to start and accelerate it) through: removing bottlenecks and other factors responsible for slow growth and ensuring the redistribution of resources into so-called engines of growth, i.e. into highly competitive sectors and activities (Kuznets, 1973, 248).

Changes in the structure of the industry, in this paper, are interpreted and observed as a change in the participation of certain parts (branches or complexes) of the industry in the total industrial production. The analysis of the structure of the industry, i.e. the changes in that structure, was carried out on the basis of theoretical knowledge, with the use of relevant statistical data from the documents of official statistical institutions - the Federation and the Statistical Office of the Republic, namely: *first,* by determining the participation of certain industrial branches i *secondly,* by determining the participation of individual industrial complexes, formed according to development criteria, in total industrial production. By the way, the structure of the industry according to the development criterion consists of its three parts: advancing (propulsive) industry, auxiliary (intermediate) industry and traditional (stationary) industry.

The role of the *advancing industry* is played by: electricity production, mechanical engineering, production of transport vehicles, production of electrical machines and devices (especially electronics) and production and processing of chemical products. The mentioned branches of industry are very technologically intensive, with a high content of knowledge and with a lower consumption of energy and material substances per unit of product. That is why they are of great importance for the spread of technical and technological progress and changing the structure of the economy. These branches of industry also have high growth rates and make a huge contribution to increasing business effectiveness and the efficiency of industry

development. They are, in fact, the carriers of development and the main factor in the induced development of all other economic and non-economic activities of a country.

Ancillary industry includes: coal and oil production, ferrous metallurgy, non-ferrous metallurgy, building materials industry and pulp and paper industry. These branches deal with the production of raw materials and reproductive material and have a special importance as a condition for the development of a thriving industry. They are characterized by extensive development, a lower degree of processing and have lower growth rates compared to branches of advanced industry.

Traditional industry includes: textile industry, leather and fur industry, rubber industry, tobacco industry, food industry, etc. Here we are talking about labor-intensive and low-accumulative branches of industry. They have a wide product range and low growth rates, and they deal, above all, with the production of consumer goods that are subject to rapid changes.

The structure of the industry determined according to the development criterion enables one to gain very important knowledge about the relationship between those branches of industry that are the carriers of development, on the one hand, and those branches of industry that provide raw materials and reproduction material for the previous branches, i.e. that produce consumer goods, on the other side.

3. Results and discussion

3.1. Industry of the Republic of Serbia in the period from 1947 to 1990

The most significant characteristic of the economy of the Republic of Serbia immediately after the Second World War, in addition to the dominance of agriculture in the sectoral structure, is contained in the underdevelopment of the industrial structure,[3] with the predominant participation of branches of the light processing industry. Namely, after a period of accelerated restoration of industrial potential,[4] destroyed during the Second World War, the production of food and beverages, together with the production of textiles and clothing, accounted for more than 50% of the social product of the industry of the Republic of Serbia (Gligorijević & Ćorović, 2019, 28). In addition, certain beginnings of the development of the metalworking industry and the processing of chemical products were also present, but without an adequate raw material basis. Production of construction materials, leather and footwear, and tobacco also played a significant role.

In order to overcome the above-mentioned situation, the initial phase of industrial development was characterized by efforts to sharply increase the volume of accumulation and investments and to direct investments into the development, first of all, of heavy industry and energy. The goal was to create, in the shortest possible time, with great pressure on personal consumption and the standard of living of the population, a sufficiently broad long-term material basis for the further development of the industry and the filling of the industrial structure with the necessary elements.

Thanks to the aforementioned development orientation and achieved high growth rates of industrial production, especially after 1953[5], there were the fastest and most extensive

[3] According to the first classification of activities, which was developed in 1947 by the then Federal Planning Commission (founded on May 25, 1946, and abolished in 1951), there were only 20 industrial branches.

[4] "In the strategy of the country's economic reconstruction, industry occupied a prominent place, and the rapid reconstruction of other branches of the economy depended on its successful reconstruction" (Rakonjac, 2018, 87-100).

[5] The average annual growth rate of industrial production in the period from 1953 to 1960 was

changes in the structure of the industry,[6] and specialization in the production of food and beverages was also visible. The share of textile, clothing, leather and footwear production, despite the tendency to fall, was at the level of about 6% (Gligorijević & Ćorović, 2019, 28-29). The highest growth, in this period, was recorded by branches belonging to the complex of advancing industry (mechanical engineering, metalworking industry, electrical industry), but also the production of final wood products and clothing production, and new industrial branches also appeared (processing of non-ferrous metals, production of non-metallic products and production of vehicles). At the same time, the growth of the relative contribution of the mentioned industrial branches in the creation of the social product of the industry was achieved, mainly, at the expense of the reduction of the contribution of food and textile production.

In the following period of industrial development, which lasted until the end of 1961, there was a radical turn in the development priorities of the industry. The mentioned turn consists in creating conditions for the faster development of branches of light processing industry and agriculture, with a gradual decrease in the share of accumulation and economic investments, as well as an increase in the share of personal consumption and non-economic investments in the distribution of the social product. The resolution on the prospective development of industry envisages a change in the structure of industrial production in the sense that the average annual growth index of production for personal consumption and the production of reproduction material should be above the growth index of the industry as a whole (About our economic policy, 1955, 4). The goal was to balance the economic structure, by reducing the gap between agriculture and industry, but also within the industry itself: between the production of goods, on the one hand, and the production of consumer goods, on the other. However, the radical turn and sudden break with the logic of rapid development of branches in which basic raw materials and energy are produced contained the germ of new disturbances in the structure of the industry (Marsenić, 2003, 84).

The consequences of the aforementioned change in the center of gravity of industrial development were felt relatively quickly. The increase in the relative participation of the branches of the processing industry resulted, in some complexes, in a faster growth in the production of products of a higher, compared to products of a lower stage of processing. This process of changes in the relations between branches of the processing industry and branches that produce raw materials resulted in a shortage of raw materials, an increase in their import, incomplete use of certain processing capacities, and the creation of inconsistencies and disproportions in the material structure of industrial production.

In the period from 1961 to 1965, with the emphasized need to stop lagging in the growth of production of basic industrial raw materials, there was a partial redefinition of development priorities (Social Plan of Economic Development of the National Republic of Serbia, 1961-1965, 1961). With a slight increase in the share of investments in the social product and an overly broad list of development priorities, there was a gassing of investment efforts, with little or no corrective effects on the already established direction of movement of the industrial structure.

At the end of this period, the Republic of Serbia had a relatively developed metal complex dominated, above all, by the metal processing industry and mechanical engineering, with the growing production of electrical machines and means of transport, while the participation of the very important metallurgy in the social product of the industry remained without significant changes, whereby iron ore production had symbolic proportions.

14.0% (See: Savić, 2009, 9).

[6] The development orientation focused on the accelerated development of heavy industry and energy "... according to all relevant indicators, led to rapid and deep structural changes, which in the first decade of post-war development were accompanied by high rates of economic growth" (Gligorijević & Ćorović, 2019, 26).

With the adoption of economic reform measures, the development orientation of the Republic of Serbia since 1965 was also aimed at increasing the production of raw materials, energy and food, on the one hand, and stimulating production for export, on the other hand (Economic and Social Reform 1965, Belgrade, 57-82).

The decline in the rate of growth of the social product and industrial production, along with the already evident balance of payments difficulties, directed the goals of the reform towards the decentralization of distribution, towards the transfer of disposal of accumulation and management of investments to economic enterprises, with the aim of increasing the effectiveness of the operations of individual economic entities and the economy as a whole and with the aim of stopping negative development trends. However, the freer functioning of the market in the country was not an adequate mechanism for eliminating the structural disproportions that arose earlier, that is, that arose in different institutional frameworks.

Data on the structure of industrial production in the period from 1970 to 1975 clearly illustrate the tendencies regarding structural disproportions between certain branches of the processing industry and their complementary branches that deal with the production of raw materials. In addition to the already mentioned, structural disproportion present between the metal complex (metal processing industry, mechanical engineering, production of transport vehicles and production of electrical machines), which participated in the structure of industrial production with about 25-26%, and metallurgy (ferrous and non-ferrous), whose participation is was only around 3%, the following disproportions in industrial production were also characteristic: the relative share of the production of sawn timber of 0.6%, is less than the relative share of the production of final wood products, which is around 3.5%; the relative share of non-metallic mineral production of 0.2% is less than the relative share of non-metal processing, which is greater than 1%; the relative participation of the production of textile yarns and fabrics of about 5%, is less than the relative participation of the production of finished textile products of over 7.5% and the relative participation of the production of leather and fur of about 1%, it is less than the relative participation of the production of footwear which is around 3%.[7]

The shown structural disproportions between certain complementary branches "... are the consequence of a large gap in the pace of growth ... between one part of the industry and another over a ... long period of time. The expansion of the industry was based on the construction of processing capacities, while the production of raw materials and reproduction materials and energy was neglected" (Gligorijević, 1984, 33). Although in the development documents the focus of development was placed on the faster growth of the production of raw materials, the processes in practice went in the other direction. The stated fact is best illustrated by the state of the industry structure observed by industrial complexes, determined according to the development criterion (***Table 1***).

Table 1 - Structure of the industry of the Republic according to development criteriain the period from 1970 to 1985 (in %)

	1970	1975	1980	1985
Industry - total	100,0	100,0	100,0	100,0
Advancing (propulsive) industry	36,0	38,8	43,0	45,4
Auxiliary (intermediate) industry	22,7	22,0	20,4	20,2
Traditional (stationary) industry	41,3	39,2	36,6	34,4

Source: Calculated on the database from the *Statistical Yearbook of Yugoslavia for the year 1992*, Belgrade: Federal Bureau of Statistics.

[7] Calculated on the database from the *Statistical Yearbook of Yugoslavia for 1976*.

Based on the above data, it can be concluded that the structure of the industry, in the entire observed period, was extremely unfavorable and that there were serious problems in the industry of the Republic of Serbia, regardless of the fact that the participation of the advancing industry (as the carrier of development) was at a relatively high level. This, all the more so, since the participation of the auxiliary industry was at a very low level. This quite clearly and unequivocally confirms the already mentioned fact that in the industry of the Republic of Serbia there was a very pronounced structural disproportion in the relationship: processing industry - production of raw materials and reproduction material and that, over time, it took on greater and greater proportions.

In addition to structural disproportions in the industry of the Republic of Serbia, during the observed period, problems of another kind were also present. Here, first of all, we have in mind the fact that the advancing industry, viewed from the technological aspect, was to a significant extent outdated and dependent on foreign countries, while the traditional industry was burdened with numerous inconsistencies, as well as a lack of raw materials.

Structural mismatches especially culminated at the end of 1979, when the largest post-war deficit in the trade and balance of payments was realized, with long-term consequences for the country's economic development. Namely, the economy of the Republic of Serbia as a whole, as well as the industry as an integral part of it, achieved successful growth for the last time in 1979 thanks to borrowing abroad. From 1980, a period of continuous crisis began, which will last until the end of the observed period. The key indicator of the course of the crisis, certainly, is the absence of growth of the social product per capita. Namely, the national product of the Republic of Serbia, in the period from 1980 to 1990, increased at an average annual rate of only 0.7%. The number of inhabitants grew with the same dynamics, so that the social product per capita had a de facto zero growth. Such a long crisis period, with a continuous duration of ten years, was recorded in the Republic of Serbia for the first time in the 20th century. Until that period, the Republic of Serbia was reducing the development distance in relation to the developed countries of the world, and since that period, that distance has been constantly increasing, because slow economic growth, as a rule, preserves the found structural relations by the very fact that the most important parts of the economy are moving along approximatly the same dynamics (Marsenić, 2003, 9). In this regard, in the eighties of the 20th century in the Republic of Serbia, the social and private sectors, industry and agriculture, as well as the largest part of the industrial sector, followed the same dynamics. This tendency is noticeable has been since the beginning of the 1970s, in order to become a dominant feature of the industrial structure in the later period.

Contrary to trends in the world, investments in the Republic of Serbia caused only cosmetic structural changes and worsened the position of industry and the entire economy on the international market. The extensiveness in development is best illustrated by the situation in the metalworking industry, mechanical engineering, the production of electrical machines and vehicles, that is, the branches that recorded above-average growth. However, the wide range of products of these branches was not, to a sufficient extent, harmonized with the needs of the market, nor did it have a support in ferrous metallurgy and other branches producing raw materials. "Relative to the world average, with the exception of the metal processing industry, there was a lag in the structural growth of these industrial branches. In contrast, the relative share of food and beverage production and textile, clothing, leather and footwear production remained at the level of almost 40% of the social product of the manufacturing industry, which is significantly higher than the world average in that year" (Gligorijević & Ćorović, 2019, 33).

The causes of crisis trends in the economy and industry of the Republic of Serbia in the eighties of the 20th century have been analyzed in numerous works. It is a unique

assessment that the key focal point of the crisis is the decline in investment efficiency and the appearance of continuity of negative values in this period of development. The efficiency of investments (increase in social product per 100 dinars of gross economic investment in fixed assets) has, after the initial period of development, declined in a series of decades, and in the last decade of the observed period, it moved into the negative zone (-2.7 in the period from 1981 to 1990. year) (Stamenković, et all, 2009, 15). In this period, there was also a slowdown in the growth of investments and employment, compared to the previous number of years, so there was an absence of their effects on the increase of the social product, which stagnated in per capita terms. In this regard, it is important to point out that that period was marked by the reduction of final consumption within the limits of the available social product, with the help of the sudden elimination of the deficit in the balance of payments and trade and its transformation into a surplus starting in 1983. This is, at the same time, a key indicator of the dependence of economic growth in the Republic of Serbia at that time on the growth of borrowing abroad and a deep structural crisis.

The established structure of the industry was aimed at satisfying domestic investment demand and realizing the model of extensive growth, through the quantitative increase of production capacities. As such, the industry was chronically dependent on the import of raw materials from abroad, which, due to pronounced inefficiency and non-competitiveness on the international market, generated an increase in indebtedness due to a constant lack of export revenues. When the culmination of borrowing turned into a crisis of external liquidity, the forced balance of payments surplus from 1983, in conditions of unacceptably low domestic accumulativeness, halved the growth of investments. The deterioration of the structure of investments, to the detriment of the technological modernization of the industry, led to a further decline in business effectiveness, with consequences in the long-term trend of the absence of economic growth and development efficiency.

3.2. Industry of the Republic of Serbia during the last decade of the 20th century

The functioning of the industry of the Republic of Serbia during the last decade of the 20th century was marked by the continuation of unfavorable development tendencies that arose in the previous decade of development, characterized by extremely unstable macroeconomic conditions such as: a high trade deficit and an extremely high (galloping) inflation rate. The appearance of inflation, i.e. hyperinflation, is linked to the appearance of stagnant flows in the development of the economy at the beginning of the eighties. The negative effect of hyperinflation, at the same time, was reinforced by the action of non-economic factors. With the disintegration of the joint state, the decades-long economic ties between the republics, members of the Yugoslav federation, were broken. In addition to the loss of a large part of the domestic market for the placement of finished products, important channels of supply of raw materials and raw materials were also cut off, which increased the already high import dependence of the processing industry of the Republic of Serbia. Along with the disintegration of the common state and the creation of independent states from the former republics, there was the introduction of international sanctions against the Federal Republic of Yugoslavia, that is, against Serbia and Montenegro. First, at the end of 1991, the European Community introduced economic sanctions, and in the following year, a UN Security Council Resolution imposed a complete trade embargo, with a ban on oil deliveries and a suspension of traffic through the territory of the Federal Republic of Yugoslavia. In the short term, the sanctions had direct and indirect consequences and caused enormous measurable and immeasurable

losses, primarily through the reduction of the social product[8] and further destabilization of economic flows (Aranđelović & Gligorijević, 2008, 220).

The partial recovery that followed the aforementioned events was stopped in 1999 by the bombing of the Federal Republic of Yugoslavia, i.e. Serbia and Montenegro, by the member countries of the NATO pact. The destruction of industrial capacities and infrastructure, the interruption of production and human casualties further reduced the material basis of development and destabilized the functioning of the state and the economy as a whole, and above all, the industry. As a result of the aggression of the member countries of the NATO pact, in 1999 there was a drastic drop in the social product of almost 23%, so that, viewed as a whole, the effects of economic growth from several previous years were canceled (Gligorijević, 1999, 21-30).

During the nineties of the 20th century, there was a tendency of a decline in the participation of industry in the formation of the social product in the economy of the Republic of Serbia, on the one hand, and a slight growth of agriculture and the dominance of the service sector, on the other hand. This fact is unequivocally confirmed by the following data: in the formation of the social product in 2000, industry participated with 33.6%, agriculture with 19.9%, and the service sector with 46.5%.[9] This was, quite obviously, the beginning of the deformation of the economic structure. As for the industry of the Republic of Serbia itself, its structure changed during the nineties under the influence of strong recessionary currents in this sector of the economy, present from the very beginning of this period, so the absolute decline in production was a general feature of the development of this activity.

The structural positioning of certain industrial branches depended, exclusively, on the intensity of the decline in production in them, so that some branches increased their relative participation on the basis of smaller negative growth rates compared to the average. The largest absolute drop in production in 2000, compared to 1990, was recorded by the metal sector: mechanical engineering achieved a lower production by 94%, shipbuilding by 89%, production of transport vehicles by around 66% and metal processing industry by around 54%. Footwear production also recorded a high drop in production by 78%, while the textile industry, furniture production and non-ferrous metal production had a drop in production close to the average of the entire industry, in the observed period. Relative growth in production was recorded by the following branches: rubber processing by 135%, ferrous metallurgy by 82%, production of construction materials by 46%, production of beverages by 25%, production of chemical products by 20%, processing of non-ferrous metals by 13%, processing of chemical products by 5% and electricity production by 3%.[10]

The structure of industrial production in the Republic of Serbia in 2000 was dominated by the food industry, which increased its relative share from 18% in 1990 to around 26.5%, despite the decline in the physical volume of food production. The chemical industry also increased its relative share from 7.8% to 12.2%, as well as electricity production from 6.4% to 9.5%. The metal complex, with a drop in relative participation from 21% to around 8%, equaled the textile industry.[11]

The structural disproportion between the production of raw materials and the production of final products was also present in the chemical complex with a relatively

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[8] "At the lowest point of the economic downturn, in 1993, GDP was barely more than two-fifths (41 percent) of its 1989 value." (Simon, jr., 2003, 105).

[9] The data refers to the Federal Republic of Yugoslavia (Serbia and Montenegro), (See: Aranđelović & Gligorijević, 2008, 233).

[10] Calculated on the basis of data from: *Statistical Yearbook of Yugoslavia for 1991*.

[11] Calculated on the basis of data from: *Statistical Yearbook of Yugoslavia for 1991 and Statistical Yearbook of Serbia for 2002*.

preserved development potential, as well as in the failing metal complex, textile and wood processing industry. The only exception was the food industry, which, thanks to the state of agriculture, recorded a relatively small drop in production in this period.

The aforementioned data show that the recessionary trends brought the structure of the industry of the Republic of Serbia, at the end of the last decade of the 20th century, to a state approximately equal to that of 1970. The structural imbalance between the raw material and processing branches, observed through the industrial complexes formed according to the development criterion, was still present and represented the main material basis of the import dependence of the processing industry of the Republic of Serbia (***Table 2***).

Table 2 - Structure of the industry of the Republic according to development criteria during the last decade of the 20th century (in %)

	1990	1995	2000
Industry - total	100,00	100,00	100,00
Advancing (propulsive) industry	47,5	37,9	38,5
Auxiliary (intermediate) industry	19,8	24,3	27,0
Traditional (stationary) industry	32,7	37,8	34,5

Source: *Statistical Yearbook of Yugoslavia for 1991,* Belgrade: Federal Bureau of Statistics and *Statistical Yearbook of Serbia for 1998 and 2002,* Belgrade: Republic Institute of Statistics.

The directions of structural changes in the processing industry during the last decade of the 20th century were completely opposite to the tendencies in the world. The production of food and beverages in the world recorded a decline in its relative share and remained at the level of about 12%, while in the Republic of Serbia this industry increased its relative share to about 31%.

The industrial branches most affected by technical progress (chemical industry, production of non-electrical machines, including the production of computing equipment, production of electrical machines and communication equipment and production of transport vehicles), viewed on a global scale, recorded the highest growth, with a relative share in the national product in 2000 of over 43%, while in the Republic of Serbia these industrial branches (with the exception of the chemical industry) recorded a drop in their relative share to around 23% (Statistical Yearbook of Serbia, 2002 and 2003), while classic industrial branches still had a slightly higher relative share of the world average.

4. Conclusion

The economic structure of the Republic of Serbia after the Second World War was formed under the influence of industrialization, as a general development concept of the SFRY. Industrialization in the Republic of Serbia, with a special focus on the development of heavy industry, according to all indicators, led to rapid and deep structural changes, which, especially in the first fifteen years of post-war development, were accompanied by high rates of economic growth. Until the beginning of the sixties of the last century, this development concept functioned as a unique and plan-coordinated process.

In the following period of industrialization, there is a radical turn in development priorities, in the direction of faster development of light processing industry and agriculture, but with a gradual reduction in the share of accumulation and economic investments, as

well as an increase in the share of personal consumption and non-economic investments in the distribution of the social product. The goal was to balance the economic structure, by reducing the gap between agriculture and industry, as well as within industry (between the production of production and consumption goods). However, the sudden break with the logic of rapid development of branches in which basic raw materials and energy are produced, contained the germ of basic structural disturbances: faster growth of consumption compared to the growth dynamics of the domestic product.

The consequences of a sudden change in the center of gravity of industrial development, through an increase in the relative participation of branches of the processing industry, resulted in a faster growth in the production of higher, compared to lower stages of processing. This process of changes in the relations between the branches of processing and branches of basic industry resulted in a shortage of raw materials, incomplete use of certain processing capacities, an increase in the import of reproduction materials and the gradual creation of disproportions in the material structure of industrial production. The consequences of that are very pronounced even in modern conditions.

The established industrial structure was aimed at meeting the domestic investment demand and realizing the model of extensive growth, through the quantitative increase of production capacities. As such, it was chronically dependent on the import of raw materials from abroad, which, due to pronounced inefficiency and non-competitiveness on the international market, generated an increase in indebtedness, due to a constant lack of export revenues.

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Danica Cicmil[1]
University of Novi Sad,
Faculty of Economics in Subotica, Subotica,
Republic of Serbia

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THE INFLUENCE OF FINANCIAL INDICATORS ON LIQUIDITY: AN EMPIRICAL ANALYSIS OF PROFITABILITY, LEVERAGE, AND FUND AGE

Abstract

Financial leverage, profitability, and liquidity are crucial metrics used to evaluate the financial health and stability of a firm. This study aims to investigate the relationship between leverage ratios (debt-to-equity and debt-to-asset), profitability ratio(ROE), Fund Age and liquidity ratios (cash ratio and quick ratio) for Residential Real Estate Investment Trusts (REITs) listed on the New York Stock Exchange (NYSE) over the period of 2009-2021. A multiple linear regression analysis was conducted to model the relationship between the independent variables and the dependent variables. The findings suggest that ROE has a significant positive relationship with liquidity ratios, while Debt to Equity and Fund Age have a significant negative relationship. Debt to Assets is found to be not statistically significant in explaining liquidity, further highlighting the complex nature of the relationship between financial metrics and the financial stability of a firm.

Key words: *liquidity, leverage, REITS*

JEL classification: *G01 ,G21, G29*

УТИЦАЈ ФИНАНСИЈСКИХ ПОКАЗАТЕЉА НА ЛИКВИДНОСТ: ЕМПИРИЈСКА АНАЛИЗА ПРОФИТАБИЛНОСТИ, ЛЕВЕРИЦА И ДОБИ ФОНДА

Апстракт

Финансијски левериџи, профитабилност и ликвидност су кључни показатељи процене финансијског здравља и стабилности предузећа. Ово истраживање има за циљ да испита везу између показатеља левериџа (однос дуга према капиталу и дуга према средствима), показатеља профитабилности (принос капитала), доби фонда и показатеља ликвидности (показатељ готовине и општи показатељ ликвидности) за Ресидентиал Реал Естате Инвестмент Трустс (РЕИТс) који су листирани на Њујоршкој берзи (НYСЕ) у периоду 2009-2021. Обављена је вишеструка линеарна регресиона анализа како би се моделовала веза између независних и зависних варијабли. Резултати анализе сугеришу да РОЕ има значајну позитивну везу са ликвидношћу, док Доба фонда и Однос Дуга према Капиталу имају значајну негативну везу са ликвидношћу.

1 cicmildanica@yahoo.comq, ORCID ID 0000-0001-6373-5264

Поред тога, Однос Дуга према Активи се показао као статистички незначајан показатељ, што указује на сложену природу између финансијских показатеља и финансијске стабилности предузећа.

Кључне речи: *ризик, ниво задужености, РЕИТС*

Introduction

Financial leverage, profitability and liquidity are three key metrics used in the evaluation of a firm's financial health and stability. Leverage ratios, such as debt to equity and debt to asset ratios, measure the extent to which a firm relies on debt financing. Liquidity ratios, such as the cash and current ratios, measure the ability of a firm to meet its short-term obligations. Profitability ratio, such as return of equity measures the efficiency with which a company's management uses its equity to generate profits. In order to better understand the relationship between these financial metrics, it is important to conduct a regression analysis. This type of analysis aims to model the relationship between the dependent variable and the independent variables. The results of this analysis can provide valuable insights into the relationship between company's liquidity on the one hand and leverage, profitability and fund age on the other hand.

The purpose of this study is to investigate the relationship between leverage ratios (debt-to-equity and debt-to-asset), profitability ratio(ROE), fund age and liquidity ratios (cash ratio and quick ratio) for Residential Real Estate Investment Trusts (REITs) listed on the New York Stock Exchange (NYSE) over the period of 2009-2021. Acquiring a comprehensive understanding of the relationship between liquidity as a dependent variable and independent variables such as profitability, leverage, and fund age can exert a substantial influence on a company's financial performance. When it comes to liquidity and profitability, there is often a trade-off between the two. Companies that prioritize maintaining high levels of liquidity, such as cash and easily marketable securities, may have lower profits as they are not investing their resources in high-return assets. The relationship between liquidity and leverage is also important to consider. Leverage refers to the use of borrowed funds to finance a company's operations and investments. High levels of leverage can increase a company's financial risk and make it more vulnerable to changes in the economic environment. Finally, the relationship between liquidity and fund age should also be taken into account. Fund age refers to the length of time that funds have been invested in a particular asset. Older funds are typically less liquid than newer funds, making them more difficult to sell quickly and subject to greater market risk (Sassanfar & Zhang, 2014). The hypothesis is that profitability ratio, leverage ratios, and fund age are significant predictors of liquidity ratio. To test this hypothesis, multiple linear regression analysis will be conducted with leverage ratios, profitability ratio and fund age as independent variables and liquidity ratios as dependent variables. The results of the analysis will be evaluated based on the coefficients and p-values of the regression model. The magnitude of the coefficient provides an estimate of the strength of the relationship, with larger coefficients indicating a stronger relationship. Furthermore, the significance of the relationship will be assessed using p-values. A p-value less than 0.05 indicates that the relationship is statistically significant, meaning that it is unlikely to have arisen by chance. In addition to the coefficients and p-values, the overall fit of the model will be evaluated

using statistical measures such as R-squared. This measure provides insight into the validity of the regression model and its ability to explain the relationship between dependent and independent ratios for Residential REITs.

Literature review

There are many research papers that focus on the assessment of the relationship between liquidity and leverage. One of the papers that addressed this issue was a paper that examined the liquidity management practices of companies listed on the Ghana Stock Exchange (GSE) (Isshaq & Bokpin, 2009). The study aimed to investigate the determinants of corporate liquidity holdings of companies listed on the Ghana Stock Exchange (GSE). The research design involved using a dynamic panel model with a lagged dependent variable, with data collected from the annual reports and financial statements of the firms and the GSE Factbook, covering the period 1991-2007. The Arrellano-Bond estimator was applied, incorporating a Sargan test to account for over-identification. The findings indicated that leverage was not a significant determinant of liquidity in Ghanaian-listed firms, likely due to the underdeveloped nature of the financial market. On the other hand, the results showed that liquidity was statistically significantly influenced by factors such as a target liquidity level, firm size, return on assets, and net working capital. Additional research on the relationship between liquidity and price effects in firms by examining the liquidity of market-based options to predict changes in the capital structure of REITs used option data to evaluate the potential behavior of REIT managers. The results show that REITs with higher historical volatility or lower option market liquidity are less likely to increase leverage, while those with higher option liquidity or lower realized volatility are more likely to increase net long-term debt (Borochin, et al., 2017). The findings are similar to prior research on non-REIT firms (Borchin & Yang, 2016).

Another paper examined the relationship between liquidity (cash conversion cycle) and profitability using a sample of 20 Indian automotive companies over the period 1996-2009 and showed that managers can increase their companies' profitability by shortening the cash conversion cycle, days sales outstanding, and inventory conversion time (A., 2011). The study suggests that an optimal cash conversion cycle is a more accurate and comprehensive measure for analyzing liquidity. In another work that examines the relationship between liquidity and profitability of small and medium enterprises, it is proposed to use the new mathematical model to calculate the net profit by reducing the amount of liquid assets. This allows SMEs to take net profit into account when managing and reducing liquid assets in order to improve profitability (Kontus & Mihanovic, 2019).

Subsequent research focusing on asset liquidity and stock liquidity confirms that holding more cash increases the liquidity of REIT stocks (Downs & Zhu, 2022). There is also a positive correlation between the liquidity of the real estate market and the liquidity of REIT shares. Another study on REITs and liquidity examined liquidity between public and nonpublic REITs (Soyeh & Wiley, 2019). The results show that public, non-listed REITs tend to accumulate a significant amount of cash from issuing shares, resulting in higher liquidity ratios compared to a sample of listed REITs. In addition, these REITs have less access to bank lines of credit. The growth of investments in public, unlisted REITs is highly dependent on the availability of cash. In addition, there is a paper that examines the dividend policy of

REITs and its impact during the 2008-2009 liquidity crisis. Results from a multinomial logit analysis indicate that REITs with higher market leverage or lower market-to-book ratios are more likely to adjust dividends in ways such as cutting, suspending, or paying elective stock dividends (Case, et al., 2012).

In addition, the liquidity risks of REITs are examined using a sample of 440 REITs for the period 1980-2015 (DiBartolomeo, et al., 2021). The results are classified into four groups:

1. The study finds that REITs exhibit negative sensitivity to marketwide liquidity shocks and their prices tend to increase compared to the broader stock market during such events.
2. The results are not specific to any property type sector but are evident across different classifications.
3. Smaller REITs offer protection against liquidity risk only when they have a relatively high dividend frequency.
4. When firms change their status from non-REITs to REITs, the study finds that marketwide liquidity risk is lower. These findings suggest that investors view dividends as a source of enhanced liquidity and REITs, with their high regulatory-mandated payout requirements, provide investors with reduced liquidity risk.

Further study analyzed the financial performance of Real Estate Investment Trusts (REITs) in Turkey using a Multi-Criteria Decision Making method called Entropy based TOPSIS. The analysis covered the period between 2011Q1-2014Q3 and considered factors such as liquidity, profitability, turnover, and capital structure. The results highlights the importance of assessing financial performance to maintain market share and ensure the soundness of REITs (Islamoglu, et al., 2015).

The paper that studys the impact of capital structure on firm liquidity has shown that leverage affects firm liquidity and growth using tobacco industry in Pakistan as an example (Salman, 2019). The study uses secondary data from 2011-2016 of tobacco companies listed on the Karachi stock exchange and employs regression testing to demonstrate the influence of leverage on corporate liquidity and growth. The results suggest that debt financing and holding a high proportion of short-term debt positively affect corporate liquidity and growth in the tobacco industry. Further study aimed to investigate the moderating role of liquidity and optimal liquidity level on the relationship between debt and financial performance using MREITSs as an example for the period 2005-2016 (Zainudin, et al., 2019). The results showed that liquidity affects the relationship between financial performance and debt, and that maintaining a certain level of liquidity negatively affects the relationship between debt and financial performance. Similarly, another study that examines the use of debt financing in terms of financial performance using data from all Malaysian REITs between 2005 and 2014 finds that REITs use debt financing to meet growth needs rather than to achieve tax benefits, and that the high dividend payout requirement serves more as a disciplinary tool than debt financing (Zainudin, et al., 2017). The study also concludes that financial flexibility plays an important role in turning the negative relationship between debt financing and financial performance into a positive one, making it an important aspect for REIT managers to consider in their financial management.

Methodology overview

Linear regression is a statistical technique used to examine the relationship between dependent variable and one or more independent variables (Weisberg, 1981). The aim is to develop an equation that can accurately predict and explain the value of the dependent variable based on the values of the independent variables. Linear regression is a valuable tool in statistics and can be applied to various situations such as forecasting future values, exploring the connection between variables, and determining key variables for a particular outcome (Chatterjee & Hadi, 2014). The formula for linear regression with two independent variables (x_1 x_2 , x_a,... x_n) and one dependent variable (y) is:

$$y = b_0 + b_1x_1 + b_2x_2 + ... + b_nx_n \quad (1)$$

Where:

- y is the dependent variable (cash ratio/current ratio)
- $x_1, x_2, ... x_n$ are independent variables (debt-to-equity, debt-to-asset, fund age, ROE)
- b_0 is the y-intercept of the line
- $b_1, b_2, ..., b_n$ are the slopes of the line representing the change in y for a unit change in $x_1, x_2, ... x_n$. The coefficients (b_0, b_1 and b_2) are estimated from the data using a method such as least squares.

Debt-to-equity and debt-to-asset ratios, along with the fund age and return on equity (ROE), are considered crucial determinants in assessing the liquidity of a company or investment fund. This is primarily because these factors provide essential insights into the financial robustness and sustainability of the respective entity. The table below presents a comprehensive summary of the selected determinants and their anticipated impact on liquidity.

Table 1 Determinants overview and expected influence on liquidity ratios

	Debt to Equity	***Debt to Asset***	***Fund Age***	***ROE***
Liquidity ratios	*Negative relationship*	*Negative relationship*	*Negative relationship*	*Positive relationship*
Source	(Rashid & Abbas, 2011)	(Daryanto, et al., 2018)	(Sassanfar & Zhang, 2014)	(Hongli, et al., 2019)

Source: multiple sources (see table)

Based on the above sources, three hypothesis can be formulated:

1. There is a negative relationship between debt-to-equity ratio/debt to asset and liquidity ratios in REITs.

Higher levels of debt indicate that a REIT is financing more of its assets with debt, which can result in higher interest payments and potentially lower cash levels. As a result, the REIT's liquidity ratios are expected to be lower.

2. There is a negative relationship between fund age and liquidity ratios in REITs. Older funds are anticipated to have lower liquidity levels.

As REITs age, their asset bases grow and may become more complex, making it more difficult to quickly convert assets into cash to meet liquidity needs. Additionally, older REITs

may have a higher proportion of long-term assets that are not easily sold, further decreasing their liquidity levels.

3. There is a positive relationship between return on equity (ROE) and liquidity ratios in REITs.

Higher ROE indicates that a REIT is generating higher profits from its operations, which increases its ability to meet liquidity needs. Therefore, REITs with higher ROE are expected to exhibit higher liquidity ratios.

To measure company's liquidity there are two common ratios - the Cash Ratio and the Current Ratio, that measures the company ability to meet its short-term obligations as they come due (Birgham & Houston, 2015):

(2) $$Cash\ Ratio = \frac{Cash + Cash\ Equivalents}{Current\ Liabilities}$$

(3) $$Current\ Ratio = \frac{Current\ Assets}{Current\ Liabilities}$$

Cash and Cash Equivalents refers to the company's cash and cash-like assets, such as short-term investments that can be easily converted to cash. Current Assets includes assets that can be readily converted to cash within one year, such as accounts receivable and marketable securities. Current Liabilities are obligations due within one year, such as accounts payable and short-term debt (Horngren, 2018).

To measure company's leverage there are two common ratios (Birgham & Houston, 2015):

(4) $$Debt\ to\ Equity = \frac{Total\ Debt}{Total\ Equity}$$

(5) $$Debt\ to\ Asset = \frac{Total\ Debt}{Total\ Asset}$$

The profitability of a company is commonly evaluated using various financial metrics, with Return on Equity (ROE) being a widely accepted. ROE measures the efficiency with which a company's management is utilizing its equity to generate profits (Penman, 2007). As a result, it is often considered to be the most suitable metric for evaluating the profitability of REIT companies.

(6) $$ROE = \frac{Net\ income}{Average\ shareholder's\ equity}$$

In order to increase the quality of model, fund age is included. Including fund age in regression analysis is useful for several reasons (Cheng, et al., 2009):

1. Age as a predictor variable: Fund age may be a significant predictor of fund performance and can provide valuable information about the relationship between fund age and performance.
2. Control for survivorship bias: Fund age can help control for survivorship bias in performance analysis, as older funds have a higher chance of survival and therefore a higher chance of being included in performance data.
3. Time-series analysis: Fund age can also be used in time-series analysis to model the evolution of fund performance over time.

The calculation was carried out as follows: the relevant data was sourced from the Macrobond platform and imported into the Python programming language. The dependent variables chosen were cash and current ratio for each REIT, while the independent variables were leverage ratio, profitability ratio, and fund age. Before performing linear regression analysis, a logarithmic transformation was performed to attenuate skewness and increase the degree of normality of the data. Descriptive statistics were then calculated and the data tested for normality. For the normality test, the Shapiro-Wilk test was used. The Shapiro-Wilk test is a normality test used to determine whether a data set is drawn from a normal distribution (King & Exkersley, 2019). Upon observing a large number of non-normal data points, only those factors that demonstrated a p-value greater than 0.05 were selected from the transformed data, effectively accepting the null hypothesis of normality and implying that the data was considered to be normally distributed. After the independent variables are selected, the VIF (Variance Inflation Factor) is measured to determine the extent of multicollinearity among the independent variables. VIF starts at 1, indicating no correlation between the independent variable and the other variables, and a value above 5 or 10 indicates high multicollinearity (Bhandari, 2020). The results and discussion are presented in the following chapter.

Results and discussion

This section presents the results of the previously mentioned methodology of a regression analysis for selected REITs. The following three tables show respectively the descriptive statistics, the p-values for the normality test and values of VIF factor, as well as the regression analysis with the selected factors for EQR REIT.

Table 2 Descriptive statistics for EQR logs

	Cash EQR	***Current EQR***	***DE EQR***	***DA EQR***	***Fund Age EQR***	***ROE EQR***
count	*13*	*13*	*13*	*13*	*13*	*13*
mean	*-0,57*	*-0,38*	*0,19*	*-0,62*	*3,08*	*-2,13*
std	*1,21*	*1,08*	*0,30*	*0,13*	*0,18*	*0,73*
min	*-1,87*	*-1,39*	*-0,10*	*-0,76*	*2,77*	*-2,94*
25%	*-1,31*	*-1,24*	*-0,02*	*-0,71*	*2,94*	*-2,64*
50%	*-1,24*	*-0,99*	*0,10*	*-0,64*	*3,09*	*-2,38*
75%	*0,19*	*0,27*	*0,25*	*-0,58*	*3,22*	*-1,90*
max	*1,68*	*1,69*	*0,75*	*-0,39*	*3,33*	*-0,47*

Source: the authors calculation based on data

Based on the summary statistics, some general observations can be made: Cash EQR and Current EQR variables have negative mean values, which suggest that they are distributed around negative values. DE EQR and DA EQR variables have relatively small standard deviations, which suggest that the data is relatively concentrated around the mean.

Fund Age EQR variable has a mean close to zero and a small standard deviation, which suggest that the data is relatively symmetrical around the mean. ROE EQR variable has a mean close to negative 2 and a relatively small standard deviation, which suggest that the data is symmetrical around a negative value.

Table 3 Normality test: p-value of ratios & Co-linearity test: VIF factor for independent variables

	Cash EQR	***Current EQR***	***DE EQR***	***DA EQR***	***Fund Age EQR***	***ROE EQR***
p-value	*0,029*	*0,010*	*0,011*	*0,034*	***0,792***	***0,067***
VIF factor					***1,088***	***1,088***

Source: the authors calculation based on data

The p-value from a normality test indicates the probability of observing a sample that is as or more extreme than the one observed, assuming that the data is normally distributed. In general, a p-value less than 0.05 indicates that the data is not normally distributed, and a p-value greater than 0.05 indicates that the data is likely to be normally distributed. Based on the results provided, the following conclusions can be made:

- DE EQR and DA EQR have p-values less than 0.05, which suggests that the data is not normally distributed.
- Fund Age EQR and ROE EQR has a p-value greater than 0.05, which suggests that the data is likely to be normally distributed. Moreover, the VIF factor is close to 1, indicating that there is no multicollinearity among the independent variables. Therefore these two parameters will be included in linear regression

Table 4 OLS: Regression Results for Cash & Current Ratio for EQR

Dep. Variable:	*Cash Ratio*		***Dep. Variable:***	*Current Ratio*	
R^2:	*0,392*		***R^2:***	*0,536*	
	coef:	***P> |t|***		***coef:***	***P> |t|***
const.	*13,01*	***0,04***	***const.***	*13,35*	***0,01***
Fund Age	*-4,31*	***0,03***	***Fund Age***	*-4,43*	***0,00***
ROE EQR	*0,13*	*0,32*	***ROE EQR***	*0,04*	*0,90*

Source: the authors calculation based on data

The R-squared value, 0.392, represents the proportion of variation in the dependent variable that is explained by the independent variables. An R-squared value of 0.392 indicates that 39.2% of the variation in the Cash Ratio can be explained by the values of Fund Age and ROE EQR. In this linear regression, the coefficient for the constant is 13.01, with a p-value of 0.04. This suggests that the constant has a statistically significant impact on the Cash Ratio. The coefficient for Fund Age is -4.31, with a p-value of 0.03. This suggests that Fund Age has a statistically significant negative impact on the Cash Ratio. The coefficient for ROE EQR is 0.13, with a p-value of 0.32. This suggests that ROE EQR does not have a statistically

significant impact on the Cash Ratio. In conclusion, based on this linear regression, it seems that the Fund Age is the most important predictor of the Cash and Current Ratio, where the R-squared value of 0.536 indicates that 53.6% of the variation in the Current Ratio can be explained by the values of Fund Age and ROE EQR. Furthermore, the initial hypothesis stating a negative correlation between liquidity ratios and Fund Age, as well as a positive correlation between liquidity ratios and ROE, has been validated.

In the case of ELS REIT, only Fund Age follows a normal distribution, and there is no multicollinearity as only one variable is included.

Table 5 Descriptive statistics for ELS logs

	Cash ELS	***Current ELS***	***DE ELS***	***DA ELS***	***Fund Age ELS***	***ROE ELS***
count	*13*	*13*	*13*	*13*	*13*	*13*
mean	*-3,71*	*-2,69*	*1,09*	*-0,31*	*3,08*	*2,74*
std	*0,95*	*0,84*	*0,40*	*0,08*	*0,18*	*0,45*
min	*-5,88*	*-3,91*	*0,80*	*-0,38*	*2,77*	*1,66*
25%	*-4,08*	*-3,00*	*0,89*	*-0,36*	*2,94*	*2,80*
50%	*-3,50*	*-2,81*	*0,92*	*-0,33*	*3,09*	*2,92*
75%	*-3,22*	*-2,81*	*0,99*	*-0,32*	*3,22*	*2,98*
max	*-1,89*	*-0,49*	*2,02*	*-0,13*	*3,33*	*3,14*

Source: the authors calculation based on data

Table 6 Normality test: p-value of ratios & Co-linearity test: VIF factor for independent variables

	Cash ELS	***Current ELS***	***DE ELS***	***DA ELS***	***Fund Age ELS***	***ROE ELS***
p-value	*0,397*	*0,015*	*0,000*	*0,001*	***0,792***	*0,002*
VIF factor					***1,00***	

Source: the authors calculation based on data

Table 7 OLS: Regression Results for Cash & Current Ratio for ELS

Dep. Variable:	*Cash Ratio*		***Dep. Variable:***	*Current Ratio*	
R^2:	*0,079*		***R^2:***	*0,006*	
	coef:	***P> |t|***		***coef:***	***P> |t|***
const.	*-8,26*	*0,105*	***const.***	*-3,67*	*0,403*
Fund Age	*1,47*	*0,251*	***Fund Age***	*0,34*	*0,808*

Source: the authors calculation based on data

The R^2 values of 0.079 and 0.006 suggest that the independent variables explain only 7.9% and 0.6% of the variation in the Cash Ratio and Current Ratio, respectively. This means that the regression models do not explain a significant portion of the variation in the dependent variables. The initial hypothesis stating a negative correlation between liquidity ratios and Fund Age, has not been validated. However, p-value are higher than 0.05, meaning that the results are not statistically significant.

The next REIT to be discussed is UDR, which has all four factors with a normal distribution. However, there is a strong multicollinearity between Debt to Equity, Debt to Asset and Fund age, which is why the linear regression only considers the ROE.

Table 8 Descriptive statistics for UDR

	Cash UDR	***Current UDR***	***DE UDR***	***DA UDR***	***Fund Age UDR***	***ROE UDR***
count	*13*	*13*	*13*	*13*	*13*	*13*
mean	*0,50*	*0,73*	*0,52*	*-0,45*	*3,55*	*0,65*
std	*1,47*	*1,29*	*0,22*	*0,07*	*0,11*	*1,32*
min	*-1,62*	*-1,35*	*0,25*	*-0,57*	*3,37*	*-2,48*
25%	*-1,13*	*-0,40*	*0,39*	*-0,51*	*3,47*	*0,00*
50%	*1,22*	*1,44*	*0,49*	*-0,46*	*3,56*	*0,76*
75%	*1,68*	*1,69*	*0,56*	*-0,41*	*3,64*	*1,56*
max	*2,01*	*2,03*	*0,98*	*-0,32*	*3,71*	*2,35*

Source: the authors calculation based on data

Table 9 Normality test: p-value of ratios & Co-linearity test: VIF factor for independent variables

	Cash UDR	***Current UDR***	***DE UDR***	***DA UDR***	***Fund Age UDR***	***ROE UDR***
p-value	*0,007*	*0,014*	***0,154***	***0,986***	***0,820***	***0,131***
VIF factor			***18,28***	***14,06***	***4,31***	***1,63***

Source: the authors calculation based on data

Table 10 OLS: Regression Results for Cash & Current Ratio for UDR

Dep. Variable:	*Cash Ratio*		***Dep. Variable:***	*Current Ratio*	
R^2:	*0,49*		***R^2:***	*0,39*	
	coef:	***P> |t|***		***coef:***	***P> |t|***
const.	*-0,004*	*0,34*	***const.***	*0,33*	*0,32*
ROE	*0,77*	***0,00***	***ROE***	*0,61*	***0,02***

Source: the authors calculation based on data

Based on the p-values listed, ROE is statistically significant for both factors predicting liquidity, and initial hypothesis about positive relationship with ROE is validated. Moreover, the R^2 values are moderate and are 0.49 and 0.39. The next REIT is UMH with three normally distributed variables, without collinearity between them.

Table 11 Descriptive statistics for UMH

	Cash UMH	Current UMH	DE UMH	DA UMH	Fund Age UMH	ROE UMH
count	13	13	13	13	13	13
mean	0,41	1,67	0,10	-0,88	3,39	1,78
std	0,75	0,50	0,27	0,89	0,13	0,81
min	-0,56	1,03	-0,34	-3,81	3,18	0,00
25%	-0,31	1,21	-0,05	-0,72	3,30	1,63
50%	0,34	1,81	0,13	-0,63	3,40	1,89
75%	1,01	2,08	0,25	-0,57	3,50	2,18
max	1,71	2,35	0,49	-0,47	3,58	2,98

Source: the authors calculation based on data

Table 12 Normality test: p-value of ratios & Co-linearity test: VIF factor for independent variables

	Cash UMH	Current UMH	DE UMH	DA UMH	Fund Age UMH	ROE UMH
p-value	0,406	0,128	**0,528**	0,000	**0,814**	**0,401**
VIF factor			**1,74**		**1,49**	**1,21**

Source: the authors calculation based on data

Table 13- OLS- Regression Results for Cash & Current Ratio for UMH

Dep. Variable:	Cash Ratio		**Dep. Variable:**	Current Ratio	
R^2:	0,485		**R^2:**	0,647	
	coef:	**P> |t|**		**coef:**	**P> |t|**
const.	12,05	**0,06**	**const.**	12,66	**0,00**
Debt-to-Equity	-1,80	**0,07**	**Debt-to-Equity**	-0,68	0,19
Fund Age	-3,48	**0,06**	**Fund Age**	-3,30	**0,00**
ROE	0,20	0,42	**ROE**	0,16	0,25

Source: the authors calculation based on data

Based on the p-values listed, Fund Age, Debt to Equity and const. are statistically significant, with having R^2 between 48 % and 64 %. Furthermore, the initial hypothesis

regarding the relationships between the analyzed factors and liquidity is supported by the findings. Specifically, a negative relationship exists between Debt to Equity and Fund Age, whereas a positive relationship exists between ROE and liquidity. Following REIT is MAA, with two parameters being included in calculation, having no collinearity.

Table 14 Descriptive statistic for MAA

	Cash MAA	***Current MAA***	***DE MAA***	***DA MAA***	***Fund Age MAA***	***ROE MAA***
count	*13*	*13*	*13*	*13*	*13*	*13*
mean	*-1,48*	*-1,44*	*0,25*	*-0,64*	*3,03*	*1,57*
std	*0,70*	*0,69*	*0,54*	*0,24*	*0,19*	*0,55*
min	*-2,71*	*-2,66*	*-0,29*	*-0,93*	*2,71*	*0,19*
25%	*-1,91*	*-1,90*	*-0,18*	*-0,83*	*2,89*	*1,35*
50%	*-1,50*	*-1,43*	*0,16*	*-0,78*	*3,04*	*1,64*
75%	*-1,30*	*-1,20*	*0,65*	*-0,42*	*3,18*	*1,87*
max	*-0,47*	*-0,46*	*1,22*	*-0,26*	*3,30*	*2,41*

Source: the authors calculation based on data

Table 15 Normality test: p-value of ratios & Co-linearity test: VIF factor for independent variables

	Cash MAA	***Current MAA***	***DE MAA***	***DA MAA***	***Fund Age MAA***	***ROE MAA***
p-value	*0,416*	*0,441*	*0,023*	*0,048*	***0,787***	***0,254***
VIF factor					***1,007***	***1,007***

Source: the authors calculation based on data

Table 16 OLS- Regression Results for Cash & Current Ratio for MAA

Dep. Variable:	*Cash Ratio*		***Dep. Variable:***	*Current Ratio*	
R^2:	*0,352*		***R^2:***	*0,428*	
	coef:	***P> |t|***		***coef:***	***P> |t|***
const.	*4,64*	*0,13*	***const.***	*5,55*	***0,064***
Fund Age	*-1,83*	***0,07***	***Fund Age***	*-2,15*	***0,034***
ROE	*-0,35*	*0,29*	***ROE***	*-0,30*	*0,344*

Source: the authors calculation based on data

The p-value for Fund Age and constant is lower than threshold 0.05, indicating that the relationship between these two factors and Current Ratio is statistically significant. The

R^2 value of 0.352 indicates that 35% of the variation in the cash ratio is explained by the independent variables, while the value for the current ratio is 0.428. The initial hypothesis stating a positive correlation between liquidity ratios and ROE, has not been validated. However, p-value are higher than 0.05, meaning that the results are not statistically significant. The hypothesis asserting a negative relationship between liquidity and Fund Age has been substantiated.

The following REIT is ELME, though it has only Fund Age as a normally distributed factor.

Table 17 OLS- Descriptive statistics for ELME

	Cash ELME	Current ELME	DE ELME	DA ELME	Fund Age ELME	ROE ELME
count	13	13	13	13	13	13
mean	3,37	0,28	0,20	-0,44	3,55	0,17
std	0,96	1,29	0,40	0,73	0,11	1,18
min	2,03	-3,51	-0,86	-1,29	3,37	-2,30
25%	2,69	0,29	0,13	-0,67	3,47	0,00
50%	3,36	0,46	0,38	-0,56	3,56	0,00
75%	3,62	0,79	0,47	-0,52	3,64	0,00
max	4,94	1,81	0,55	1,76	3,71	2,43

Source: the authors calculation based on data

Table 18 Normality test: p-value of ratios & Co-linearity test: VIF factor for independent variables

	Cash ELME	Current ELME	DE ELME	DA ELME	Fund Age ELME	ROE ELME
p-value	0,302	0,002	0,008	0,000	**0,820**	0,002
VIF factor					**1,00**	

Source: the authors calculation based on data

Table 19- OLS- Regression Results for Cash & Current Ratio for ELME

Dep. Variable:	Cash Ratio		**Dep. Variable:**	Current Ratio	
R^2:	0,130		**R^2:**	0,104	
	coef:	**P> |t|**		**coef:**	**P> |t|**
const.	14,37	0,12	**const.**	13,45	0,27
Fund Age	-3,09	0,22	**Fund Age**	-3,71	0,28

Source: the authors calculation based on data

The coefficient values show that the p-value is greater than 0.05 for all independent variables, meaning that none of the independent variables are significant predictors of the Cash and Current Ratio. Moreover, the hypothesis asserting a negative relationship between liquidity and Fund Age has been validated. The following REIT is CSR, though it has Fund Age and Debt to Equity as a normally distributed factors, with moderate collinearity between them.

Table 20- OLS- Regression Results for Cash & Current Ratio for CSR

	Cash CSR	***Current CSR***	***DE CSR***	***DA CSR***	***Fund Age CSR***	***ROE CSR***
count	*13*	*13*	*13*	*13*	*13*	*13*
mean	*-0,78*	*-0,33*	*0,42*	*-0,56*	*2,87*	*0,49*
std	*1,44*	*1,66*	*0,21*	*0,15*	*0,22*	*0,80*
min	*-3,79*	*-3,91*	*0,09*	*-0,74*	*2,48*	*-0,21*
25%	*-1,93*	*-1,90*	*0,20*	*-0,69*	*2,71*	*0,00*
50%	*-0,06*	*0,33*	*0,46*	*-0,62*	*2,89*	*0,14*
75%	*0,35*	*0,76*	*0,53*	*-0,41*	*3,04*	*0,81*
max	*0,69*	*1,43*	*0,74*	*-0,37*	*3,18*	*2,68*

Source: the authors calculation based on data

Table 21 Normality test: p-value of ratios & Co-linearity test: VIF factor for independent variables

	Cash CSR	***Current CSR***	***DE CSR***	***DA CSR***	***Fund Age CSR***	***ROE CSR***
p-value	*0,026*	*0,015*	***0,463***	*0,029*	***0,767***	*0,005*
VIF factor			***4,09***		***4,09***	

Source: the authors calculation based on data

Table 22- OLS- Regression Results for Cash & Current Ratio for CSR

Dep. Variable:	*Cash Ratio*		***Dep. Variable:***	*Current Ratio*	
R^2:	*0,606*		***R^2:***	*0,721*	
	coef:	***P> |t|***		***coef:***	***P> |t|***
const.	*8,62*	*0,33*	***const.***	*6,37*	*0,456*
Debt-to-Equity	*1,74*	*0,54*	***Debt-to-Equity***	*3,85*	*0,18*
Fund Age	*-3,53*	*0,20*	***Fund Age***	*-2,9*	*0,27*

Source: the authors calculation based on data

The coefficient values show that the p-value is greater than 0.05 for all independent variables, meaning that none of the independent variables are significant predictors of the Cash and Current Ratio. The last REIT is ESS, with only the Fund Age as a variable.

Table 23- Descriptive statistics for ESS

	Cash ESS	Current ESS	DE ESS	DA ESS	Fund Age ESS	ROE ESS
count	13	13	13	13	13	13
mean	-0,34	0,47	0,17	-0,62	3,03	2,05
std	0,39	0,27	0,26	0,12	0,19	1,47
min	-1,17	-0,12	-0,13	-0,76	2,71	0,79
25%	-0,59	0,31	-0,05	-0,72	2,89	1,31
50%	-0,32	0,57	0,11	-0,65	3,04	1,94
75%	-0,06	0,64	0,45	-0,49	3,18	1,98
max	0,21	0,79	0,56	-0,45	3,30	6,73

Source: the authors calculation based on data

Table 24 Normality test: p-value of ratios & Co-linearity test: VIF factor for independent variables

	Cash ESS	Current ESS	DE ESS	DA ESS	Fund Age ESS	ROE ESS
p-value	0,836	0,209	0,022	0,017	**0,787**	0,000
VIF factor					**1,00**	

Source: the authors calculation based on data

Table 25- OLS- Regression Results for Cash & Current Ratio for ESS

Dep. Variable:	Cash Ratio		**Dep. Variable:**	Current Ratio	
R^2:	0,021		**R^2:**	0,207	
	coef:	**P> |t|**		**coef:**	**P> |t|**
const.	1,08	0,41	**const.**	2,45	0,16
Fund Age	--0,20	0,63	**Fund Age**	-0,92	0,11

Source: the authors calculation based on data

The coefficient values show that the p-value is greater than 0.05 for all independent variables, meaning that none of the independent variables are significant predictors of the Cash and Current Ratio

Based on the results of multiple linear regression analysis performed on the various REITs, the following conclusions can be made:

- The results indicate that Fund Age is a significant predictor of liquidity ratios, namely Cash Ratio and Current Ratio, in most REITs. This is evidenced by the statistically significant relationship and the high R^2 values of the regression models, ranging from 35% to 53.6%. These findings lend support to the initial hypothesis that there is a negative relationship between Fund Age and liquidity ratios.
- Furthermore, some REITs have additional independent variables that are statistically significant predictors of liquidity ratios, namely Debt to Equity and ROE, confirming the initial hypothesis about their negative and positive relationship with liquidity, respectively.
- However, in some REITs, independent variables such as Debt to Assets (DA) were not found to be statistically significant predictors of liquidity ratios, thus the initial hypothesis about its negative relationship with liquidity cannot be supported.
- In addition, the constant value was found to be a significant predictor of liquidity ratios in some REITs.

Conclusion

The objective of this study was to examine the relationship between debt ratios, profitability ratios and fund age, and liquidity ratios (cash ratio and quick ratio) for REITs listed on the NYSE during the period 2009-2021. A multiple linear regression analysis was conducted with liquidity ratios as dependent variables. All hypotheses mentioned in the overview of the methodology were confirmed. The results of the analysis show that Fund Age can be used as a predictor of liquidity. Constant value also proves to be a statistically significant predictor of liquidity ratios for some REITs, and some REITs have other independent variables that are statistically significant predictors of liquidity ratios, such as Debt to Equity and ROE. Debt to assets (DA) was not statistically significant in any of the regression models run. Results that were not consistent with the hypotheses established were not considered statistically significant. All results that did not support the established hypothesis were found not be statistically insignificant.

As for further work, one could consider including more variables in the analysis, such as the operating income or the net income of the REITs, and excluding the ones that prove not to be statistically significant. In addition, including several different funds using a panel analysis can provide a broader perspective. Another approach would be to perform a more in-depth analysis of the underlying reasons for the relationship between Fund Age and the Cash and Current Ratios. Additionally, one could also compare the results of this study with similar studies of other types of financial companies to see if the results are generalizable. Finally, it would be interesting to explore how the results of this study could be used by REIT managers to improve their financial performance.

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Vuk Miletić[1]
The College of Academic Studies "Dositej", Belgrade

Dušan Aničić[2]
University "Union-Nikola Tesla", Faculty of Economics and Finance, Belgrade

Aleksandar Gračanac[3]
University "Union-Nikola Tesla", Belgrade

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EVALUATION OF HUMAN RESOURCES POLICY IN NATIONAL ORGANIZATIONS WITH DIFFERENT GOVERNING ORGANIZATIONAL STRUCTURES

Abstract

The primary idea of the paper is to look at the essence of human resources policy in national organizations that have different organizational structures as a source of generating competitive advantage. Every high-grade organization pays great attention to the human resources policy, both in terms of hiring suitable personnel and in terms of professional development of those already employed in the organization. The research subject is the organizational structure of the company as an indicator of the satisfaction of employees, who are ready to progress and improve, thereby bringing profit to themselves and the organization. The resulting premise is that a reliable human resources policy is a condition for the right personnel and the most successful value parameters to be fully expressed in different organizations. The analysis is focused on assessing the disproportion in the human resources policy in organizations that otherwise have a conflicting organizational structure, which should ensure their business results. The analytical-deductive method, the synthesis method, and the statistical test method were used to prove the initial assumption.

Key words: *organization, organizational structure, human resources policy, personnel, leadership style.*

JEL classification: J24, L22, M12, M51

[1] vukmiletic88@gmail.com, ORCID ID 0000-0002-6250-6803

[2] dusan.anicic@yahoo.com, ORCID ID 0000-0003-1201-0532

[3] agracanac@yahoo.com, ORCID ID 0000-0002-5792-4752

ОЦЕНА ПОЛИТИКЕ ЉУДСКИХ РЕСУРСА У НАЦИОНАЛНИМ ОРГАНИЗАЦИЈАМА СА РАЗЛИЧИТОМ ВЛАДАЈУЋОМ ОРГАНИЗАЦИОНОМ СТРУКТУРОМ

Апстракт

Примарна идеја рада је да се сагледа суштина политике људских ресурса у националним организацијама које имају различиту организациону структуру, као изворoм генерисања конкурентске предности. Свака квалитетна организација придаје велику пажњу политици људских ресурса како из домена ангажовања одговарајућих кадрова, тако и са аспекта стручног усавршавања оних који су већ упошљени у организацији. Предмет истраживања је организациона структура предузећа као индикатор задовољства запослених, спремних да напредују и усавршавају се и тиме и себи и организацији доносе профит. Исходишна премиса је да је поуздана политика људских ресурса услов да прави кадрови и најуспешнији вредносни параметри дођу до пуног изражаја у различитим организацијама. Сагледавање је усредсређено на процени несразмере у политици људских ресурса у организацијама које иначе имају опречну организациону структуру, која ваља да осигура њихов пословни резултат. Ради доказивања полазне претпоставке употребљени су аналитичко - дедуктивни метод, метод синтезе и метод статистичког теста.

Кључне речи: *организација, организациона структура, политика људских ресурса, кадрови, стил руковођења.*

Introduction

A key point of the strategically oriented policy of any organization is the human resources policy that determines the logic and postulates used by managers in relation to employee satisfaction (Wedajo, et al., 2020) and the governing organizational structure. Every organization has its own specific structure, its dominant system of internal connections and relationships, which should ensure its successful functioning. Such organizational structures are adapted to the company's strategic goals (Vujačić, et al., 2022) and thus pave the way for easier change management, as well as greater employee motivation and satisfaction. Without the right organizational structure, even the best performance in all areas of leadership will remain ineffective. In general, the organizational structure has the task of unifying and combining all the characteristics of the organization: process technology, complexity of the work process, adequate measurement of results, market position, employee motivation, all in the function of business excellence (Djurović, Bulatović, 2016). As a hierarchical framework within which organizations organize lines of authority and communication and assign rights and responsibilities to employees, the organizational structure determines the necessary responsibilities and authority of the management of each constituent part (Mihajlović, et al., 2021) within the structure (Kovač, 2012) in order to more efficiently achieve the planned goals.

Human resources policy, as a management tool, incorporates organizational activity whose goal is to unify the efforts of all employees in the organization to complete given tasks (Mitsakis, 2014). It is a holistic activity of personnel that combines different forms of personnel work, specific aspects of its application in the organization (Latin, et al., 2022) and employment programs. Such a policy should ensure the synergy of the process of synchronizing and preserving the numerical and qualitative structure of personnel (Petković, et al., 2021) in accordance with the needs of the organization and developments on the labor market.

Personnel (Popović, et al., 2021) in the organization are the first decisive factor in the production of goods, a productive force that favors the combination of goals and priorities in order to achieve sustainable competitiveness. Differences among personnel in terms of expertise, performance, talents, and demographic characteristics exist in all organizations and are considered important in ensuring high performance (Ferreira, et al., 2020; Petrović, 2020). The fact that the difference in human resources policy exists in organizations that have a different organizational structure (Vasić, 2015) can significantly determine the results of their operations. Therefore, those who have the power to decide should keep these differences in mind and fully respect them in the HR management process (Brebels, et al., 2015). All the more so because differences in management style can significantly affect: the allocation of financial resources for the education and training of employees, objectivity when choosing those who will be educated, the formation of the level of employee awareness of business culture and the concept of teamwork in the organization, the creation of a level of awareness on which employees share responsibility for the success and failure of the company, and the level of awareness of employees as a resource of creativity and new ideas.

Regardless of the decision-makers in organizations and/or their management style (Gardašević, et al., 2021), human resources policy should ensure an increase in the ability of employees, i.e. companies, to provide answers to the changing demands of the market in the near future, regardless of the structure of the organizational model. Improving the human resources policy of national organizations is not possible without a comprehensive analysis. In the analysis of the characteristics of such an organization's personnel policy, the starting point is its connection with the strategic direction of development. At the same time, attention should be focused on long-term planning, the essence of the role of personnel, and the system of interconnected structures and procedures for working with given personnel. Quality selection of people (Robertson, et al., 2001; Afshari, et al., 2010; Stanujkic, et al., 2018) and their assignment to the right places in a specific organizational structure in which roles, powers, and responsibilities are delegated, controlled, and coordinated and in which the information flow between different organizational levels is regulated is considered a winning combination of a successful human resources policy.

Research methodology

In this paper, the research was conducted as an analytical cross-sectional study with the goal of interpreting the importance of human resources policy for achieving total business excellence in different national organizations, which have different organizational structures, taking into account the variations in leadership tenability. In order to perceive the key elements of the strategic importance of human resources

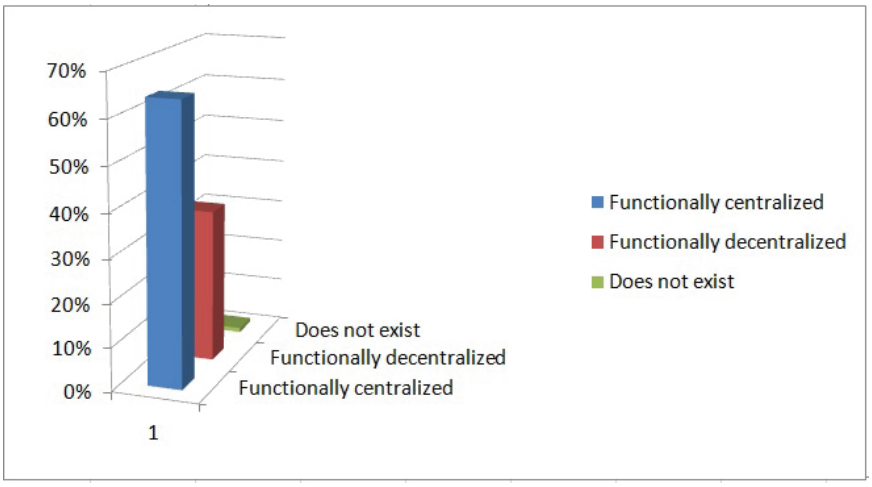
policy for the sustainable success of various organizations, primary data was obtained, extracted, and analyzed in the field. The research was conducted in the form of an online questionnaire on a sample of 123 organizations. The acquisition of data is focused on determining the influence of human resources policy, i.e. organizational structure as an independent variable on consequential variables such as: allocation of funds for employee education and training, as well as their reaction to the education module; objectivity when choosing employees who will be trained; the importance of human resources in the organization as a source of creativity and new ideas; the level at which the idea of business culture and teamwork is realized in organizations where decision-makers have different leadership styles, which ultimately determines business results.

The answers obtained from the respondents were processed with the ANOVA test and the non-parametric $\chi 2$ test (the presence of a statistically significant difference for Sig≤0.05 values). The collected data are presented graphically, tabularly, and descriptively. Microsoft Excel 2010 was used to draw the graphs.

Results and Discussion

As a result of the organizing process, the organizational structure should correspond to the goals and the environment in which the company engages in its business activity. In a large number of national organizations analyzed in the sample, a functional centralized organizational structure prevails. Functional centralized organizational structure is present in 79 (64%) organizations, functional decentralized organizational structure is present in 42 (35%) organizations, while in 2 (1%) organizations it is indicated that there is no clearly visible organizational structure. Incidentally, functional organization is the simplest and most applied model of organizational structure in the domestic business milieu. The percentage representation of the different organizational structures in the organizations in the sample is presented in Graph 1.

Graph 1. Organizational structures in the organizations in the sample



Source: Author's researc

An organization on the market cannot ensure sustainable business if the engaged human resources are not adequately motivated and trained for the necessary tasks and if there is no reliable communication between different organizational levels, regardless of the possession of financial resources, appropriate equipment, and modern technology. Without investing in the knowledge of the engaged personnel, their quality selection, education and training, it is not possible for the organization to grow and develop and achieve sustainable competitiveness. Also, without the quality organization and assignment of rights and responsibilities and without controlled and coordinated roles, it is not possible for the organization to transform into a highly profitable structure. The analysis of human resources from the defined sample was processed by the ANOVA test with a probability level of 0.05, in relation to the independent variable:

- organizational structures.

Dependent variables were graded from 1 to 5, with 1 being the lowest and 5 being the highest grade. The survey asked respondents to mark the organizational structure in their company with one of the following options: functionally centralized, functionally decentralized, or non-existent. Comparative statistics indicating the existence of differences in human resources policy in organizations with different organizational structures are presented in Table 1.

Table 1. Differences in human resources policy in organizations that they have a different organizational structure

		Sum of Squares	df	Mean Square	F	Sig.
Work habits of employees in the organization	Between Groups	5.493	2	2.746	3.015	.052
	Within Groups	121.147	133	.911		
	Total	126.640	135			
The reaction of employees to the education program, as well as their readiness for education and training	Between Groups	1.752	2	.876	.653	.522
	Within Groups	178.365	133	1.341		
	Total	180.118	135			
Allocating funds of the organization for the education and training of employees	Between Groups	13.585	2	6.793	4.265	.016
	Within Groups	211.819	133	1.593		
	Total	225.404	135			
Justness in selecting the employees to be educated	Between Groups	16.542	2	8.271	6.351	.002
	Within Groups	173.222	133	1.302		
	Total	189.765	135			

Level to which the idea of business culture is realized within the organization	Between Groups	.599	2	.299	.299	.742
	Within Groups	133.166	133	1.001		
	Total	133.765	135			
Level to which the organization's employees share the responsibility both for the success and for the failure of the organization	Between Groups	4.756	2	2.378	1.689	.189
	Within Groups	187.236	133	1.408		
	Total	191.993	135			
Team work in the organization	Between Groups	1.826	2	.913	.891	.413
	Within Groups	136.284	133	1.025		
	Total	138.110	135			
Organization's employees as a source of creativity and new ideas	Between Groups	9.757	2	4.879	4.312	.015
	Within Groups	150.478	133	1.131		
	Total	160.235	135			

Source: Author's research

Table 2 shows the differences in objectivity in the selection of personnel to be educated in organizations with a specific leadership style. Education programs are focused on maintaining and improving results in the current workplace, while training programs are intended to develop skills needed for future work. It can be noted that there is a difference between organizations in which there is an autocratic and participative leadership style and in organizations in which there is an autocratic and democratic leadership style.

Table 2. Objectivity during the selection of employees who will be trained in organizations that have different leadership styles

Objectivity when choosing employees who will be educated		Mean difference (I-J)	Standard deviation	Deviation significance (Sig)	95% Confidence interval	
(I) Management style in an organization	(J) Management style in an organization				Lower limit	Upper limit

Autocratic	Participatory	-.767(*)	.260	.020	-1.44	-.09
	Democratic	-.848(*)	.278	.015	-1.57	-.12
	Not sure	.250	.455	.946	-.93	1.43
Participatory	Autocratic	.767(*)	.260	.020	.09	1.44
	Democratic	-.081	.231	.985	-.68	.52
	Not sure	1.017	.427	.086	-.10	2.13
Democratic	Autocratic	.848(*)	.278	.015	.12	1.57
	Participatory	.081	.231	.985	-.52	.68
	Not sure	1.098	.438	.064	-.04	2.24
Not sure	Autocratic	-.250	.455	.946	-1.43	.93
	Participatory	-1.017	.427	.086	-2.13	.10
	Democratic	-1.098	.438	.064	-2.24	.04

Source: Author's research

Based on the collected data, taking into account the differences in the organization management style, it can be concluded that the observed differences significantly affect:

- Allocation of the organization's funds for employee education and training
  Sig=0.016;
- Objectivity during the selection of employees who will be trained Sig=0.002;
- Human resources in the organization as generators of inventiveness and new ideas
  Sig=0.015.

An additional Tukey test was used to determine which organizations with different organizational structures differ by looking at the variables in which a significant disparity in ratings was observed.

The disproportions in the evaluations of the allocation of funds for the education of employees and their training in organizations with different organizational structures are presented in Table 3. It can be seen that the scores in organizations that have a functional centralized organizational structure and a functional decentralized organizational structure are particularly different compared to organizations in which the organizational structure does not exist.

Table 3. Allocation of funds for the improvement and training of employees in organizations that have a different organizational structure

Allocating funds of the organization for the education and training of employees		Mean difference (I-J)	Standard deviation	Deviation signify-cance (Sig)	95% Confidence interval	
(I) Organizational structure in the company	(J) Organizational structure in the company				Lower limit	Upper limit

Functional centralized	Functional decentralized	-.226	.228	.584	-.77	.32
	Does not exist	2.391(*)	.903	.024	.25	4.53
Functional decentralized	Functional centralized	.226	.228	.584	-.32	.77
	Does not exist	2.617(*)	.911	.013	.46	4.78
Does not exist	Functional centralized	-2.391(*)	.903	.024	-4.53	-.25
	Functional decentralized	-2.617(*)	.911	.013	-4.78	-.46

Source: Author's research

Variations in objectivity during the selection of employees who will be trained in organizations with different organizational structures are presented in Table 4. From the table seen above, it should be noted that there is an oscillation in organizations that have a functional centralized and functional decentralized structure in relation to organizations in which there is no organizational structure.

Table 4. Objectivity during the selection of employees who will be trained in organizations that have a different organizational structure

Objectivity when choosing employees who will be trained		Mean difference (I-J)	Standard deviation	Deviation signify-cance (Sig)	95% Confidence interval	
(I) Organizational structure in the company	(J) Organizational structure in the company				Lower limit	Upper limit
Functional centralized	Functional decentralized	-.109	.207	.859	-.60	.38
	Does not exist	2.828(*)	.816	.002	.89	4.76
Functional decentralized	Functional centralized	.109	.207	.859	-.38	.60
	Does not exist	2.936(*)	.824	.001	.98	4.89
Does not exist	Functional centralized	-2.828(*)	.816	.002	-4.76	-.89
	Functional decentralized	-2.936(*)	.824	.001	-4.89	-.98

Source: Author's research

Conclusion

In the conducted research, organizations of different sizes are proportionally represented in the sample. The results of the study indicate that, in the largest number of national organizations included in the sample, a functional centralized organizational structure prevails (64%). Comparative statistics confirm the presence of differences in human resources policy in organizations that have different organizational structures, so it can be concluded that there are differences in organizations with an autocratic and participative leadership style and in organizations with an autocratic and democratic leadership style. The results of the study indicate the existence of a disproportion in the human resources policy in organizations that have different management styles, so it is established that oscillations in the organization management style significantly affect: the allocation of the organization's funds for employee education and training, objectivity when selecting the personnel to be trained, and human resources in the organization as carriers of creativity and new ideas. The Tukey test shows the existence of an oscillation between organizations that have a different organizational structure by looking at the variables where a significant disparity in ratings was observed. It is evident that the evaluations in organizations that have a functional centralized organizational structure and a functional decentralized organizational structure are different in comparison to organizations in which the organizational structure does not exist. Variations in objectivity when choosing employees who will be trained in organizations that have a different organizational structure clearly indicate that there is a difference in those that have functional centralized and functional decentralized structure compared to organizations where there is no organizational structure.

The assumptions stated in this study show that there is no sustainable business if the management does not improve the personnel policy of its organization. Without investing in the knowledge and education of human resources and the function of an adequate organizational structure, even the best performance in all areas of management will remain ineffective. The final suggestion to organizations would be to actively adapt the human resources policy and organizational structure to the decisions being made, which should correspond to the goals and the environment in which they perform their business activities.

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Biljana S. Ilić[1]
Bojana Ostojić[2]
Educons, University of Kamenitz,
Faculty of project and Innovation Management
"Petar Jovanovic", Belgrade

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COMMUNICATION MANAGEMENT USING DIGITAL SOFTWARE TO INCREASE SALES

Abstract

Digital marketing is the practice of using digital platforms and technologies to advertise a good, service, or brand to make influence on a target market. To attain company objectives, this type of marketing uses a variety of methods and tactics. When the emphasis is on product promotion and communication with potential customers, email marketing is one of the most significant aspects of digital marketing and continues to score highly in communication channels. To rank the digital platforms, or software, that are most frequently available on the Serbian market and used to advertise a variety of goods and services, the paper will research the opinions of senior managers of enterprises and firms in Serbia. The analysis was conducted using the multilinear regression technique. The study's findings may have an impact on Serbia's efforts to manage digital platform services better. The project makes a minor contribution to the use of digital communication technologies for enhancing the current digital platform offerings, particularly in the central part of the country. As a representative example, the study includes the city of Belgrade, the capital of Serbia, where various firms and companies that use various digital software for their needs operate.

Key words: *Digital Marketing, E-mail Marketing, Digital Platforms, Service Management, Managers, Serbia.*

JEL classification: *M150.*

МЕНАЏМЕНТ КОМУНИКАЦИЈОМ УПОТРЕБОМ ДИГИТАЛНОГ СОФТВЕРА ЗА ПОВЕЋАЊЕ ПРОДАЈЕ

Апстракт

Дигитални маркетинг је пракса коришћења дигиталних платформи и технологија за промовисање робе, услуга или брендова како би се утицало на циљно тржиште. Ова врста маркетинга користи различите методе и стратегије у циљу постизања циљева компаније. Када је фокус на промоцији производа и комуникацији са потенцијалним купцима, маркетинг путем е-поште је један од најважнијих аспеката дигиталног маркетинга и наставља да се истиче у свим каналима комуникације. У циљу рангирања дигиталних

[1] bilja0110@gmail.com, ORCID ID 0000-0001-6137-8478

[2] bojanaostojic2002@yahoo.com, ORCID ID 0000-0001-6731-431X

платформи, односно најчешћих софтвера на српском тржишту који се користе за промоцију различитих роба и услуга, у овом чланку ћемо испитати мишљења виших менаџера српских компанија и предузећа. Анализе су обављене коришћењем техника вишеструке линеарне регресије. Налази студије могли би да утичу на напоре Србије да боље регулише услуге дигиталних платформи. Рад даје одређени допринос у коришћењу дигиталних платформи и комуникационих технологија, а фокус је на централном региону земље. Као репрезентативан пример, студија обухвата град Београд, главни град Србије, где послују многобројне компаније које користе различите дигиталне софтвере за своје потребе.

Кључне речи: *Дигитални маркетинг, Е-маил маркетинг, Дигиталне платформе, Управљање услугама, Менаџери, Србија*

JEL classification: *M150*

Introduction

Digital marketing and email marketing are closely related and are often used together as part of an overall marketing strategy (Alcakovic et al., 2021). E-mail marketing is considered by many to be an outdated method of Internet marketing, implying that nowadays advertising is done only and only through social networks (Ostojic et al., 2021). The same email marketing is tied to old-fashioned companies that are still not in step with the present. However, if used correctly, this form of advertising can be very beneficial for a business. Email marketing is one of the key elements of digital marketing and provides organizations with a direct channel of communication with users via electronic mail (Miletic et al., 2020; White, 2017). Digital marketing and email marketing are connected in several ways (E-mail Marketing): a) Integration into the marketing strategy, b) generating leads, c) increasing engagement, and d) measuring results. Email marketing is an important tool in digital marketing that enables direct and personalized communication with users, resulting in greater engagement and increased sales (Ilic et al., 2022). The surveyed companies that use digital platforms, and therefore communication via e-mail in Serbia, are as follows: Delta Holding - members of Delta Holding are engaged in agricultural production, food production, export, import, representation of foreign companies, distribution of consumer goods, car sales, real estate development and the development of new technologies. Delta Holding realizes its business through five organizational units: Delta Agrar Group, Delta Food Processing, Delta Real Estate Group, Delta Distribution and the division of new technologies (Delta Holding); Zlatiborac organization within the food industry, which deals with the production and sale of dried meat products in Serbia and beyond. Leader in the production of authentic cured meat specialties (Zlatiborac company); The Tourist Organization of Serbia (TOS) - also uses available platforms to communicate with its users and market the Serbian tourist product. The activity of the Tourist Organization of Serbia is aimed at positioning the tourist product of Serbia on the domestic and foreign markets and tourism valorization of Serbia's comparative advantages, such as its geostrategic position, historical, cultural, and natural identity (Tourist Organization of Serbia); Bambi Požarevac is a company engaged in the production of confectionery products and is considered one of the leading brands in Serbia, as well as in the region of the Western Balkans (Bambi Company). Is it possible to "improve"

the services of new technology? What else can be offered to the users of services in the field of modern communication digital marketing platforms? Is it possible to improve business with the help of e-marketing software? These are some of the questions that the author will try to answer by making a modest contribution in the part related to the management of software for e-marketing. This study aims to highlight common characteristics and problems related to the attitude of senior company managers about digital platforms, based on the most common software or platforms for e-marketing in Serbia. The study in one way highlights how to improve digital services and communication with users.

Theoretical backgrounds and Literature review

Phillip Kotler, known throughout the world as the father of modern marketing, defined marketing as follows (Kotler & Lejn, 2017): "the science and art of research, creation, and delivery of value to satisfy the needs of the target market, while gaining profit." Marketing recognizes unmet needs and wants. It defines, measures, and quantifies the market size and potential profit. It indicates which parts of the market the company can best satisfy, and based on that it creates and promotes appropriate products and services" (Kotler & Lejn, 2017). Email marketing is a marketing method used to send marketing messages via electronic mail to communicate with a target audience. The evolution of email marketing includes the development and changes in the way this communication channel is used over the years (Stallings, 2004). The very beginnings of email marketing date back to the early days of the Internet, when organizations sent mass, generic messages via electronic mail without a clear goal or personalization. However, as technology has evolved, email marketing has become more sophisticated and customer-oriented (Ilic et al, 2019; Simonovic et al., 2017). The evolution of digital direct marketing has ranged from direct mail, through telemarketing to the latest phase of online marketing, which is social media marketing and mobile marketing. Electronic mail has changed its importance in digital communication, but it is certainly still very popular, sustainable, and different from other forms of communication through the media (Chaffey & Smith, 2017). According to the authors of Chaffey & Smith, marketing campaigns launched on the site support advertisements that are segmentally different from traditional advertisements. From the point of view of digital marketing, they determined that several basic methods of Internet marketing can be launched on any site (Chaffey & Smith, 2017): Banner, Email Marketing, Newsletter, and Blog marketing. Email marketing is one of the most profitable marketing methods, where you get in direct contact with the audience through an email service provider. This method also includes how the organization addresses an unknown audience to turn them into potential clients. Today, email marketing includes properly segmented and targeted messages that are tailored to the specific interests, preferences, and needs of users (Gavric et al., 2015; Bojkovic, 2009). This can be achieved through personalization of messages, automated campaigns, testing, and content optimization (Ostojic et al., 2020; Simonoviv et al., 2012). In addition, email marketing integrates with other digital channels and marketing tools to create a cohesive and aligned marketing strategy (Perisic et al, 2005). Defining email marketing is the process of sending relevant and timely messages via electronic mail to achieve marketing goals (Ostojic et al, 2021). This may include sending promotional offers, product updates, personalized messages, newsletters, automated message series, and more. The goal is to capture the recipient's attention, prompt

them to take action, improve engagement and, of course, increase conversions and sales (Ilic & Nikolic, 2019; Rimal & Real, 2005).

Research results and Discussion - Digital software for e-communication in Serbia

Email marketing software is a key tool for effectively managing, designing, automating, and analyzing email campaigns. They help companies and businesses reach their target audience, personalize messages, track results, and optimize their marketing efforts (Gajic et al., 2015). For the success and improvement of the sale of services and the quality of email messages, it is certainly crucial to list the most famous and most used software in Serbia - these are (Paulo et al., 2022): 1) Mailchimp - one of the most popular email marketing software that offers a wide range of features for managing subscriber lists, designing emails, automating campaigns, and tracking results. 2) Klaviyo - is specifically targeted at e-commerce and provides advanced email personalization features based on customer behavior. It also can integrate with various e-commerce platforms. 3) Constant Contact - popular email marketing software that offers a simple interface, email design tools, and campaign automation. It also provides the ability to manage subscriber lists and monitor analytical data. 4) SendinBlue - comprehensive software that, in addition to email marketing, also offers SMS marketing, campaign automation, CRM tools, and much more. It also has affordable plans for small and medium-sized businesses. 5) Campaign Monitor - email marketing software that stands out for its user interface and intuitive tools for designing emails. 6) GetResponse - Email marketing software that offers a wide range of features including subscriber list management, campaign automation, landing pages, webinars, and analytics. Campaign Monitor and Get Response digital software were used to a much lesser extent in Serbian business and therefore will not be included in the research, that is, they were not considered. Belgrade, which occupies much of the country's center region, is not only the nation's capital but also a major European city with a high level of appeal to foreign investors (Belgrade). The largest corporations in Serbia have their headquarters in Belgrade, which is also the area of Serbia that is thought to be the most developed. All news on world accomplishments and innovations first reaches Belgrade before spreading to other regions of the country. The same is true of emerging technologies and advances, including digital marketing, a component of contemporary information technology. Modern technologies require knowledgeable human resources, or human resources who have received proper training and education. Serbian businesses, which served as research subjects in the paper, are typical in terms of their quality management personnel (Przulj & Vemic-Djurkovic, 2010). The top management of four large companies, Deltaholding, Zlatiborac, Bambi, and the Tourist Organization of Serbia, has a total of 170 employees in the positions of senior managers and top managers. These are the human resources that use information technology the most and communicate the most using digital software. It should be noted that these respondents are also the biggest users of e-mail Marketing. They use e-mail marketing to advertise new products and services, expand the market, as well as communicating with other personnel structures within the company. The respondents were sent a questionnaire to their email address, with a note that their answers will be

used exclusively for scientific research and that they will be strictly confidential. As email marketing has evolved from the mass sending of generic messages to customized and targeted campaigns, the top management of companies has also evolved (Feld et al., 2013). E-mail Marketing, as well as users of digital software, is an important tool in digital marketing, as it allows top managers to communicate directly with users and achieve marketing goals through e-mail (Kumar & Salo, 2018).

Methodology

The multinomial regression method was used in the paper. An anonymous questionnaire was created to conduct interviews with software users. Out of 170 employees in senior top management positions, 148 respondents completed the questionnaire, making up the study's total sample size of 148 top managers. Eight questions were put to them, seven of which were general and concerned subjects such as gender, age, how frequently respondents opened marketing emails from other businesses, whether they believed that newsletters influenced their decisions to purchase certain goods, how frequently respondents clicked on "Call to Action" (CTA) links, whether respondents used one of the provided platforms (Mailchimp, Klaviyo, Constant Contact, SendingBlue) in their business, and which of the four offered software (platforms) sent the clearest messages. The questionnaire's final question asked about how managers in the workforce rated various digital platforms/software. The participants rated the offered features of the platforms on a scale ranging from 1 - extremely low rating to 6 - extremely high rating, mentioned platforms: Mailchimp, Klaviyo, Constant Contact, and Sendinblue. So, in the paper, the authors investigated the predictors of the behavior of the respondents, in this case, top managers, during the use of the software. The authors believe that the analysis will assess the following characteristics: Discounts and promotional offers; New products and services; Personalized offers according to the interests of the company; Free samples or gifts; Attractive design. Relevant content for the interests of the company - be significant for determining the best-selling e-mail marketing software in Serbia. When setting up the analysis, top managers who indicated they were for Mailchimp (group 1) were treated as the reference group (or base category) against which the other groups were compared. The SPSS program and Multinomial logistic regression were used in the analysis, which is normally used when the researcher models the relationship between two or more independent variables. This is also perhaps the most common form of regression in the research literature for comparing more than two groups of logits. Multiple logistic regression is used when the dependent variable is not binary and/or the categories are not ordered or arranged (Menard, 2002). Let the dependent variable Yij be given where there are four choices. And let two independent variables be given $Xi1$ I $Xi2$, where i is the number for the i -th sample element. The multinominal logit model is represented by Eq 1:

$$P\left(X_{ij} \geq \frac{j}{X_{iy}, X_{i2}}\right) = \frac{1}{1+e^{-(\beta j0+\beta_1 X_1+\beta_2 X_2)}} \qquad (1)$$

gde je $i \in (1,\ldots,n), a\ j \in (0,1,2,3)$

In this case, the evaluated coefficients are $\beta_1, \beta_2, \beta_3$ i β_4. This shows that in the specific case, the number of coefficients to be evaluated is $j - 1 + K$. Evaluated coefficients are $\beta 0{,}0, \ldots, \beta j - 1{,}0, \beta\ 1, \ldots, \beta$ for parameters $\beta 0{,}0, \ldots, \beta j - 1{,}0, \beta 1, \ldots, \beta$.

When a person *i* chooses (outcome/option) *j*, the score is taken into consideration in the discrete choice theory, where observations represent managers and they represent choices. The option with the greatest score is the anticipated pick (Darroch & Ratcliff, 1972).

The primary objective of the study was to forecast the actions of senior managers and users of four pieces of software in Serbian businesses based on the following predictors or regressors: gender, age, the opening of marketing communications, belief about the value of newsletters in decision-making, and utilization of links. Using the platforms Mailchimp, Klaviyo, Constant Contact, and SendingBlue, determine which Call to Action (CTA) communicates the clearest messages. In addition to the multiple logistic regression method, a descriptive approach was used for this portion of the investigation. Of the total 148 respondents, 54 respondents were female, while 94 respondents were male. The number of people by age ranged from 20 to 60 years old - with most managers being over 25 years old (133). Marketing messages are opened by all 148 top managers/respondents. The 110 surveyed top managers believe that newsletters have a great impact on making decisions about purchasing certain products (mainly products that are related to the company's operations). Only 50 respondents use the Call to Action link. Mailchimp software is used in their daily work by 31 respondents (employed top managers), 43 respondents said Klaviyo, 36 respondents used Constant Contact, and 38 respondents said SendinBlue - shown in Table 1.

Table 1: Structure of respondents who use E-marketing software

		N	Percentage
Softver	Mailchimp	*31*	*20.9%*
	Klaviyo	*43*	*29.1%*
	Constant Contact	*36*	*24.3%*
	SendinBlue	*38*	*25.7%*
Total		*148*	*100.0%*

Source: author's analysis

Mailchimp software users were taken as a reference group (I group), because there were the fewest of them, but they gave the strongest arguments (in writing) why, in their opinion, Mailchimp is the most favorable software. The other three groups of respondents in the analysis were compared with this group, i.e. the groups of respondents who use Klaviyo, then Constant Contact, and SendinBlue. Since the respondents' arguments for Mailchimp were by far the strongest, the authors wanted to investigate why the other respondents also do not use this software in E-marketing. The software was compared based on the three strongest parameters of the respondents: personalized offers, free samples, and based on relevant content for the company's business.

Table 2: Model Fitting Information

	Model Fitt.Crit	Likelihood Ratio Tests		
Model	-2 Log Likelihood	Chi-Square	df	Sig.
Intercept Only	*322.071*			
Final	*244.879*	*77.193*	*18*	*.000*

Source: author's analysis

Table 2 shows "Model Fitting Information" - which is made up of the likelihood ratio chi-square test that includes all predictors to a model that considers only the intercept (Darroch & Ratcliff, 1972) Statistical significance indicates that the full model represents a significant improvement in fit over the null model, as can be seen [$\chi^2(18)=77.193$, $p<.001$]. The Deviance and Pearson Chi-Square tests are shown in Table 3, labeled "Goodness of Fit," and they can be used to assess how well a model fits the data. Results from tests that are not statistically significant are signs that the model fits the data well (Field, 2017). Based on the example for social researchers of how to execute multinomial logistic regression, the outcome is mixed, claim Field and Petrucci (although they did not always agree) (Osborne, 2015).

Table 3: Goodness-of-Fit

	Chi-Square	**df**	**Sig.**
Pearson	*294.691*	*237*	*0.006*
Deviance	*225.294*	*237*	*0.697*

Source: author's analysis

According to Pearson's chi-square test, the model does not entirely fit the data ($\chi^2(237)= 294.691$, $p=0.000$), whereas the Deviance chi-square does indicate a good fit ($\chi^2(237)= 225.294$, $p=1.00$)

Table 4: Pseudo coefficients of determination

Cox and Snell	*0.406*
Nagelkerke	*0.434*
McFadden	*0.189*

Source: author's analysis

Pseudo coefficients of determination are displayed in Table 4. These pseudo-R-squared values are used to approximate the values of the regression's coefficients of determination. About 40% of the variance in the dependent variable was explained by this model (Ladyzynski et al., 2019; Petrucci, 2009).

Table 5: Likelihood Ratio Tests

Effect	Likelihood Ratio Tests		
	Chi-Square	df	Sig.
Intercept	*29.606*	*3*	*0.000*
Discounts/promotion	*1.811*	*3*	*0.613*
New Products	*6.023*	*3*	*0.110*
Personalized offers	***16.216***	***3***	***0.001***
Free samples	***11.217***	***3***	***0.011***
Attractive design	*2.682*	*3*	*0.443*
Relevant content	***16.816***	***3***	***0.001***

Source: author's analysis

The results of the likelihood ratio tests of the overall contribution of each independent variable in the model (software) are presented in Table 5 - Likelihood Ratio Tests (Saura et al, 2021; Zhao & Mao, 2018).

It should be emphasized that when a variable is included as a factor, the outcome is regarded as an omnibus test of that variable (Leung & Tsou, 2019).

The table demonstrates that tailored offers, free samples, and pertinent information are the model's most significant predictors (regressors), using the typical statistical error threshold of 005%. In other words, these elements have a role in deciding which software to use for e-marketing.

This would imply that future users of the software might select the most suitable option for their task based on these factors. Other factors are not taken into account since they lack statistical significance. The findings from Table 6 contain a comparison of each user group with the reference group (group I, users of the Mailchimp software).

The regression coefficients, in particular, highlight the predictors that significantly distinguish top managers between those assigned to Klaviyo (represented by number 2 in this part of the model) and those assigned to Mailchimp (group 1); between those assigned to Constant Contact (represented by number 3) and Mailchimp users; and between those assigned to SendinBlue (represented by number 4) and once more the managers who are determined for Mailchimp. The regression coefficients (given in the log-odds metric) are found in Column B. The odds ratios are in the Exp(B) column (Cummings, 2009; Bland & Altman, 2000).

The first set of coefficients is a comparison between Mailchimp users (reference group - I) and Klaviyo users (group 2). Only the factor "relevant content for the interests of the company" was a significant predictor (B=1.154, standard error (s.e.)=0.413, $p<.005$) in the model, because managers who gave a higher score to this variable were probably more committed to Klaviyo and less so for Mailchimp. The odds ratio of 3.172 shows that for every unit increase in "content relevant to the company's interests", the odds for Klaviyo increased (that is, the odds decreased for Mailchimp).

Increasing the factor "relevant content to the interests of the company" gives a three times greater chance that users will be more satisfied with the Klaviyo software

than with the Mailchimp software. The second set of ratios is a comparison of a reference group of Mailchimp users versus the Constant Contact software.

From the table 6, it can be concluded that with the ConstantContact software compared to the Mailchimp platform (software), managers gave higher ratings for the predictors of personalized offers and relevant content for the company. In other words, the result of 0.464 for personalized offers (B=0.868, s.e.=0.395, p<.005), means that the chances of using ConstantContact are lower compared to Mailchimp, with every increase in satisfaction with personalized offers, the chances for Mailchimp increase. Relevant content is also important for Constant Contact compared to Mailchimp.

In other words, the odds increase by almost three times in favor of ConstantContact (B=3.152, standard error (s.e.)=0.474, p<.005)-

Table 6: The final result of MLR (Multiple Logistic Regression)

Softver		B	Sig.	Exp(B)
2 Klaviyo	Intercept	*-6.006*	*.000*	
	Discounts/promotion	*.149*	*.724*	*1.161*
	New Products	*-.673*	*.154*	*.510*
	Personalized offers	*.608*	*.088*	*1.836*
	Free samples	*-.306*	*.553*	*.737*
	Attractive design	*.513*	*.252*	*1.670*
	Relevant content	*1.154*	*.005*	*3.172*
3 Constant Contact	Intercept	*-9.865*	*.000*	
	Discounts/promotion	*.663*	*.203*	*1.940*
	New Products	*-.175*	*.713*	*.840*
	Personalized offers	*-.868*	*.049*	*.464*
	Free samples	*.883*	*.152*	*2.418*
	Attractive design	*.460*	*.428*	*1.585*
	Relevant content	*1.148*	*.015*	*3.152*
4 SendinBlue	Intercept	*-2.752*	*.066*	
	Discounts/promotion	*.275*	*.495*	*1.317*
	New products	*.341*	*.392*	*1.407*
	Personalized offers	*.142*	*.667*	*1.153*
	Free samples	*-.732*	*.117*	*.481*
	Attractive design	*.636*	*.130*	*1.889*
	Relevant content	*-.009*	*.980*	*.991*

Source: author's analysis

The third set of coefficients represents the comparison of SendinBlue and Mailchimp software According to all predictors, personalized offers, free samples, and relevant content - SendinBlue and Mailchimp software are almost equal, in other words, managers give almost the same ratings for both software. The statistical categorization used to identify which group of respondents is the most appropriate for making outcomes predictions (representative group) is shown in Table 7.

Table 7: Classification table

		Predicted			
Observe	Mailch.	Klaviyo	Constant	Sendin Blue	Percent
Mailch.	19	4	3	5	61.3%
Klaviyo	4	26	4	9	60.5%
Constant Contact	1	24	8	3	22.2%
Sendin Blue	6	14	4	14	36.8%
Overall Percent.	20.3%	45.9%	12.8%	20.9%	45.3%

Source: author's analysis

In reality, the model indicated that 19 out of a total of 31 senior managers that are identified for Mailchimp will be users of this software, which is what the analysis anticipated would happen in 61.3% of situations. In 60.5% of the cases, the analysis projected future Klaviyo users. In 36.8% of the situations, top managers who will employ the SendinBlue program were forecasted. According to the model, senior managers were using ConstantContact software in the least favorable scenario, which was predicted with only 22.2% accuracy.

The authors highlighted and emphasized the following based on their results. According to the top managers selected for the Mailchimp - reference group, the software Mailchimp and Klaviyo are the most popular and highly rated among Serbian top managers for the following reasons: Because the Mailchimp software package made it possible to link and optimize practically all business sectors, the process of deploying it completely changed the organization where they work; The adoption of Mailchimp software reduced the need for external data sources, and the system also made sure that the entire organizational process was completely transparent; This accelerated business operations and increased accuracy in day-to-day work.

Conclusion

It is vital to emphasize that specialist software for e-marketing is of paramount importance for business, as well as for general communication inside and outside of organizations, based on the analysis of the conducted research and the responses of top managers in Serbia. The following details are important for businesses producing this specialist software to be aware of: To enable a distinct picture of the business, it is important to link with the software, systems, and processes within the organization; To use software to streamline monthly, quarterly, and annual reporting and to provide users with more control over cash flows; The software could facilitate more intelligent sales by accelerating the offer-to-payment process and enabling better control over the full sales process; Using software is required to automate organizational operations, secure documents, and guarantee the security of information flow at the corporate level; Business software should make it possible to take charge of the supply chain and improve customer service for the organization.

The continual investment in staff education, particularly among senior managers who are the primary decision-makers for crucial business choices, is vital for the installation of appropriate

software.The needs of the company should be taken into consideration while implementing or expanding e-marketing software. For example, it is possible to connect to data sources and services - Excel files, SharePoint lists, and CRM records with the help of Microsoft PowerApps software. However, the authors highlight the limitations of this study, noting that only four sizable Serbian businesses that conduct business both domestically and abroad were included. To assess how much e-marketing platforms are actually used in Serbia and how effectively the workforce is trained and familiar with them, the study might be expanded to smaller companies, specifically small and medium-sized businesses in Serbia. The usage of e-marketing software in Serbia's less developed regions, such as the Eastern and Southern portions of the country, may also be recommended as a topic for some future research.

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Snežana Krstić[1]
University of Defence, Military academy

Aleksandar Savić[2]
Military Technical Institute

Radan Kostić[3]
University of Defence, Military academy

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SYSTEM RISK MANAGEMENT POLICY IN BANKING

Abstract

The goal of this article is to analyze the concept of system risk. The article reviews many definitions of system risk in various literatures. In addition, the article identifies factors that contribute to raising system risk, spreading infection, and provides a conceptual plan linking these phenomena. System risk can be defined as the risk that shock will result in such a significant materialization (eg macrofinancial) of imbalances that it expands on a scale that disrupts the functioning of the financial system and to the extent that negatively affects the real economy (eg economic growth). The draft of this plan aims to break down and clearly categorize the processes of accumulation, materialization and spread of system risk. This should facilitate its identification and subsequent mitigation by allocating appropriate preventive macroprudential measures.

Key words: *system risk, banking, financial stability.*

JEL classification: *G24, G29.*

ПОЛИТИКА УПРАВЉАЊА СИСТЕМСКИМ РИЗИКОМ У БАНКАРСТВУ

Апстракт

Циљ овог рада је анализа концепта системског ризика. Рад преиспитује мноштво дефиниција системског ризика у разним литературама. Поред тога, рад идентификује факторе који доприносе изградњи системског ризика, ширењу заразе и пружа концептуални план који повезује ове појаве. Системски ризик се може дефинисати као ризик да ће шок резултирати тако значајном материјализацијом (нпр. макрофинансијских) неравнотежа да би се проширио на скали која нарушава функционисање финансијског система и до мере која негативно утиче на реалну економију (нпр. економски раст). Нацрт овог плана има за циљ да сруши и јасно категорише процесе накупљања,

[1] snezanakrstic17@gmail.com, ORCID ID 0000-0001-6666-6401

[2] aleksandar22071993@gmail.com, ORCID ID 0000-0002-5037-9130

[3] kostic.radan1976@gmail.com, ORCID ID 0000-0002-1642-1278

материјализације и ширења системског ризика. То би требало да олакша његову идентификацију и касније ублажавање додељивањем одговарајућих превентивних макропруденцијалних мера.

Кључне речи: *системски ризик, банкарство, финансијска стабилност.*

Introduction

Although system risk and pro-cyclicality were present before the outbreak of the global financial crisis, the magnitude of their negative effects has sharply increased researchers' interest in exploring their nature and ways to mitigate them. Despite the diversity of studies on this topic, this article attempts to structure different aspects of system risk and provides a concept for understanding it. The aim of the study is to analyze the concept of system risk in the context of the global financial crisis. The article analyzes the definitions of system risk as well as possible outcomes of materialization of system risk. System risk analysis includes factors that contribute to its accumulation, the spread of infection and provides a conceptual plan that connects these phenomena. The model can be used to distinguish between accumulation, materialization and spread of system risk. The main contributions of this paper include the identification and assessment of system risk and its management through macroprudential policy. Moreover, the article introduces a "way of thinking" about system risk that intends to clarify this phenomenon and facilitate analysis. The subject of the study does not include possible forms of quantification and measurement of the above-mentioned phenomena, but the following methods are used: literature review, comparative method and deductive method. The paper attempts to answer five research questions and presents a conceptual model of system risk. Research questions include:

1) How is system risk defined in the literature and central banks?
2) How is system risk identified and assessed?
3) What dimensions and phases of system risk exist?
4) What is macroprudential policy?
5) What are the tools to prevent and mitigate system risk?

Theoretical backgrounds

Regarding the concept of financial stability and system risk, there is no consensus or unanimous decision-making. The materialization of system risk during the recent global financial crisis has shown that net financial security and financial institutions have significantly underestimated it (Ilic and Tasic 2021, 25). It turned out that system risk is much more than a group of certain types of risks that affect financial institutions. Although credit risk, liquidity risk, operational risk, etc. can be directly attributed to a particular institution, system risk can only be attributed indirectly. Before the financial crisis, these types of risks were usually considered separately. However, the interconnection, ie. correlation leads to unwanted and unexpected consequences when attached to system risk. System risk develops together with the development of financial markets, regulations and collective behavior of market participants, and this can be influenced by regulatory arbitrage (Miletić et al. 2021, 177).

Previous comparative definitions of system risk emphasize a wide range of system risk characteristics. Based on a review of the literature and a case study, it is pointed out that in the most common type of system risk, moral hazard plays a key role in destroying the motivation of financial institutions. System risk arises from excessively risky activities of an individual or group, aggressive type of organizational culture (striving for short-term profit), collective failure of management in the bank (or throughout the financial system), leading to inertia and inability to respond to changes in economic circumstances and high exposure to banks. risk (symmetric shock) as a whole. A review of the literature on system risk concludes that, despite extensive research on the subject, there is still no consensus on the definition of system risk. As in the case of financial stability, there are many definitions of system risk, but they are still difficult to operationalize. Nevertheless, operationalization would be most useful from the perspective of conducting macroprudential supervision with the goal of preventing system risk. The lack of consensus in the literature and the complex nature of system risk imply the need for different measures and principles for measuring them. The concept of system risk lies in the "infection effect" and the negative impact on the real economy.

Based on a comparison of various definitions of system risk, the following conclusions can be drawn (Monfred & Akin, 2017):

- It is often emphasized that system risk refers to a large part of the financial system or a significant number of financial institutions and is considered to disrupt the financial system and its functions, such as financial intermediation. On the other hand, only a small proportion of researchers consider the loss of self-confidence as a characteristic of system risk and its evolving nature;
- A key element of system risk is the transmission of disturbances (shocks) between interconnected elements of the system, which in conclusion may have a negative impact on the real economy;
- Definitions of system risk began to appear in the literature in the mid-1990s, but their creation clearly intensified after the outbreak of the global financial crisis;
- Before the crisis, definitions placed more emphasis on the effect of infection and the large scale of this phenomenon. However, after the outbreak of the crisis, in addition to the significant scale of the phenomenon, more attention was paid to the disturbances in the functions of the financial system. This results in a negative impact on the real economy, which was rarely emphasized before the crisis.

Central banks rarely propose definitions of system risk. The research points out that central banks often focus on elaborating definitions of financial (in)stability, and not on definitions of financial crisis and system risk. Although the study was conducted in 2003, these conclusions are still valid. When central banks define system risk, they seem to be quite narrowly defined, ie. there is a threat to the entire financial system (Czech National Bank, Bank of Canada, Riksbank - Swedish Central Bank) or inability to meet obligations in the payment system, which leads to its reduction (Bank of Luxembourg, Bank of Greece) (Peković et al., 2020). Analyzing the definitions of system risk, it is emphasized that regardless of the differences in definitions, it remains indisputable that the occurrence of risks in the financial system causes huge risks to financial stability. This causes serious disruptions, including financial crises, to spread to other entities, markets and countries.

Dimensions of system risk

System risk varies considerably and encompasses a wide range of characteristics. This means that financial instruments, institutions, markets, market infrastructure or a segment of the financial system can be a source of system risk. It is not easy to determine whether the scope of events will be system, because in turbulent periods the assessment of the degree of impact on other parts of the system may be subject to dynamic changes and the assessment could be subject to underestimation of bias. System risk may have its source in or outside the financial system or may arise from the interconnectedness of certain financial institutions and financial markets and their exposure to the real economy.

However, the classification of a given phenomenon as a system risk cannot depend on whether it is endogenous to the financial system or whether it has an impact on the real economy. This influence is probably always present due to the disruption of the functions of the financial system. Therefore, it is important to quantify the impact of system risk as the degree of impairment of financial system functions (Ilić & Tasić, 2021). System risk can also be endogenous, ie. the result of the collective behavior of financial institutions, or exogenous if its source is outside the financial system, e.g. imbalances in the real economy. System risk includes the risk to the proper functioning of the system as well as the risk that the system creates. Of course, these two risks can overlap, and shock within a system that amplifies the system can lead to automatic destruction of large components of the system and even the entire system, or even to a real economy that incorporates the system from which the shock originates (Ivanova & Ristić, 2020, 15). Based on the defined concepts, it can be concluded that system risk can be distributed in a matrix showing the relationship between shock (scale of negative impact on the financial system as a whole) and range (volume) of impact (understood as a combination of system importance). shock to the system).

System risk is often described in the literature in two dimensions (Đorđević & Mitić 2020, 27):

- Cross-sectional dimension, understood as the allocation of system risk in the financial system at a given time. It includes risks to financial stability, ie. instability of individual institutions resulting from concentrations of their risk exposure or sources of financing, size, structure and level of concentration of the financial system and the relationship (direct and indirect) between financial institutions;
- Time (cyclical) dimension, understood as the accumulation of system risk over time. This includes risks that do not arise directly from the activities of one institution, but from collective behavior, which leads to increased instability in the financial sector and the real economy, materialization and procyclicality.

Table 1: Dimensions of system risk

	Cross-sectional dimension	**Time dimension**
The aim of the analysis	Shock transmission mechanism	Accumulation of macrofinancial imbalances
Access	At a given time	At given period
The main area of analysis	The size of the financial system, its structure and the degree of interconnectedness	Procyclicality

The role of macroeconomic factors	Exogenous	Endogenous
Objective of macroprudential measures	Increased resilience of the financial system to shocks	Reducing the rate of accumulation of imbalances and mitigating their impact
Examples of risk sources	Interrelationships and similarities in risk exposures of financial institutions leading to exposures of symmetrical shock, excessive concentration	Relationships between the financial system and the real economy

These dimensions of system risk are closely related. For example, increasing the level of concentration of the financial system (cross-sectional dimension) leads to the creation of SIFIs and thus forces them to take excessive risks over time (time dimension) as a result of increased moral hazard. In addition, over-lending during development encourages an increase in risk (time dimension), which can lead to the accumulation of banking risk exposures and their concentration in certain market segments (cross-sectional dimensions) at the micro level (eg real estate market). At the macro level, pro-cyclicality can lead to the development of new, more complex interrelationships within the financial system and between the financial system and the real economy (Munitlak-Ivanović 2017, 1473). At the same time, the results of the analysis from each perspective may differ, ie. during the development of profitability and growth of banks' capital, their resilience to shocks strengthens (cross-sectional dimension - reduction of system risk), and at the same time - imbalances accumulate through excessive lending and simultaneous increase in property prices (time dimension - increase in system risk).

When analyzing system risk, it seems crucial to distinguish between current and future (in)stability of the financial system. Financial institutions largely take into consider the current instability and base their actions on this assessment, but the accumulation of future imbalances is difficult to take into consider. They tend to "overreact" in recessions and reduce losses. This leads to procyclicality. It is crucial that the central bank or some other macroprudential body analyzes system risk in the current and future dimensions. However, there is the question of objectivity in system risk assessment, as the macroprudential authority will assess a phenomenon that it may significantly influence, so it may be biased in its assessment. It seems that a collegial body acting as a macroprudential body may be less susceptible to assessing bias than a single macroprudential body (eg a central bank or a supervisory body). Distinguishing the time and dimensions of the system risk cross-section determines which macroprudential tools are suitable for preventing system risk in certain dimensions. In a broad sense, time-varying risks motivate tools that affect the balance sheets of financial institutions or affect the terms of financial transactions, while tools that affect market structures are closer to intersection or structural risk. In the case of the time dimension, the tools should be anti-cyclical. On the one hand, they should reduce excessive risk-taking during accumulation, and on the other hand, reduce the extent of unbundling during a recession. The tool should also aim to strengthen the financial system's resilience to shocks, reducing the potential for contagion, e.g. improving financial market infrastructure.

System risk identification and assessment

The two main tasks of macroprudential policy are to prevent system risk and, if prevention fails, to mitigate its impact(Krstić et al., 2019). From the perspective of prevention, the main task of financial stability analysis is the timely identification of marginal contribution in the current financial environment of accumulating system risk. This contribution, which can be called the risk of future financial instability, contributes to the accumulation of system risk in the phase of increasing leverage in the areas of cheap loans and over-optimistic expectations regarding future income and property prices(Cvetković et al., 2021). At some point, economic agents will radically revise that, repeat the interpretation of your expectations as a result of certain information or a certain event and change will occur. Aspects of the crisis will begin to become apparent and there will be a phase of materialization of the risk accumulated in the previous phase in the form of financial stability. Banks will review their opinions on credit, market and liquidity risk in their balance sheets, increase credit margins or credit differences and tighten their lending conditions. After that, the process of separation will begin, during which the system risk will gradually disappear.

Success in achieving financial stability is largely a function of the government's ability to identify and properly assess the sources and development of system risk during the financial cycle. When it comes to the two main tasks of macroprudential policy - prevention and mitigation - the competent authorities must focus at the time of accumulation on assessing the risk of future financial instability and during the crisis on assessing the scale of the problem of risk materialization(Ha et al., 2019). The primary goal must be preventive action against the growth of system risk in the phase of spreading risk, when the conditions for future financial instability are created. During this phase, macroprudential analysis must focus primarily on identifying latent risks that arise in the balance sheets of financial intermediaries and their clients. Analytical attention must also be paid to the quality of cash flows, because financial institutions with structural problems in their balance sheets (eg poor balance sheet liquidity or excessively long maturity transformations) are naturally far more prone to cash flow problems. When identifying hidden risks, it is important to understand that current indicators based on current levels of financial variables provide information on the degree of materialization of system risk, but not on the likelihood of financial stability in the future. In achieving their goals, however, the authorities need to focus on a number of forward-looking indicators that provide information on the possibilities of future materialization of system risk as a result of current financial imbalances. This mainly refers to indicators based on the assessment of deviations of factors that determine the degree of leverage from their normal or equilibrium values. For example, deviations of the ratio of loans in the private sector to GDP or the ratio of real estate prices and revenues from their long-term movements would seem to be relatively reliable indicators (Mihajlović et al. 2020, 9). Such indicators send a signal several years in advance about financial imbalances in the balance sheets of financial institutions and the potential for creating dangerous frauds.

Thanks to the paradox of financial stability, current indicators can also be used to identify the accumulation of system risk. Where the values of current indicators (non-performing loan rates, default rates or provisioning rates) are significantly "better" than their usual values or their historical assets, this can be considered an indicator of a growing risk of financial instability(Kvrgić et al., 2021). Such indicators can be considered as complementary indicators that look to the future and that are applicable primarily for determining the position

in the financial system or assessing the probability of change in the financial system. When assessing system risk during the accumulation phase, authorities must first reach a general consensus on the normal or sustainable values of the relevant indicators, and then continuously assess whether deviations of actual values from normal levels become critical. In the phase of accumulating system risk, this process will not be easy. It is quite difficult to timely distinguish between normal system fluctuations and long-term trends from a dangerous financial system (Radić, 2021, 71).

Preventive macroprudential tools are usually not activated until a consensus is reached that the critical values of individual indicators or a combination of indicators have a strong informative content. These indicators of the temporal dimension of system risk will also need to be used in assessing when the effects of pre-materialization cease to operate in a systemic manner, so anti-crisis measures and policy support may be lifted(Bakić, 2020). If prevention is not effective enough and a system risk materialization phase occurs, the focus of macrofinancial policy must shift to mitigating the impact of the crisis. The beginning of this phase is usually quite easy to identify, since the crisis is usually visible due to the sharp deterioration of market variables. At this stage, the most important thing is to assess the ability of the financial system to withstand new risks. Financial system resilience stress tests are a suitable analytical tool for performing this task. Using such tests, supervisors should be able to assess whether the financial sector will withstand the adverse effects associated with the materialization of risk at a given level of capital and liquidity. In addition to stress tests, the above current indicators can be used to assess the extent of financial stress.

Macroprudencial policy

The main, though not only, element of financial stability is macroprudential policy. The primary feature of macroprudential policy is that, unlike traditional microprudential regulation and supervision (focused on the resilience of individual financial institutions to mostly exogenous events), it focuses on the stability of the system as a whole. It primarily monitors endogenous processes in which financial institutions may find themselves in a situation of systemic instability through joint behavior and interaction. The only "real" instruments of macroprudential policy are those that are explicitly focused on the financial system as a whole and on the endogenous processes that take place in it. Other measures that can be used to some extent to support financial stability and may have macroprudential aspects include microprudential regulatory and supervisory instruments and monetary, fiscal and fiscal policy tools. The goal of macroprudential policy is to prevent the formation and spread of system risk in the financial system and thus reduce the likelihood of a financial crisis with large real losses of production for the entire economy. By repressing the channels of formation and spreading of system risk, macroprudential policy should primarily act preventively against signs of financial instability in the future, and secondly at least mitigate their effects if prevention fails.

An important condition for the efficient and effective implementation of macroprudential policy is the operationalization of that policy. In constructing such a policy, the competent authorities should gradually move towards a similar sophisticated operational framework (Lukić &Gajić, 2019, 331).

The goal of macroprudential policy is the system risk, which has two main dimensions. The cross-sectional dimension reflects the existence and distribution of system risk at any point in time. The source of this dimension is mutual and related exposures among financial institutions. Such institutions may underestimate the potential impact of their own activities on the risk of the financial network as a whole, thus creating negative externalities for other parts of the system. Another dimension of system risk is the time dimension, which reflects the creation of system risk over time. The source of this dimension is pro-cyclical behavior of financial institutions, which contributes to the formation of unbalanced financial movements, which sometimes fall out of the control of the institutions themselves or their regulators. System risk of this type is manifested primarily by correlated exposure to the same macroeconomic factors in all financial institutions (Tasić et al., 2021, 49).

The main transitional goal of preventive instruments used in the phase of accumulation of the time component of system risk is to increase the resilience of the financial system by creating reserves that are then used in the period of materialization of this risk(Novales & Chamizo, 2019). Sufficient protective capital and an adequate level of reserves increase the ability to absorb unexpected and expected losses, while stable balance sheet liquidity increases the ability to absorb source shocks. The secondary goal is to reduce the amplitude of the financial system by curbing credit growth and preventing excessively long maturity transformations. Experience with the use of macroprudential tools in some countries shows that their individual impact on the financial system is limited. However, a combination of macroprudential tools and applied microprudential instruments (eg those that create additional capital requirements for risk exposure) could help eliminate expected surpluses over the financial cycle(Božović, 2019). They could also contribute to improving risk management in individual institutions, including risks associated with the cyclical increase in the transformation of maturity in bank financing and the tendency of banks to rely on short-term market financing at the time of easy access to liquidity.

A comparison of certain aspects of the operational framework of monetary and macroprudential policy reveals that the framework of macroprudential policy will always be associated with a higher degree of uncertainty and a lower level of accuracy than the monetary policy framework. This is due to the multidimensionality of the goal of financial stability, mainly the longer length of the financial cycle than the monetary cycle and the more complex transfer from macroprudential tools to changes in the behavior of financial institutions and their clients. Therefore, macroprudential policy may have a longer and changing response horizon(Berber et al., 2022). Years can pass from the moment when the financial system becomes vulnerable to the moment of the outbreak of the financial crisis. Then, however, the conditions suddenly change and the adjustment process is extremely nonlinear (a sharp transition from good to bad times). However, these factors do not necessarily preclude macroprudential policy, because when analyzing financial stability it is better to be approximately accurate than accurately incorrect.

Tools for prevention and mitigation of system risk

Once system risk has been identified, authorities can use appropriate tools to prevent or mitigate it. Two phases of development and two dimensions of system risk may require the use of different tools or a combination of the same. In the phase of materialization of system risk,

the priorities of macroprudential policy will be to prevent escalation (spread) of elements of instability, reduce the likelihood of panic adjustment by financial institutions and their clients in response to revision of expectations and mitigate the negative effects of significantly worse conditions (Krstić et al. 2020, 105). . Countercyclical reserves created in good times can be considered the most important macroprudential tool for this phase. However, in a systemic crisis, a range of monetary policy instruments and regulatory and supervisory measures may become macroprudential in nature. At the specific level, macroprudential policy at this stage will operate through built-in stabilizers (release of reserves and use of automatic central bank funds) or crisis management tools (government guarantees for banking assets and poor asset transfer and balance programs). Active communication with financial markets and the public will also be important, including the publication of stress test results, in order to reduce the level of uncertainty about the stability of the financial system. Communication is a very important tool even in the phase of accumulating system risk.

There is currently no full consensus on which tools can be considered macroprudential policy tools. Since the full range of measures can have macroprudential aspects, a wide range of financial stability measures is usually included in the macroprudential tool. However, it is more appropriate to divide this broad category into macroprudential tools, microprudential tools applied in a macroprudential way and other means of financial stability. Real macroprudential tools are those that can be applied in the form of rules and can therefore take the form of embedded stabilizers (countercyclical capital reserves, leverage ratio through the financial system, surcharge for capital or liquidity for size, complexity and release of capital, maturity transformation limits, etc.). They should automatically limit the pro-cyclicality of the financial system or the risky behavior of individual institutions (Tešić et al. 2021, 33).

In addition to true macroprudential tools, various microprudential regulatory and supervisory tools can be used for macroprudential purposes. If these tools are not applied to individual institutions, but to all institutions in the system, they can be considered macroprudential instruments (increased risk weightings for certain types of loans, increased reserves for loan losses depending on the default period, increased security requirements, rules for reference rates for home loans, monetary policy tools: interest rates, minimum reserve rates and marginal reserve rates for selected sources of liabilities and interventions in the foreign exchange market). Measures of this kind, along with monetary policy instruments, fiscal policy instruments, and tax measures, have been applied in the past in many countries in an effort to slow credit surplus growth(Tran et al., 2016). Many of these tools can also be used in symmetrically opposite ways in the system risk materialization phase to preserve access to credit for the private sector, as well as in times of significantly increased risk perceptions. True macroprudential tools in the form of built-in stabilizers, the introduction of which is currently the subject of international debate, are more focused on the time component of system risk. The first set of such tools is aimed at capitalizing banks that should face the obligation to create countercyclical capital surcharges above and above the macroprudentially obtained minimum capital adequacy ratio to reflect the degree of system risk change over the system. According to the agreed version of Basel III, which will be implemented in the coming years, in good times, when a certain total level of credit in the economy is exceeded, banks will have to start creating capital reserves that can be used to absorb the negative effects of future financial instability(Iikka et al., 2019). The second set of proposals is aimed at securing provisions during the cycle in order to better accept the expected loss from the loan portfolio and to allow banks to create hedging committees to cover credit

risk. Macroprudential tools of the embedded stabilizer type, but oriented towards the cross-sectional dimension, include, for example, capital surcharges set for individual institutions. Basel III also includes requirements for compliance with the liquidity ratio, which are also focused mainly on the cross-sectional dimension (the requirement for a specific ratio of stable balance sheet liquidity sources or coverage of potential outflows with highly liquid assets). The requirement for reserves between the value of collateral and the amount borrowed by the institution can also be considered as an instrument that encourages the creation of conditions for liquidity risk. Reserves should enable the absorption of even a large decline in the value of insurance as a result of the crisis in property markets. The possibility of configuring liquidity risk management tools to have an anti-cyclical effect is also discussed.

When tools oriented to the cross-sectional system risk dimension are used, the transition objective in the preventive phase should include the risks that individual financial institutions, markets and instruments may create for the system as a whole. In order to limit this dimension of risk, related to the interconnectedness, size or significance within the system, it is first necessary to assess the contribution of individual institutions, markets and instruments to system risk, and then reduce or limit this contribution(Dang & Nguyen, 2022). This should result in less likely collapse of large, complex or overly related institutions as a result of credit, market or liquidity risks, greater resilience of institutions, markets and instruments to pollution within the system and associated overall loss of confidence in the financial system. The macro-prudential tools of the embedded stabilizer type currently under consideration include, for example, systemic surcharges in the form of additional capital or liquidity requirements set for individual institutions taking into account their contribution to system risk due to their size, complexity and interconnectedness. Several methods for estimating the marginal contribution to system risk can be used to determine the size of a systemic additive. The chosen practical method should reflect the specifics of the financial sector of a particular country. The purpose of applying systemic compensation as a macroprudential policy tool is to inform a particular financial institution about the government's assessment of its systemic importance or excessive interconnectedness and to encourage a change in structure.

Systemic risk management in Halkbank a.d. Belgrade

Halkbank a.d., Belgrade, previously known as Čačanska banka, has been operating continuously since July 1, 1956, since when it changed its name and organizational form several times in the course of its work and development. The bank is registered in the Republic of Serbia for payment transactions and credit and deposit operations in the country and abroad and operates in accordance with the Law on Banks. In accordance with the Law on Banks and the Decision of the National Bank of Serbia on risk management, Halkbank's systemic risk management strategy is based on a conservative approach, which implies a restrictive assumption of all risks to which it is exposed or may be exposed in its operations. The risk management strategy contains:

- definitions of risks to which the bank is exposed or may be exposed,
- long-term goals determined by the business policy and risk appetite in accordance with these goals,
- basic principles of risk taking and management,

- the basic principles of the process of internal assessment of the bank's capital adequacy,
- definition, criteria and basic principles for bad asset management.

On the basis of the achieved business results and the goals defined by the Halkbank five-year strategy, a business policy is drawn up annually, in which the goals for the following calendar year are determined. In order to more efficiently achieve the objectives of the strategy, policy and procedure, Halkbank prescribes the way of organizing the risk management process, the way and methodology for identifying, measuring, or assessing, mitigating and monitoring risks and the principles of the functioning of the internal control system. The following management bodies and organizational units are responsible for eliminating deficiencies in risk management policies and the internal control system and reviewing and implementing risk management policies and procedures: management board, executive board, audit committee, asset and liability management committee, credit committee, service for risk management, the internal audit service and the service for monitoring business compliance and preventing money laundering.

In accordance with its strategic goals, the Bank's Business Policy and Strategy determined the appetite for risk taking, as well as target indicators and their tolerance in the risk management process, the achievement of which is reported by the Risk Management Service to the Asset and Liability Management Committee and the Executive Committee. The Executive Board, at least once during the business quarter, reports to the Management Board on the achievement of the set target indicators in the risk management process, through the Business Report. Halkbank has identified the following most significant risks to which it is exposed: credit risk, interest rate risk, liquidity risk, market risk, operational risk, reputational risk, concentration risk, environmental and social risk, country risk and strategic risk.

Halkbank has established a comprehensive and reliable risk management system, which is included in all business activities and which ensures that the bank's risk profile is always in accordance with the established risk appetite. The risk management system is proportionate to the nature, scope and complexity of the bank's operations, i.e. its risk profile. The risk management system enables the bank to manage the risks it is exposed to or may be exposed to based on its business activities and is considered comprehensive and reliable. The risk management system is included in all business activities, considering that Halkbank makes every business decision by which it assumes risks, taking into account the previous assessment of the employees responsible for risk management. The risk management system includes:

- strategy and policies for risk management, as well as procedures for identifying and measuring, that is, risk assessment and risk management;
- appropriate organizational structure of the bank;
- an effective and efficient process of managing all risks to which the bank is exposed or may be exposed in its operations;
- an adequate system of internal controls;
- appropriate information system and reporting system;
- framework and frequency of stress tests, including procedures in case of unfavorable results of the stress tests themselves;
- an adequate process of internal assessment of capital adequacy.

In accordance with the current Law on Banks, current decisions of the National Bank of Serbia that regulates the area of risk management, as well as the Statute, Halkbank has established a comprehensive and reliable risk management system that is fully integrated into all the bank's business activities and that ensures that its risk profile be consistent with her risk appetite. The risk profile is articulated through the Risk Appetite Framework (Table 2) adopted by the Bank's Board of Directors.

Table 2 - Risk appetite framework of Halkbank a.d. Belgrade

Description of indicators	Indicator values	
	Limit	Realization on 31.12.2018.
Capital adequacy indicator	Minimum greater than or equal to 19.00%	27,82%
Indicator of adequacy of basic capital	Minimum greater than or equal to 15.00%	27,81%
Indicator of the adequacy of the basic share capital	Minimum greater than or equal to 13.00%	24,60%
Liquidity indicator	Minimum 1,10	1,69
A narrower indicator of liquidity	Minimum 0,80	1,42
Liquid asset coverage indicator	Minimum 105%	259,27%
Aggregate indicator of total exposures in relation to the Bank's capital	Maximum 300%	89.69%
The foreign exchange risk ratio is the ratio of the total open foreign exchange position in all individual currencies to the Bank's total capital defined by the current NBS Decision on the adequacy of the bank's capital	Maximum 18%	0.63%
The total interest rate risk ratio is the ratio of all weighted interest rate gaps in all time intervals and the Bank's total capital defined by the current NBS Decision on the adequacy of the bank's capital	In the range from -20% to +20%	1.01%
Coverage of NPLs by value adjustments	Minimum 35%	47,97%
NPL rate in relation to the Bank's portfolio	Maximum 10%	6,42%
Penal measures ie. legally imposed fines to the Bank, which represents the ratio of the amount of punitive measures and the total gross income of the Bank at the level of the calendar year.	Maximum up to 0.1% of the bank's gross income on an annual basis	0%

Source:https://www.halkbank.rs/upload/documents/fin/Izvestaj%20o%20objavljivanju%20podataka%20i%20informacija%20banke%20za%202018.pdf

The establishment of a risk management system is based on the principle that risks are managed, not that risks are avoided. Halkbank has the continuous task of taking on only those risks that it can adequately and timely assess, control and manage. Accordingly, the bank's long-term goal in risk management is to minimize the negative effects on the financial

result and capital due to exposure to risks. Halkbank manages the identified risks through a clearly defined risk management process that includes regular and timely identification, measurement, i.e. assessment, risk monitoring, mitigation measures and reporting on the risks it is exposed to, or could be exposed to in its operations. In order to control or limit the taking of credit risk, Halkbank has defined exposure limits. In this sense, the Bank regularly monitors and communicates the achievement of those limits and, if necessary, implements corrective measures to keep the indicators within the prescribed limits.

Conclusion

It is often emphasized in the literature that system risk refers to a significant part of the financial system or to a certain number of financial institutions and disrupts the functioning of the financial system, e.g. financial intermediation. Before the crisis, greater emphasis was placed on contagion and on a large scale of phenomena, while after the outbreak of the crisis, more attention was paid to limiting the capacity of the financial system, which has a negative impact on the real economy. Central banks often focus on providing definitions of financial (in)stability, rather than on the financial crisis and system risk, which is narrowly perceived as a threat to the entire financial system or related to the impaired functioning of the payment system. System risk is characterized by its evolving and multidimensional nature and can be endogenous or exogenous. It can spread by contagion not only among financial institutions, but also between the financial system and the real economy. System risk may be the result of the accumulation of macrofinancial imbalances and the existence of SIFI (systemically important financial institutions), the functioning of which results in negative results for a financial system whose stability is a public good. The cross-sectional dimension and the time dimension of system risk (related to procyclicality) can be distinguished. Many structural features of the financial system can increase its exposure to system risk. The way of thinking about system risk also has far-reaching implications for policy. It is important that the central bank analyzes the financial system in order to assess the accumulation of system risk, identify its potential sources and then use macroprudential tools to mitigate them. Difficulties in unambiguously defining system risk and lack of adequate data are the two main obstacles to the development of methods and tools for systems risk analysis. Also, communicating the results of system risk identification can be challenging, so it does not trigger a self-reinforcement mechanism that leads to a worsening of the identified risks, but their mitigation. However, it should be borne in mind that the systemic materialization of risk enables the elimination of inefficient institutions. As long as this does not destabilize the entire financial system, weak institutions should be resilient or allowed to fail. Possible forms of regulation aimed at reducing system risk consist of the introduction of liquidity requirements, increased capital requirements, structural unbundling in the banking sector and the imposition of larger capital reserves for SIFI.

As for macroprudential policy, in the future it should act primarily against signs of financial instability, and secondly to mitigate their effects if prevention fails. These two main tasks reflect the two phases of the evolution of system risk - its accumulation and subsequent potential materialization. Building a sophisticated operational framework that connects the individual dimensions and stages of system risk development with appropriate indicators and instruments will be an important condition for the efficient and effective implementation of

macroprudential policy. In carrying out the two main tasks mentioned above, macroprudential authorities must focus on forward-looking indicators and at the same time take into account the potentially high degree of discontinuity in the evolution of system risk. To this end, they must use certain sets of indicators and tools that reflect the different times and phases of system risk. During the financial cycle, it will be necessary to capture the moment of accumulation of system risk, identify the point where the tolerance for system risk is exceeded and send the signal needed by macroprudential tools to activate. If prevention fails, using a different set of indicators should determine the point at which the event of financial instability should be declared, assess the potential extent and severity of the crisis, and recommend appropriate anti-crisis tools. Within macroprudential policy, the operational framework must still be the driving mechanism for the use of tools in the risk-taking and manifestation phase. This mechanism should be relatively complex and at the same time flexible. Combining a rigorous analytical approach and high doses of assessment will be crucial in implementing such a policy. Although the priority should be to use the rules and tools of the built-in stabilizer type, it will be necessary to leave a lot of room for discretion to the macroprudential authority.

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Aleksandar Dejanović[1]
Jelena Lukić Nikolić[2]
Modern Business School, Belgrade, Serbia

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ORGANIZATIONAL CULTURE AS A LEVER OF SUCCESSFUL QUALITY MANAGEMENT

Abstract

The implementation of a quality management system represents a strategic change in every organization, regardless of its activity, size, market, production program, financial strength, number of employees. Organizational culture has a significant role in that process. Moreover, the success of the quality management system depends largely on its congruence with the organizational culture, that is, the quality culture development. The aim of this paper is to show how managers observe and evaluate the level of quality culture development in the organization. In accordance with the defined goal, research was conducted in the company Šinvoz, Zrenjanin from November to December 2022 with specially designed questionnaire. The company's main activity is the overhaul of railway vehicles and components, as well as the maintenance, repair, and modernization of railway vehicles. The company management participated in the research that showed that quality culture is unevenly developed in the organization. Managers believe that certain segments of the quality culture are highly developed, but others are at a low level. Based on their evaluations, quality system management can be improved, that is, measures and activities that will result in quality system improvement in the organization can be undertaken. The key value of the paper lies in the fact that overall quality should be improved in order to remain competitive in the long run.

Key words: *organizational culture, quality culture, organizational behavior, motivation, TQM*

JEL classification: *L20, M54*

ОРГАНИЗАЦИОНА КУЛТУРА КАО ПОЛУГА УСПЕШНОГ УПРАВЉАЊА КВАЛИТЕТОМ

Апстракт

Имплементација система за менаџмент квалитетом представља стратешку промену у свакој организацији, без обзира на њену делатност, величину, тржиште, производни програм, финансијску снагу, број запослених. Успешност система за управљање квалитетом у значајној мери зависи од тога колико је у складу са организационом културом, односно колико подстиче развој културе квалитета. Циљ овог рада је да сагледа у којој мери орга-

[1] aleksandar.dejanovic@mbs.edu.rs, ORCID ID: https://orcid.org/0000-0002-3987-3795

[2] jelena.lukic@mbs.edu.rs, ORCID ID: https://orcid.org/0000-0003-0632-8974

низациона култура утиче на систем квалитета из менаџерске перспективе. У истраживању које је спроведено применом упитника у периоду од новембра до децембра 2022. године учествовало је предузеће Шинвоз, Зрењанин чија је основна делатност ремонт железничких возила и компоненти, као и услуге одржавања, поправки и модернизације железничких возила. Резултати спроведеног истраживања у којем је учествовало руководство овог предузећа показали су да менаџери сматрају да је квалитет као вредност дубоко укорењена у организациону културу предузећа, али да постоји простор за унапређења у систему мерења квалитета. Кључна вредност рада је у томе што указује на чињеницу да се целокупни квалитет неке организације мора стално унапређивати да би се задржала конкурентска предност у дугом року.

Кључне речи: *организациона култура, култура квалитета, организационо понашање, мотивација, TQM*

Introduction

Quality is the basis of every organization in the digital age. Key quality indicators have been transformed in the digital age due to modern information technologies, social networks, review portals, real-time data availability, greater data processing and visualization capabilities (Schiavone et al., 2022). In such conditions, there is a stronger need for organizations to implement Total Quality Management (TQM). The implementation of TQM is a strategic change in every organization, regardless of its activity, size, market, production program, financial strength, number of employees (Dahlgaard et al., 2019). Also, the transition from the conventional management model to TQM is a huge challenge for the organization associated with the changes in the organizational culture (quality culture development). Organizational culture has a strong influence on successful TQM implementation (Angle, 2019; Hafar et al., 2022; Patyal et al., 2020). On the other hand, there is a pronounced feedback effect of TQM on organizational culture and quality culture development. Therefore, a mutual interaction, that is, an "exchange" of influence exists between quality culture and TQM - TQM cannot exist without quality culture, and quality culture cannot be developed without TQM principles (Noronha, 2002; Sinha et al., 2016). In other words, if the organizational culture is ignored and TQM implementation is forced, the expected results will not be achieved. Likewise, if the organizational culture changes in the direction of quality culture development, the principles of TQM must be implemented during this process.

The aim of this paper is to indicate the role and importance of organizational culture in the process of building and nurturing a quality culture and quality management system in the organization. The paper is structured as follows. The first part of the paper is a theoretical background and is focused on the role and importance of organizational culture in quality management. The second part of the paper is dedicated to the conducted research: methodology, research questions, results, and discussion of results. Finally, in the conclusion, the key limitations of the conducted research are specified and suggestions for future research are given.

Literature review: The role and significance of organizational culture for Total Quality Management

Organizational culture is a pattern of common basic assumptions adopted by a group of employees, which have worked well enough and were established as a way to perceive, think, and feel (Schein, 1985). It is a set of values, heroes, rites, rituals, and ways of communication between employees (Deal & Kennedy, 2000). Many authors have emphasized the importance of organizational culture, i.e. quality culture, on TQM implementation. Hilderbrandt et al. (1991) believe that the existing basic assumptions in the organization are the primary condition for a successful TQM implementation. Westbrook and Utley (1995) point out that an organization that wants to implement TQM as a guiding business principle should create a culture that supports this change. Based on their research, they confirmed the hypothesis that TQM implementation will be more successful if the culture supports employee effort and respects customer needs. Lewis (1998) concludes that a generally accepted view in theory and practice is that culture change or at least culture awareness is a necessary prerequisite for excellence and quality. Dellana and Hausser (1999) investigated the relationship between organizational culture and TQM. In their research, they used a questionnaire compiled according to the criteria of the Malcolm Baldrige National Quality Award. Questionnaires were sent to members of the American Society for Quality. Based on the research results, the authors established a type of organizational culture that supports the TQM implementation to the greatest extent and concluded that adhocracy and the so-called group culture are most favourable to the implementation of TQM. The adhocracy culture is characterized by creativity, willingness to take risks, and creative leadership, while the group culture is characterized by teamwork, participation, and mentoring leadership. Some authors even emphasize the importance and role of organizational culture to such an extent that they claim that an organization can achieve the desired results only based on quality culture development, without the formal implementation of TQM (Swaffin-Smith et al., 2002).

Ghobadian and Gallear (2001) conducted a thorough empirical study involving 31 organizations that had implemented TQM. Based on that study, they concluded that there is a wide range of applied solutions in practice. Statistics show that the number of planned TQM initiatives varies significantly in the sample - from 6 to 35. The implementation plans included an average of 17 initiatives. So, on average, an organization plans to introduce TQM on the basis of 17 undertaken initiatives, the most common being employee training programs, formation of quality improvement teams, the definition of vision, mission, quality policy, etc. The largest number of these initiatives can be classified in the “management processes” and “employee orientation” categories, as well as in the “communication and measurements” group. Based on such observations, the authors concluded that organizations first strive to increase their “internal” competence in order to successfully implement internal changes, and only in the later stages of TQM direct their focus towards consumers. This is understandable because in the first stages, the initiatives have the task of encouraging quality culture development, that is, of preparing the organization for major changes that are necessary for the complete and successful TQM implementation.

Rahman and Bullock (2002) investigated factors affecting a successful TQM implementation in an organization. They divided these factors into two groups: (1) soft

and (2) hard. The first group is dominated by the human factor (employee commitment, teamwork, training, interpersonal relations), and the second group includes factors related to the application of modern technologies, methodological tools and techniques. Based on this constellation of factors, the authors' research confirmed the hypothesis that "soft" factors influence the acceptance and use of the "hard" core, as well as determine organizational performance. Since "soft" factors directly reflect organizational culture, that is, the quality culture, it can be concluded that their role in the TQM implementation process is extremely significant.

When implementing TQM, companies most often apply one of the following approaches (Ljubojević and Dejanović, 2017):

- Introduction of certain elements in the organization (The TQM Element Approach);
- Building a quality system according to expert recommendations (The Guru Approach);
- Fulfilling quality prize criteria (The Prize Criteria Approach);
- Development of personal implementation model (The Company Model Approach).

The implementation of certain TQM elements is an approach mainly used by organizations in the early 1980s. This approach usually includes the application of certain TQM methods and techniques in business (e.g forming a quality committee in the organization, using more advanced statistics during quality control, introducing new measurement methods, etc.). This approach had modest results because TQM implies a fundamental change in organizational culture and the construction of a comprehensive quality management system. However, due to this partial approach, organizations have expanded their knowledge of quality, gained valuable experience, and begun to perceive quality differently. This encouraged quality culture development in certain organizations and created the conditions for profound changes necessary for a full TQM implementation in the organization.

Along with a global affirmation of the TQM approach, organizations have increasingly tried to build a quality management system according to quality expert recommendations. In this sense, organizations have two options: (1) the organization itself builds a quality management system by adhering to the theoretical principles and procedures for introducing TQM, without hiring consultants; (2) the organization uses the services of specialized consultants. Regardless of which option the organization chooses, this model for TQM implementation increases the chances for success but does not guarantee it. Experts' help and support are welcome, in some cases even necessary, but they cannot "lead" the organization and achieve the desired goal alone. They can help in that process, but management and employees have the main role. The members of the organization should gradually develop a quality culture, change the way of thinking, habits, and behavior in order to finally reach the goal - the successful TQM implementation.

Some managers believe that winning prestigious quality awards leads to top quality. Namely, the organization has to build a quality system in order to meet the defined criteria, and winning a prestigious quality award is the best confirmation that the system works. This approach might seem simple and logical at first. However, a deeper analysis

reveals its weaknesses and requires answers to the following questions: Are the defined award criteria applicable in every organization? Are they identical to the criteria required by the market? Can the award create an illusion about the achieved quality level in the organization? In addition, there are more than 120 quality awards in the world, and there are significant differences in criteria. The organization should choose its role model, that is, the award it aims for. In doing so, it must consider whether the defined award criteria are in accordance with the key features of the organizational culture. If they "clash" with the organizational culture, there will be a strong backlash against meeting these criteria. Essentially, TQM implementation should be the main organizational goal. The award is a consequence of that, i.e. a recognition for the achieved quality level.

An organization can abandon any templates and develop its own quality management model. This approach requires that the organization itself designs the quality system, determines the goals, and the way to achieve them. It is the most difficult path, but if the organization overcomes all the obstacles, it will have a very stable, functional, and reliable quality management system.

The success of the quality management system greatly depends on whether it is in alignment with the organizational culture, that is, to which extent it encourages quality culture development (Hilman et al., 2020). It must be emphasized that all employees should actively participate in building a quality system ("We are all in this"). In this way, they will accept certain norms because they jointly defined and adopted them. In that case, they will not perceive changes and new rules as imposed, that is, as a form of coercion. Therefore, there will be no significant resistance to organizational changes, and quality culture development will be promoted. In addition, it is extremely important that all employees receive timely and verified information related to quality system development. When problems are not addressed and "successes" is falsely glorified, an illusion that will not survive contact with reality is created. This is followed by mistrust, disappointment, and giving up on goals. Therefore, communication channels must be open, and communication must be two-way, open, and honest (Jurčević, 2022).

Organizational obstacles to the quality culture development

There are various obstacles to quality culture development in organizations. Each organization is specific, so it is very difficult to list all the obstacles that hinder quality culture development. However, John Kelly (1997) grouped these obstacles into five categories:

- Short-term goals;
- The insecurity felt by employees;
- Inadequate job description;
- Inadequate management;
- Lack of long-term commitment to quality improvement.

In modern conditions, most organizations are almost exclusively focused on short-term goals such as monthly sales results, monthly cost reduction, quarterly financial results, etc. Managers boast about short-term successes to convince owners that the company is successful and, based on that, secure bonuses and new management contracts. Such

short-term goals are not conducive to quality culture development. Namely, improving organizational culture is a slow and long-term process. It implies a vision and strategic decisions aimed at raising the quality level of customer (client) services. Unfortunately, it is often imperative for organizations to quickly return invested capital. There is a lack of patience, and it is impossible to achieve top quality without patience.

Many companies disregard the importance of employees and treat them as an easily replaceable factor in the production or service process. Many employees work harder and more intensively, and even give up certain benefits in order to keep their job at any cost. However, in the long term, this kind of environment creates an atmosphere of insecurity, pronounced stress, anxiety, interpersonal relationships are contaminated with insecurity and fear, which is not a good practice for achieving top quality and business excellence. In such conditions, long-term employees do not reach their full potential, because most of them realize over time that their increased engagement did not reduce the risk of job loss. Besides, more work does not necessarily mean better work. On the contrary, pushing beyond the limits of endurance will, as a rule, have a negative impact on the delivered quality. In addition, employees who are afraid of losing their jobs try to make their commitment visible, that is, show superiors their efforts and contributions. Individuals sometimes overdo it by aggressively self-promoting and imposing themselves on superiors, often to the detriment of other colleagues and teams. These situations can have a negative impact. Value for customers (clients) is not created only when managers are watching, i.e. monitoring their employees and measuring their contributions. Likewise, employees obsessed with the fear of job loss do not share knowledge (because they want to become irreplaceable), which inhibits the spread of knowledge and harms the organization. Finally, it should be emphasized that employees' fear of job loss diminishes their creativity because they are afraid that the possible failure of their new ideas could be the reason for their dismissal. Lack of creativity and initiatives that encourage change will, as a rule, have a negative effect on organizational change and adaptation to internal and external challenges.

Research shows that an inappropriate work design can have very negative consequences on employee engagement, enthusiasm, and satisfaction, and thus indirectly on the work quality (Lukić Nikolić, 2021). Work design includes an explanation of essential job requirements, a description of employee tasks and activities. From a psychological point of view, well-thought-out work includes interesting work tasks, a wide degree of autonomy and a significant degree of interaction with other employees, defined responsibilities, a reasonable workload, and tolerable emotional pressures (Faeq et al., 2022). In such conditions, work-related stress is relatively low and employees are more satisfied because they can express their creative potential and clearly recognize the purpose and benefit of their work (Mali et al., 2022). However, in many companies, there is a completely different atmosphere. Certain jobs are defined narrowly, as a series of repetitive and boring work duties in order to increase efficiency. In such conditions, it is very difficult to improve quality. Faced with poor results, many managers confuse cause and consequence. Instead of "fixing" work design, they try to "fix" employees by organizing additional training, insisting that they improve their skills, and even threatening to reduce their salary if they do not improve their results. In such a situation, technology and organization, not psychology, take precedence when defining jobs. This is characteristic of bureaucratic organizational cultures with a pronounced hierarchy

that is prone to conformity, tradition, stability, and predictability. In these types of organizational cultures, inadequate work design is deeply rooted and constantly renewed, as each generation of managers unconsciously imitates these models. To avoid a vicious cycle of this bad practice, well-designed work should start from the top. Managers who see the value of well-designed work are likely to create it for others. It should also be emphasized that in some cases, employees achieve results below expectations because the working conditions are bad, that is, because of the poor workplace design.

The impact of bad management on the organizational culture and the achieved quality in the organization should not be additionally explained. It is obvious that the most responsible managers in the company have a key role in affirming the quality culture. In this sense, a simple rule can be formulated: bad management - bad quality. Of course, the reverse is also true. Leaders who are ready to support quality culture development by personal example and show their commitment to superior quality in practice will build an organization that delivers high-quality service consistently.

Many organizations have started to implement TQM in their business or adapt their quality management system to ISO 9001 standards with great enthusiasm. These efforts have often been accompanied by too high expectations. For example, some companies thought that TQM would solve all their business problems quickly and easily. They were disappointed when they did not achieve the desired short-term results, which led to project termination. Consistency and continuity are necessary for the success of the quality improvement process, and more tangible results are achieved in the long term. Organizations that are not ready to make a long-term commitment to quality improvement cannot expect the benefits of quality culture and TQM (Coelho et al., 2022).

Methodology and Research Questions

The aim of the research is to examine whether the organizational culture of the company Šinvoz, Zrenjanin has elements of TQM. The key research questions (RQ) used in the paper are:

RQ 1: To what extent, according to managers, has an organizational culture that supports quality management been developed?

RQ 2: To what extent, from a managerial perspective, has an organizational culture that encourages employees to improve and nurture high quality been developed?

The research was conducted in the company Šinvoz, Zrenjanin, which was founded in 1887 and privatized in 2003. The main activity of the company is the overhaul of railway vehicles and components, as well as the maintenance, repair, and modernization of railway vehicles. The company's managers participated in the research. The research was conducted at the end of 2022 using a specially designed printed questionnaire.

The questionnaire consisted of two groups of questions. In the first part, the questionnaire contained three profile questions. Based on them, it is possible to determine the basic characteristics of the respondents - gender, age, and managerial level. The second group of questions consisted of statements in the form of a five-point Likert scale. Answers showed the level of agreement with the statements (1 - I completely disagree, 5 - I completely agree). The first group of statements related to the quality system and its implementation in the values and goals of the company. The second group of statements

referred to employees and their attitude towards quality and included working conditions, motivation, degree of autonomy, and interpersonal relations.

Twenty-one managers of the company Šinvoz, Zrenjanin participated in the research. Basic data about the sample are presented in Table 1.

Table 1: Basic information about managers that participated in the research

Answers	Number	%
Gender		
Male	15	71.43
Female	6	28.57
Age of respondents		
Less than 30	6	28.57
Between 30 and 50	9	42.86
More than 50	6	28.57
Managerial level		
Operational	6	28.57
Middle	10	47.62
Top	5	23.81

Source: The authors' research

The sample is dominated by men (71%), while women make up 29% of the participants. The age structure shows that the largest number of managers, 48%, are aged 30 to 50, while 29% are managers under 30 and over 50. This age structure of the managers that participated in the research shows that there is a balance between youth and experience in the company Šinvoz. This is significant because young managers (up to 30 years of age) bring new ideas, knowledge, enthusiasm, energy, and inclination to new technologies. Managers who belong to the middle age category (from age 30 to 50) are in the best managerial years because they have both energy and experience. Older managers (over 50) are also valuable to the company because they have gained wisdom and maturity during their long careers, which can be especially important in times of crisis. Most respondents included in the research belong to the middle management level (48%). This managerial level (middle management) has a very important role to connect strategic and operational functions in the company. In addition, 6 operational managers (28%) and 5 top managers (24%) participated in this research. This structure of respondents indicates that all managerial structures are represented among the surveyed managers. This is important because different views and opinions are gained. The most responsible management perceives quality "from a greater distance" than middle and operational management levels. They use a different "diopter" that allows them to see the bigger picture, but with less detail. On the other hand, middle and especially operational managers look at quality narrowly but in more detail.

Research results and Discussion

Table 2 shows the managers' answers to the statements regarding quality and its implementation in organizational culture and organizational behavior. The results are segmented into three groups: agree, neutral attitude, and disagree.

Table 2: Answers from managers regarding the quality orientation of the company

	Statements	Answers	N	%	M
1	The company management is committed to the improvement of quality and shows how much it cares about the successful functioning of the quality system by personal example.	Disagree	2	9.52	3.86
		Neutral attitude	6	28.57	
		Agree	13	61.91	
2	Quality is one of the company's key values.	Disagree	1	4.76	4.19
		Neutral attitude	2	9.52	
		Agree	18	85.71	
3	The company understands and respects customer demands.	Disagree	1	4.76	4.00
		Neutral attitude	7	33.33	
		Agree	9	61.91	
4	The company has reliable business partners and builds long-term cooperation with them in order to raise the overall quality.	Disagree	2	9.52	3.62
		Neutral attitude	7	33.33	
		Agree	12	57.14	
5	The company has a reliable quality control system and undertakes corrective actions to improve quality as soon as there are deviations from the set norms and goals.	Disagree	5	23.81	3.38
		Neutral attitude	3	14.29	
		Agree	13	61.90	

N – Number of respondents, % - Percentage of respondents, M – arithmetic mean

Source: the authors' research

The first statement required that managers evaluate their commitment to quality improvement, that is, their role in quality culture development. The results showed that the majority of managers believe that the management is committed to improving quality and shows how much they care about the successful functioning of the quality system by personal example. Only two managers disagree with this statement. There is also a certain number of managers, 28.57%, who remained neutral. The mean score of all responses to this statement is 3.86, which is a fairly high degree of agreement with the statement.

The second statement related to the company value system: "Quality is one of the company's key values." The managers that participated in this research largely agreed with this statement, which is understandable considering that management has officially put quality as the most important core value. As many as 85.71% of managers agree with this statement, while only 4.76% of managers disagree. There is also a certain number of managers who remained neutral (9.52%). The mean score of all responses to this statement is 4.19. Based on these results, it can be concluded that managers in the company believe that quality is deeply

rooted as a core value in the company's organizational culture. In other words, according to managers, the quality culture is at a high level according to this criterion.

The degree of agreement with the statement "The company understands and respects customer demands" was intended to reveal managers' attitudes toward the company's customer focus. Focusing on customer requirements is a very important principle of total quality management and a prerequisite for the quality culture development in the company. According to the majority of managers, the company Šinvoz is highly focused on understanding and fulfilling customer requirements. The largest number of managers, 61.91%, agree that the company understands and respects customer demands. Only one manager disagrees with the statement, while one-third of managers remained neutral. The mean score of all responses to this statement is 4.00. These results show that managers believe that this important feature of the quality culture is present in the company.

The largest number of managers (57.14%) believe that the company has reliable business partners and builds long-term cooperation with them in order to raise the overall quality. A small number of managers, 9.52%, do not agree with the above statement, while one-third of managers remained neutral. The mean score of all responses to this statement is 3.62.

The results showed that the majority of managers, 61.90%, agree with the statement that the company has a reliable quality control system and undertakes corrective actions as soon as there are deviations from the set norms. There are 23.81% of managers who disagree with the statement, as well as 14.29% of managers who have adopted a neutral position. The mean score of all responses to this statement is 3.38. This shows that according to the surveyed managers, the quality control system in the company is not fully developed and there remains room for further development and better implementation.

The functioning of any organization is largely determined by employee behavior (Lukić Nikolić, 2021). Therefore, in order to determine to which extent an organizational culture supports and nurtures quality culture, managers were asked whether they agree with the statements regarding employees. The obtained results are presented in Table 3. The results are segmented into three groups: agree, neutral attitude, and disagree.

Table 3: Answers from managers regarding employees

	Statements	**Answers**	**N**	**%**	**M**
1	Interpersonal relations in the company are harmonious.	Disagree	1	4.76	3.71
		Neutral attitude	6	28.57	
		Agree	14	66.67	
2	Employees have adequate working conditions.	Disagree	6	28.57	3.00
		Neutral attitude	9	42.86	
		Agree	6	28.57	
3	Employees have sufficient authority and autonomy to make decisions at their workplace.	Disagree	2	9.52	3.57
		Neutral attitude	9	42.86	
		Agree	10	47.62	
4	Employees are sufficiently motivated to achieve top quality.	Disagree	5	23.81	3.05
		Neutral attitude	7	33.33	
		Agree	9	42.86	

N – Number of respondents, % - Percentage of respondents, M – arithmetic mean
Source: the authors' research

The results show that 66.67% of managers believe that interpersonal relations in the company are harmonious. Only one manager believes that interpersonal relations are not harmonious, while 28.57% of them remained neutral. The mean score of all responses to this statement is 3.71. Pleasant and positive interpersonal relationships are important for the quality development in an organization (Markos & Sridevi, 2010). According to the interviewed managers in the company Šinvoz, this condition is fulfilled to a great extent.

The next statement "Employees have adequate working conditions" caused divided reactions from respondents. 28.57% of managers agree with this statement and 28.57% of them disagree with the statement, while the largest number of managers, 42.86%, remained neutral. The mean score of all responses to this statement is 3.00. This indicates that the working conditions are average, which is not a good basis for achieving top quality. If employees do not have the appropriate equipment and tools for work, it is not realistic to expect them to achieve a high level of quality.

The largest number of managers, 47.62%, believe that employees have enough authority and autonomy to make decisions at their workplace. A small number of managers, only 9.52%, do not agree with the statement, while as many as 42.86% of managers remained neutral. However, it is necessary to be careful when interpreting these responses. It is true that a significant number of managers agreed with the statement. But, a large number of managers had a reserved attitude toward this statement. That is why the mean score for this statement is not high and amounts to 3.57. This shows that there is no consensus among managers on this issue. A total of 42.86% of managers strongly agree with the statement that employees are sufficiently motivated to achieve top quality, while 23.81% disagree. One-third of managers remained neutral. The mean score of all responses to this statement is 3.05. It is obvious that the surveyed managers are aware that employee motivation is not at a high level.

Discussion on the degree of quality culture development in the company Šinvoz, Zrenjanin

The quality management system was implemented in the company with the aim of achieving benefits such as increasing income, reducing costs, higher level of customer satisfaction, gaining competitive advantages, improving organizational image, etc. If these goals are achieved, it can be concluded that the quality management system is effective and has justified expectations. However, if the goals set for the quality management system are only partially achieved or are not achieved, then disappointment occurs and enthusiasm for quality improvement in the company decreases.

Managers were asked to what extent the company has significant and visible benefits from the quality management system. The results showed that almost 30% of the surveyed managers believed that the company had great benefits from the quality management system. However, over 40% of managers admitted that they expected more. Latent dissatisfaction with the functioning of the quality management system and the achieved results "simmers" among these managers. The cause of this dissatisfaction can be: (1) unrealistically high expectations from the quality system and excessive optimism when setting goals; (2) incomplete or inadequate quality system implementation; (3) poor quality

system management. In addition, it should be pointed out that about 14% of the respondents stated that they "do not know" whether the company has significant and visible benefits from the quality management system. These honest answers show that the company does not have an effective system of reporting on the achieved results or that such information is not distributed in the right way. Finally, a smaller part of the surveyed managers is extremely disappointed with the functioning of the quality management system and believes that the benefits are barely visible (about 5%) or that there are no benefits at all (about 9%).

As part of the questionnaire, the surveyed managers had the opportunity to evaluate the level of the company's customer (client) service quality. Less than 5% of the surveyed managers believe that the company Šinvoz delivers the highest level of quality (world-class). However, almost half of them (about 48%) rated the quality level as "very high". A third of respondents think that the quality level is "average", and about 14% think that it is "low". None of the surveyed managers circled the answer "very low-quality level". The mean score of the level of the company's service quality was 3.43. This score indicates that Šinvoz still has a lot of room for quality improvement.

At the end of the questionnaire, the managers were given the opportunity to evaluate the best and the weakest segment in the quality management system at Šinvoz. They were offered nine answers: (1) Leadership; (2) Customer focus; (3) Continuous improvements; (4) Employee participation; (5) Process approach; (6) Systemic approach; (7) Fact-Based Decision Making; (8) Establishing and developing relationships with stakeholders; (9) Quality measurement system. Based on the respondents' opinions, the system approach was rated as the best segment (about 19%). The segments "Organization's ability to establish and develop relationships with stakeholders" and "Quality measurement system" also received high marks. However, the weakest "link" in the quality system is the lack of leadership (about 24%), as well as insufficient employee participation (about 19%).

Table 4 shows the overall picture of the quality culture development in the company Šinvoz, according to the results shown in Tables 2 and 3.

Table 4: Summary of quality culture development level

		Quality culture development level		
Statements	M	Low level (≤ 3.00)	Average level (3.01 – 3.50)	High level (>3.50)
The company management is committed to the improvement of quality and shows how much it cares about the successful functioning of the quality system by personal example.	3.86			
Quality is one of the company's key values.	4.19			
The company understands and respects customer demands.	4.00			
The company has reliable business partners and builds long-term cooperation with them in order to raise the overall quality.	3.62			

The company has a reliable quality control system and undertakes corrective actions to improve quality as soon as there are deviations from the set norms and goals.	3.38			
Interpersonal relations in the company are harmonious.	3.71			
Employees have adequate working conditions.	3.00			
Employees have sufficient authority and autonomy to make decisions at their workplace.	3.57			
Employees are sufficiently motivated to achieve top quality.	3.05			

Source: the authors' research

The lowest mean score of 3.00 refers to the statement that employees are provided with adequate working conditions. The statement that the employees are sufficiently motivated to achieve top quality is rated rather low (3.04). The highest mean score (4.19) refers to the statement that quality is one of the company's key values. The statement that the company understands and respects customers is also rated highly, as the mean score for this statement is 4.00.

The mean score of all managers' ratings was calculated based on a total of 10 questions. Six mean scores are higher than 3.50, which indicates a high level of quality culture development. Only two mean scores are in the range of 3.01 to 3.50 (the average level of quality culture development, which are marked with yellow boxes in Table 4). Only one mean score is "red" and signals a low level of quality culture development (although this grade is very close to the threshold value). If all the answers, that is, the views of the surveyed managers, were expressed with one mean score, that score would be 3.60. This leads to the conclusion that the majority of surveyed managers generally believe that the level of quality culture development is quite high.

Conclusion

In the digital age, it is essential for organizations to maintain a high level of quality. Clients are becoming more demanding and better informed, which imposes the need for excellent organizational quality. One of the significant factors affecting quality is organizational culture. As a set of behaviors, norms, values, and attitudes of employees in an organization, organizational culture greatly influences the way quality is perceived, built, improved, nurtured, and maintained. In order to build and maintain a high level of organizational quality, it is necessary to change and adapt the organizational culture and employee behavior.

In this paper, research was conducted with the aim to analyze how managers perceive and evaluate the level of quality culture development. The research was carried out in the company Šinvoz, Zrenjanin, whose main activity is the overhaul of railway vehicles and components, as well as the maintenance, repair and modernization of railway vehicles. The results showed that managers believe the quality culture is

rather unevenly developed in the organization. According to certain criteria, managers believe that the quality culture is at a high level. However, there are also segments of a quality culture that are not sufficiently developed. Namely, the managers believe that a major change in the organizational culture towards a culture of quality and a change in organizational behavior, i.e. the behaviour of employees who represent a significant link in the development of all business processes and activities, is necessary. Managers believe that there is plenty of room for improving working conditions, encouraging employee motivation, empowering employees, and encouraging employee autonomy in work. The obtained results imply that there is significant room for improving the quality culture and the entire TQM system in this company through organizational culture change.

The conducted research has certain limitations arising from the size and structure of the sample. Namely, the research included only one company and its management, which is why the obtained results cannot be generalized, especially considering the company's specific activity. Also, the research was conducted using closed-ended questions to which respondents answered, without detailed discussion and explanation. Due to the mentioned limitations, recommendations for future research on this topic would be to include a larger number of respondents and a larger number of organizations. It is recommendable to complement the data collection techniques with interviews during which more precise and complete information would be obtained. In addition to the above, future research on this topic could analyze the implications of the fifth industrial revolution, robotics, artificial intelligence on the manufacturing process automation, and the general quality level.

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Mirela Momčilović[1]
Sanja Vlaović Begović[2]
Slobodanka Jovin[3]
School of Business, Novi Sad

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EFFICIENCY EVALUATION OF INVESTMENT IN EXPANDING THE CAPACITY OF THE RUBBER INDUSTRY COMPANY

Abstract

The aim of this paper is to determine and evaluate the economic efficiency of investment of the company from the field of rubber industry in the injection molding press and tool, with which the company expands the capacities intended for the production of rubber seals. The effects of the investment were estimated using the payback period, as a static method of investment efficiency evaluation, as well as the net present value and profitability index, as dynamic methods. In addition,in paper was used sensitivity analysis, as a method for evaluation of investment in conditions of uncertainty. The obtained results showed that the payback period of the investment is 2.93 years, while the net present value of the investment is 149,914 euros, and the profitability index is 1.79. All the obtained results indicate that the investment should be implemented. In addition, the sensitivity analysis, whose focus was primarily to consider the impact of increased material costs, on the results of the investment evaluation methods used, showed that the project is acceptable in all considered cases, because it contributes to increasing value of the company.

Key words: *investment evaluation, payback period, net present value, profitability index, sensitivity analysis.*

JEL classification: G31, D22

ОЦЕНА ЕФИКАСНОСТИ ИНВЕСТИЦИЈЕ У ПРОШИРЕЊЕ КАПАЦИТЕТА ПРЕДУЗЕЋА ИЗ ГУМАРСКЕ ИНДУСТРИЈЕ

Апстракт

Циљ овог рада јесте утврђивање и оцена економске ефикасности инвестиције предузећа из области гумарске индустрије у ињекциону пресу и алат, којим предузеће проширује капацитете намењене производњи гумених заптивки. Ефекти инвестиције су оцењени помоћу периода повраћаја, као статичког метода оцене ефикасности инвестиције, као и нето садашње

[1] bizniscentar@gmail.com, ORCID ID. 0000-0001-5752-6992

[2] sanjavbegovic@gmail.com, ORCID ID. 0000-0003-2379-9057

[3] boba_jovin@yahoo.com, ORCID ID. 0000-0002-1221-890X

вредности и индекса профитабилности, као динамичких метода. Поред тога, у раду је коришћена и анализа осетљивости, као метода оцене инвестиције у условима неизвесности. Добијени резултати су показали да је период повраћаја инвестиције 2,93 године, док нето садашња вредност инвестиције износи 149.914 евра, а индекс профитабилности 1,79. Сви добијени резултати указују да инвестицију треба спровести. Осим тога, анализа осетљивости, чији је фокус, пре свега, био да сагледа утицај повећања трошкова материјала, на резултате коришћених метода оцене инвестиције, је показала да је пројекат прихватљив у свим разматраним случајевима, јер доприноси повећању вредности предузећа.

Кључне речи: *оцена инвестиције, период повраћаја, нето садашња вредност, индекс профитабилности, анализа осетљивости.*

Introduction

Investments represent present investments that are made in real goods, in order to obtain certain effects in the future, which will, in that way, increase the overall wealth of the company and the social community as a whole. (Jovanović, 2013, p. 44) Investments are, therefore, the base of growth and development of companies, as well as social community, and they should be realized in such a way to provide maximum effects per unit of (limited) invested financial resources. For investment analysis and evaluation are used various static and dynamic methods, as well as investment evaluation methods in conditions of uncertainty. (Malešević and Malešević, 2011, pp. 111-138, 156-180)

The main goal of this research is to analyze and evaluate the effects of the investment of the company "X", which operates in the field of rubber industry, in injection molding press and tool. In paper for evaluation of investment is used the payback period, as a static method of assessing the efficiency of the investment. In addition, in paper are used net present value and profitability index as dynamic methods of assessment. Since from the beginning of 2021 there has been instability in the procurement market and an increase in the price of raw rubber, in the paperis also used sensitivity analysis, as a method of assessment of investments in conditions of uncertainty.

Literature Review

A number of papers, both in domestic and foreign literature, deal with the analysis and evaluation of economic efficiency of investments. Thus, Novković et al. (2006) examined the effects of investing in silo capacity expansion. On the example of silos PP Titel AD in Titel, they presented the procedure of assessing the effects of investing in the expansion of silo capacity. The research showed that the investment should be undertaken, because the paybeck period is slightly higher than five years, the net present value of the investment is around 190,000 euros, and the internal rate of return is 13.01%. Similarly, Novković et al. (2017) investigated the economic effects of investing in hazelnut plantation on an area of 0.5 hectares. The obtained results indicated that the

project has a positive net present value for a period of 10 years (1,212,200 dinars), as well as that the internal rate of return of the project is 16.97%. In addition, the results showed that after eight years, the project returns the invested funds, and can be assessed as profitable.

Subić (2017) examined the economic efficiency of investments in the field of crop production, ie he investigated the effects of the project of purchasing agricultural land, as well as the procurement of machinery for agricultural production. For investment evaluation he used dynamic methods, as well as investment evaluation methods in conditions of uncertainty. He concluded that there is a justification for investment in all analyzed cases. Similarly, Subić, Kljajić and Jeločnik (2017) examined the economic effects of introducing energy from renewable sources into the raspberry production process. The authors evaluated two investment scenarios (conventional way of establishing and using raspberry plantation, as well as raspberry plantations that include investing in a mobile solar robotic generator). The assessment of the economic effects of the projects was performed using the methods of net present value, internal rate of return, payback period and break-even point. The results of the study indicated that investing in a device for the transfer of renewable into electrical energy, during the process of growing raspberries, has a high economic justification.

Assessment the economic efficiency of the investment using several dynamic methods of capital budgeting on the example of the purchase of 10 hectares of agricultural land for corn cultivation by an agricultural farm was performed by Vlaović Begović, Momčilović and Tomašević (2018). The research showed that the net present value of the investment is 43,415 euros, the internal rate of return is 9.91%, and the profitability index is 1.22, and they concluded that the investment should be implemented.

Baruwa and Fabode (2019) investigated the investments, as well as a structure of costs and returns of the layer and broiler production investments in the state of Osun, Nigeria. The results of the research showed that the investment in layer production has a higher, positive net present value and the value of the internal rate of return in relation to the investment in the production of broilers, as well as a shorter discounted payback period. It should be emphasized, however, that the used indicators of the efficiency of the investment in the production of broilers also indicated that this investment should be accepted too. The authors concluded that small scale layer producer is more profitable compared to broiler producer, because it has higher net present value, internal rates of return, as well as a shorter discounted peyback period of investment.

Lopes Santos et al. (2020) evaluated two soybean cultivation systems on three different rural property profiles, using three different price scenarios. Using discounted cash flows of the investment (which includes the net present value method), as well as cost-volume-profit analysis, the authors found that production makes economic sense, with different strategies, property production profiles and price scenarios, if it is performed on land that according to the size varies between 29 ha and 1,065 ha.

Data and Methodology

The investment project, which is analyzed and evaluated in the paper, is being conducted for the company “X”, that has been operating in the field of production of

other rubber products since 1992. Company "X" has the opportunity to market additional quantities of rubber seals to long-term customer. Since it does not have unused production capacity, the company is considering investing in an injection press and tool, as it could to produce an additional, required quantity of products. Data related to investment in equipment and permanent working capital, planned (economic) utilization life of equipment, minimum quantity of products that can be produced and marketed, costs of raw materials, energy, labor and other costs, as well as the expected minimum selling price, were obtained from management of company "X" on the basis of conducted interview.

Since the management estimated that the demand for the product will exist for at least 5 years, the assessment of the efficiency of the investment is based on the economic life of the project operation of 5 years. In the paper was carried out a projection of the income statement, as well as the cash and economic flow of the project.

It is well known that the net present value is method of investment evaluation to which a large space is devoted in the literature (Peterson and Fabozzi, 2002, pp. 71-79; Malešević and Malešević, 2011, pp. 113-118; ACCA Study Text, 2014, p. 163-167, 172; Damodaran, 2015, pp. 196-204; Todorović and Ivanišević, 2018, pp. 325-327; Stančić and Čupić, 2020, pp. 173-177; CFA Institute, 2020, pp. 52- 53), and, as such, will be used in this paper to assess the efficiency of the investment.

In addition, when selecting additional methods for investment evaluation, the authors started from the results of research conducted by Todorović, Kaličanin and Nojković (2015)[4], who surveyed financial managers of 64 companies in Serbia in order to determine the most common practices of investment project evaluation. Namely, Todorović et al. (2015) found that ¾ of sample firms always or almost always use the profitability index, as well as the payback period, when evaluating investments.

They assume that managers prefer to use the profitability index, because it is a relative measure for which fewer shortcomings are cited in the literature in relation to the internal rate of return (see Peterson and Fabozzi, 2002, p. 106). Also, they believe that the payback period is well ranked due to its simplicity and comprehensibility, and state that managers mostly use metrics based on discounted cash flow and believe that the payback period represents an additional metric when evaluating investments. Due to the stated reasons, for assesment of investment efficiency, in addition to the net present value, will be used payback period and profitability index.

In addition, in the paper will also be used sensitivity analysis as an investment evaluation method suitable for uncertainty conditions. Namely, in the first part of 2021, Covid-19 contributed to the instability of the procurement market in the rubber industry, ie there was a significant increase in the price of raw rubber. As a result, in the paper will be performed a sensitivity analysis, which focus will be examination of acceptability of the investment in the case of a further increase in raw rubber prices and other material costs.

[4] In the world numerous similar studies have been conducted about investment and financial decisions made by corporate financial managers (Graham and Harvey, 2001; Ryan and Ryan, 2002; Dedi and Orsag, 2007; Correia, 2012; Andres, Fuente and San Matin, 2015, etc.).

Research Results and Discussion

The total investment in the project include investment in equipment, as well as investment in permanent working capital, in the total amount of 190,000 euros. The company has unused space in the existing production facility, as well as the accompanying infrastructure, which are needed for the installation of new equipment, and during the realization of the project, no investment will be made in construction facilities. The structure of investments is presented in Table 1.

Table 1: Structure of investments in the project (in EUR)

No.	Description	Amount	Share (%)
I	**Fixed assets**	**140,000**	**74**
1.	Plant and equipment	140,000	74
1.1	Injection press MTF2000/250	130,000	69
1.2	Injection tool	10,000	5
II	**Permanent working capital (PWC)**	**50,000**	**26**
	TOTAL:	**190,000**	**100**

Source: Authors calculation

The company will finance part of the investment in plant and equipment from credit. The rest of the investment in plant and equipment, as well as investment in permanent working capital, company will finance from its own sources (Table 2).

Table 2: Structure of project financing sources (in EUR)

No.	Description	Amount	Share (%)
I	**Own capital**	**100,000**	**53**
1,	Plant and equipment	50,000	26
2	PWC	50,000	26
II	**External capital**	**90,000**	**47**
1,	Plant and equipment	90,000	47
	TOTAL:	**190,000**	**100**

Source: Authors calculation

The company estimated that by expanding its production capacity, it can produce 160,000 pieces of rubber seals per month, as well as that it can place the total annual produced quantity of products to an existing, foreign customer with whom it has been successfully cooperating for more than 10 years. The sale price of 0,11 EUR / piece was agreed with the customer. Table 3 shows the projected total revenue by years of exploitation of the investment.

Table 3: Total planned investment revenue (in EUR)

No.	Description	Years				
		1	2	3	4	5
Total revenue						
I	Operating revenue					
1	Revenue from sales of products and services	211,200	211,200	211,200	211,200	211,200
	TOTAL:	**211,200**	**211,200**	**211,200**	**211,200**	**211,200**

Source: Authors calculation

It is estimated that the direct cost of materials (raw rubber) per product is 0.05 euros. In addition, the monthly fuel and energy consumption is estimated at 1,000 euros, and other material costs at 5,000 euros per year. Gross labor costs are estimated at 2,000 euros per month. Estimated material costs of the project are presented in Table 4, and labor costs in Table 5.

Table 4: Material costs (in EUR)

No.	Descrition	Years				
		1	2	3	4	5
I	**Material costs**					
1	Cost of material (raw rubber)	96,000	96,000	96,000	96,000	96,000
2	Costs of fuel and energy	12,000	12,000	12,000	12,000	12,000
3	Other costs	5,000	5,000	5,000	5,000	5,000
	TOTAL:	**113,000**	**113,000**	**113,000**	**113,000**	**113,000**

Source: Authors calculation

Table 5: Labor costs (in EUR)

No.	Description	Years				
		1	2	3	4	5
1	Gross labor costs	24,000	24,000	24,000	24,000	24,000
	UKUPNO:	**24,000**	**24,000**	**24,000**	**24,000**	**24,000**

Source: Authors calculation

The annual depreciation rate of the equipment in which the investment is made is determined on the basis of the planned useful life of the equipment exploatation and the linear depreciation method. When determining the annual depreciation cost for the injection press, it was started from the assumption that the useful life of the press is 20 years, and its annual depreciation rate (write-off) is 5%. The planned useful life of the injection tool is 10 years, and its annual depreciation rate is 10%. Depreciation costs are presented in Table 6.

Table 6: Depreciation costs (in EUR)

No.	Description	Dep, rate (%)						Unamortized cost
			1	2	3	4	5	
1	Injection press	5	6,500	6,500	6,500	6,500	6,500	97,500
2	Injection tool	10	1,000	1,000	1,000	1,000	1,000	5,000
	TOTAL:		**7,500**	**7,500**	**7,500**	**7,500**	**7,500**	**102,500**

Source: Authors calculation

To finance the project, a 90,000-euro loan will be provided by a commercial bank with a fixed interest rate of 5.56%, a repayment period of 5 years and a grace period of 1 year. Repayment of the loan will be made in equal annuities (Table 7).

Table 7: Loan repayment dynamics (in EUR)

No.	Description	Years				
		1	2	3	4	5
1	Interest expenses	5,004	4,108	3,163	2,165	1,114
2	Debt repayment	16,107	17,003	17,948	18,946	19,997
	TOTAL:	**21,111**	**21,111**	**21,111**	**21,111**	**21,111**

Source: Authors calculation

Table 8 presents the income statement of the investment project, with an income tax rate of 15%. It can be seen from the table that the implementation of the project will have a positive financial result in all years of the observed period.

Table 8: Project income statement (in EUR)

No.	Description	Years				
		1	2	3	4	5
1	**Total revenue**	**211,200**	**211,200**	**211,200**	**211,200**	**211,200**
1.1	Operating revenue	211,200	211,200	211,200	211,200	211,200
	1,1,1 Revenue from sales of products and services	211,200	211,200	211,200	211,200	211,200
2	**Total expenses**	**144,500**	**144,500**	**144,500**	**144,500**	**144,500**
2.1	Operating expenses	144,500	144,500	144,500	144,500	144,500
	2,1,1 Material costs	113,000	113,000	113,000	113,000	113,000
	2,1,2 Depreciation costs	7,500	7,500	7,500	7,500	7,500
	3,1,3 Gross labor costs	24,000	24,000	24,000	24,000	24,000

3	**Operating profit**	**66,700**	**66,700**	**66,700**	**66,700**	**66,700**
4	Financial expenses	5,004	4,108	3,163	2,165	1,114
5	**Profit before tax**	**61,696**	**62,592**	**63,537**	**64,535**	**65,586**
6	Income tax (15%)	9,254	9,389	9,531	9,680	9,838
7	**Net profit**	**52,442**	**53,203**	**54,006**	**54,855**	**55,748**

Source: Authors calculation

The cash flow of the project is presented in Table 9. From the table can be seen that in each observed year of cash flow, the project generates a positive net inflow. In the last year, the net inflow is significantly higher compared to previous years, due to the residual value of fixed assets and permanent working capital. The residual value of fixed assets is estimated at their unamortized value.

Table 9: Cash flow of the project (in EUR)

No.	Description	Years					
		0	1	2	3	4	5
I	**Total inflow**	**190,000**	**211,200**	**211,200**	**211,200**	**211,200**	**363,700**
1	Total revenue	0	211,200	211,200	211,200	211,200	211,200
2	Sources of financing	190,000					
2.1	Own capital	100,000					
2.2	External capital	90,000					
3	Residual value						152,500
3.1	Fixed assets						102,500
3.2	PWC						50,000
II	**Total outflow**	**190,000**	**167,365**	**167,500**	**167,642**	**167,791**	**167,949**
1	Value of investment	190,000					
1.1	Fixed assets	140,000					
1.2	PWC	50,000					
2	Material costs	0	113,000	113,000	113,000	113,000	113,000
3	Gross labor costs	0	24,000	24,000	24,000	24,000	24,000
4	Loan liabilities	0	21,111	21,111	21,111	21,111	21,111
5	Income tax (15%)	0	9,254	9,389	9,531	9,680	9,838
III	**Net inflow (I-II)**	**0**	**43,835**	**43,700**	**43,558**	**43,409**	**195,751**

Source: Authors calculation

From Table 10, which shows the economic flow of the project, can be seen that the net inflows of economic flow in all years are positive, except in the year of project implementation (because in year zero is not expected to generate revenue from the project). The obtained results indicate that the economic potential of the project is positive.

Table 10: Economic flow of the project (in EUR)

No.	Description	Years					
		0	1	2	3	4	5
I	**Total inflow**	**0**	**211,200**	**211,200**	**211,200**	**211,200**	**363,700**
1	Total revenue	0	211,200	211,200	211,200	211,200	211,200
2	Residual value						152,500
2.1	Fixed assets						102,500
2.2	PWC						50,000
II	**Total outflow**	**190,000**	**146,254**	**146,389**	**146,531**	**146,680**	**146,838**
1	Value of investment	190,000					
1.1	Fixed assets	140,000					
1.2	PWC	50,000					
2	Material costs	0	113,000	113,000	113,000	113,000	113,000
4	Gross labor costs	0	24,000	24,000	24,000	24,000	24,000
5	Income tax (15%)	0	9,254	9,389	9,531	9,680	9,838
III	**Net inflow (I-II)**	**-190,000**	**64,946**	**64,811**	**64,669**	**64,520**	**216,862**

Source: Authors calculation

The payback period of investment represents the time required for the net inflows to cover the invested funds (capital expenditure) of the project, and in particular case it amounts 2.93 years (Table 11). A project is considered eligible if the payback period is shorter than the maximal acceptable period (which is determined by management based on an assessment).

Table 11: Investment payback period

Year	Net inflow (EUR)	Cumulative (EUR)
0	-190,000	-190,000
1	64,946	-125,054
2	64,811	-60,243
3	64,669	4,426
4	64,520	68,946
5	216,862	285,808
Investment payback period (PP)		**2.93 years**

Source: Authors calculation

The application of net present value and profitability index, as more complex dynamic methods of investment evaluation, requires the determination of the discount rate. As a rule, the weighted average cost of project capital is used as a discount rate. Given that the analyzed company has the ability to borrow funds from the bank at an interest rate of 5.56%, as well as the ability to invest equity at an a-vista interest rate of 1.06%, the weighted average cost of capital is 3.18% (or 2.78%, if the income tax rate of 15% is taken into account). Since the obtained weighted average cost of capital is quite low, in the

paper as a discount rate will be used a rate of 10%, which is usually used by the majority of authors in business plans (according to Paunović and Zipovski, 2018, p, 267).

Table 12: Net present value and profitability index of investment

Year	Net inflow (EUR)	Discount factor	Present value (EUR)
0	-190,000	1,00	-190,000
1	64,946	0,91	59,041
2	64,811	0,83	53,563
3	64,669	0,75	48,587
4	64,520	0,68	44,068
5	216,862	0,62	134,654
Present value of net inflows (for yeats from 1 to 5)			339,914
Net present value (NPV)			**149,914**
Profitability index (IP)			**1.79**

Source: Authors calculation

From the Table 12 can be seen that the net present value is 149,914 euros. Net present value represents the present value of the assets for reproduction that project generate in the economic life, and any positive value of this indicator shows that the project should be implemented.

Also, from the table can be seen that the profitability index is 1.79, which means that each euro of the present value of capital investment brings 1.79 euros of the present value of net inflow. Since the profitability index is higher than one, the theory indicates that the project should be also accepted according to this method of evaluating the investment project.

Table 13: Sensitivity analysis

Parameter	Change in parameter (%)	Payback period (years)	Net present value (EUR)	Profitability index
Base value	**0**	**2.93**	**149,914**	**1.79**
Selling prices	+5	2.57	183,940	1.97
Selling quantit, quontities	+5	2.57	183,940	1.97
Selling quantit, quontities	+10	2.29	217,966	2.15
Costs of rubber	+5	3.13	134,447	1.71
Costs of rubber	+10	3.36	118,981	1.63
Costs of rubber	+15	3.62	103,515	1.54
Material costs	+5	3.17	131,709	1.69
Material costs	+10	3.44	113,503	1.60
Material costs	+15	3.77	95,298	1.50

Source: Authors calculation

Table 13 shows the results of the sensitivity analysis. Since the minimum sales prices and quantities were determined during the company's negotiations with the customer, sensitivity analysis was used to examine the impact of possible increases in sales prices and product quantities on the value of payback period, net present value and profitability index. However, the focus of the analysis is the impact of the increase in costs of raw rubber (by 5, 10 and 15%), as well as total material costs (by 5, 10 and 15%) on the results of the methods used to assess the effectiveness of investments.

The obtained results indicate that the project is acceptable in all considered cases. The project contributes the least to increasing the value of the company in the event of an increase in total material costs by 15%, while a slightly better result would be achieved if only the cost of raw rubber increased by 15%.

Conclusion

Based on the data collected by interviewing the management of the company "X", an analysis and evaluation of the investment project of the purchase of injection presses and tool in order to expand capacity. The assessment was performed using the method of investment payback period, net present value and profitability index, as well as sensitivity analysis. The obtained results showed that:

- The payback period is 2.93 years, which means that it takes 2.93 years to cover the capital investment from the net inflow of investment;
- The net present value of the investment is 149,914 euros, assuming that the economic life of the project is 5 years and the discount rate is 10%. The obtained result indicates that the five-year use of the injection press and tools would provide the company a profit of 149,914 euros, ie that the value of the company would increase by that amount. Since the net present value of the company is greater than 0, based on the net present value criterion, the project should be accepted;
- The profitability index is 1.79 and shows that, at a discount rate of 10% and an economic life of the project of 5 years, the project adds 0.79 euros of surplus of present value on every euro of present value of investment in the project. Since the profitability index is higher than 1, according to this method, the project should be accepted;
- Sensitivity analysis indicates that the project is acceptable for all analyzed changes in input parameters.

All the methods used to evaluate the investment speak in favor of its implementation. Future research could further examine the efficiency of the investment in conditions of uncertainty using the break-even point, the scenario analysis and the decision tree.

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